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**Article**

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# Business Intelligence Tools for a Digital Services Company in Peru, 2022

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## ABSTRACT

The objective is to propose the use of the business intelligence tool Microsoft Power BI to contribute to the best decision making in the digital services company; there are deficiencies in the ERP integrator system currently used in the company, impairing decision-making in management and corresponding headquarters. The research is of an applied type, considering as a sample those involved in the operation of the ERP integrator system. The analysis of the ERP integrator and business intelligence Power BI software was used, obtaining as results that the use of ERP integrator stores a large magnitude of data that is not easily understandable, complex reading of reports, and lack of statistical graphs. Business intelligence Power BI was applied as a solution tool, obtaining tables designed with complete and correct data, extraction of tables for their subsequent relationship, and understandable statistical graphics; Power BI allows collaborators greater understanding when reading results.

## KEYWORDS

Business Intelligence, Decision Making, Digital Services Company, Enterprise, ERP, Management, Power BI, Reports, Statistics

## INTRODUCTION

Organizations currently have abundant data but lack the knowledge of effectively managing it. Consequently, key performance metrics and information resources remain obscured amidst a deluge of numbers and disassociated systems. In addition, most organizations boast many dispersed systems, each with their own distinct data sources, making it difficult to circulate up-to-date information between departments and business units. Recognizing these challenges, Business Intelligence is presented as a viable solution to establish market superiority in the immediate, intermediate, and long-term future. This necessitates adjusting and realigning internal corporate structures and processes to correctly interact with their environment. To this end, companies now use various tools and products to gain insight into internal operations. The radical growth of new computer-generated 'intelligence' forms is one of the two information technology (IT) revolutions today.

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In Peru, the full incorporation of Business Intelligence into corporate culture has yet to be achieved. Given the frequently fluctuating and changing environment in which we operate, there are many potential issues companies are likely to face. These include increased competition for technological services, prices beyond the financial capability of many, and heightened competitiveness. For firms to remain successful, they must implement BI systems to help them confront this ever-evolving business landscape. Companies in the IT sector, such as the service company examined here, require up-to-date BI tools to navigate this volatile business climate.

In the city of Trujillo, one company dedicated to digital and technological services is the company under study. It is a family business that offers consulting services, IT sales, machine leasing, among other services, and collaborates with strategic partners such as Ricoh, Cisco, Dell, Zebra, among others. The head office is on a central avenue in Trujillo, and there are branches in other Peruvian cities, such as Lima, Arequipa, Piura, and Cajamarca. In recent years, it has maintained its lead against the competition, but distinct problems have become evident to the managers. They have has observed that the company presents reports with incomplete or false values, since there is a lack of historical data or sometimes the data have not been updated. That is why they do not know the sales trend compared to previous years and cannot assess whether there has been an improvement in recent years or a decrease compared to other years. The lack of quantitative data has caused a serious deficiency in the sales area, rendering the organization incapable of making informed decisions. Such an inability to decipher and manage based on data can be severely detrimental to the efficacy of the organization. Due to a lack of familiarity with Business Intelligence tools, and the financial restraints to implement them, the management team could not exploit these resources.

This study is of an applied nature and endeavors to propose the use of Business Intelligence software (Microsoft Power BI), to develop command panels (e.g., Dashboards), to better organize information for improved decision-making in the digital services company of Trujillo province in 2022.

The study is based on theories and concepts of Business Intelligence (BI) and how it changes the organizational ability to understand business, take advantage of new opportunities and change its business processes, improving its competitiveness and efficiency. Business Intelligence provides digital services corporations with the ability to access and analyze pertinent data, aiding decision-making. Through this technology, entrepreneurs possess the capacity to evaluate strategic scenarios, contemplate alternative solutions, and devise measures to be taken within a reasonable timeframe. Additionally, it allows these companies to grow, organize, enhance their competitiveness, and further comprehend their business sector.

The rest of this article is organized as follows. First, we analyze empirical cases to determine the investigations carried out to date, and later, a thematic analysis of the theories related to Business Intelligence, followed by the methodology used. The current state-of-the-art is also presented of the organization under study, where a cross-comparison was made with the theories and the investigations in previous studies, concluding with novel findings of how BI can support organizations.

## BACKGROUND

Considering previous studies that support the study of the variable, García (2020) mentions that a characterization of the use of computer systems for business management and management in Cuba is presented, showing the current strengths and weaknesses. A chronological journey is presented regarding tools for business intelligence and data analysis in the world, identifying the most used. The BIMAS system, an executive system for planning strategies and monitoring their execution, developed by DESOFT, is presented with proposals for its future evolution. It concludes the lack of demand for this type of solution in the country and the need to have them to increase the effectiveness and efficiency of business management.

According to Basauli (2020), Business Intelligence is the analysis of information from an organization to turn it into knowledge. In this sense, some tools allow data management, processing,

and analysis. Although there are a wide variety of these tools on the market, such as software, platforms, and applications, each has benefits and drawbacks. The study presented the analysis of The Gartner Group, a globally renowned IT consultancies, using its "Gartner Magic Quadrant" methodology, and measuring the current state of technological products.

For their part, Gonzales and Wareham (2018) assessed the impact of Business Intelligence on companies based on the DeLonge and McLean and the Seddon and Seddon models. 104 companies using Business Intelligence systems (BIS) were selected, and six dimensions were used as a reference: system quality, service quality, information quality, system dependency (system use), user satisfaction, and perception. utility (individual impact). Being able to obtain that the Seddon model better explains what happens with a BIS, it is important to mention that, with use for building, the DeLonge and McLean model or the Seddon model can be used, which must be established in more detail.

According to the European Knowledge Center for Information Technology (2022), the term ERP (Enterprise Resource Planning) refers to implementing a sophisticated system of software that is used to manage and control various facets of an organization, ranging from production processes to distribution, as well as human resource management. The portal establishes competitive advantages for ERP software, allowing the automation of company processes, the availability of company information on the same platform, integrating different databases of a company in a single program, and saving time and costs. The ERP system and the Power BI program benefit small- and medium-sized enterprises (SMEs).

In the study by Brichni et al. (2017), they showed how Business Intelligence (BI) supports decision-making by providing methods and tools to access and manage business information. Maintaining BI systems and developing them to adapt to the needs of the business and users is crucial. Power BI (2019) reinforces this, stating that Power BI is a leading business intelligence tool, allowing companies to create a culture of their collaborators in decision-making supported by honest, true, and reliable data. Sinergia (2020) refers that business intelligence acts as a strategic factor for a company or organization, generating a potential competitive advantage,

In the study by Carhuallanqui Bastidas (2017), they proposed a business intelligence solution that allows the integration of data from the sales area and other support areas to generate key information to support management for decision-making. As a result, significant results were obtained in preparing reports; it also allowed the identification of critical success factors for the sales area, reducing the time to determine promotions or loyalty campaigns, and finally, the improvement of information productivity.

## Theoretical Framework

Business intelligence is an increasingly pervasive concept in current times; it acts as a mechanism for organizations to collate data from various points of origin. This data can then be used to gain insight into real-time information and provide reliable forecasts of customer need, thus affording the organization a swift response and ability to provide high-demand products, granting a competitive advantage in the global market (Microsoft Corporation, 2017).

To measure the Business Intelligence variable, the KPI (Key Performance Indicator) or key performance indicators will be used, which for the scientific journal (TEAM, nd) are values that are used to measure actions conducted by a company, as well as to achieve the objectives established in its business strategy. KPIs are also used as quality indicators or key business indicators, and their use is not only limited to the marketing area but also in any business area.

With the choice and proper use of KPIs, a company can know the actual situation and make faster and more accurate decisions. Therefore, one of KPIs' principal advantages is enhancing business decisions. After exporting the tables in Power BI, the relationship will be made using a star schema that, according to the book by Valero (2017), is a data model made up of a fact table, which contains the data for analysis, surrounded by the dimension tables. The star model separates business process

data into facts and dimensions. The facts contain quantitative data and dimensions of the attributes that describe the data, as indicated in the facts.

According to the article by Esan (2016), metrics or KPI's are represented by numbers generated in one or several operations. Therefore, they answer questions about quantities or amounts. The indicators obtained help the Power BI tool display the information on the Dashboard, showing only the information managers require. A Power BI Dashboard is a single page, which tells a story through visualizations. Readers can see related reports to know the details and allow the ease of viewing the reports produced with the help of the corresponding indicators and filters.

It is imperative to account for how information systems (IS) in SMEs are a fundamental tool used to analyze and develop operations within the organization. IS can coordinate resources through three functions. These include receiving information from internal and external sources, intervening and operating on the collected data, and finally disseminating it to users in a capacity to construct strategies that promote growth within the company. In this regard, Abrego et al. (2017) argue that "Information systems are one of the most relevant components of the business environment, offering opportunities for success for SMEs."

In the book "Business Intelligence: A Proposal for its Development in Organizations," Pea (2006) present the problem that many companies encounter difficulty when stakeholders cannot agree on the constraints of data management and capitalize upon the knowledge of the entire organization to establish more capable systems for decision making. Formalizing such processes would allow for their optimal utilization. Acito and Khari (2014) refer to that business intelligence as a revolution that is impossible to ignore, comprising taking advantage of the value of data to detect new opportunities, identify market niches, and develop new products. However, it is also notoriously amorphous and difficult to extract value from since it requires aligning strategy and desirable behaviors with the business.

## RESEARCH APPROACH

The research is applied because it involves developing a dashboard that takes the company's ERP as a source, building KPIs using different indicators, to support decision-making.

The data was collected by relying on Integrator software from digital services provider SRL, organized into a general database, creating a matrix duly filled with essential information, and transferred to and stored in Power BI. Consequently, statistical graphs were generated to permit management and supervisors to analyze them before taking action.

According to the data collection procedure, the first step was to request authorization from the digital services company to collect the information and then analyze it. Then the purposes of the study and the benefits that can be obtained thanks to it are explained.

Finally, to analyze the information collected from the ERP Integrator software, they were analyzed and integrated into Power BI, obtaining corresponding graphs according to management requirements.

### General Objective

It was proposed to use the Business Intelligence tool called "Microsoft Power BI," to enhance the organization of data and optimize decision-making processes in the digital services company of Trujillo province for the year 2022.

### Specific Objectives

- Evaluate the suitability and operation of the ERP Integrator system database currently used by the digital services company in the province of Trujillo.
- Identify the users involved in the management of the ERP Integrator system.
- Evaluate the capacity of the ERP Integrator system for the effectiveness of the data table extraction allowing the export to Power BI.
- Evaluate and propose the Microsoft Power BI tool for use by the digital services company.

## Ethical Aspects

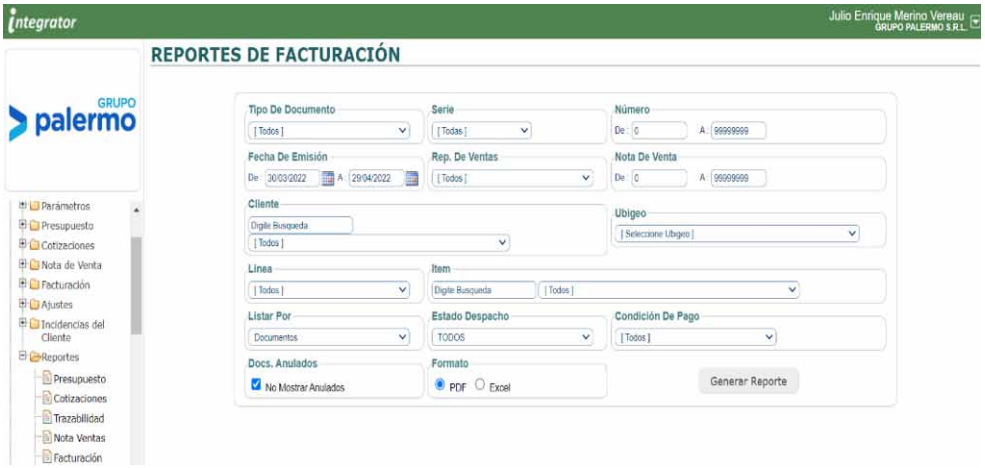
For this research, maintaining the confidentiality of results gathered throughout the study was of utmost importance while preserving the anonymity of participants by not disclosing their names; the only data collected was their age, gender, and company position. Likewise, the veracity of the data used was declared, referring to the studies analyzed in the investigation. In adherence to the APA system and to honor intellectual property rights, we accurately referenced each of the previous investigations in the report and used appropriate citations.

## RESULTS

Upon the initial visit, entering the company's Enterprise Resource Planning (ERP) system is a requirement, wherein the entire database was stored across various areas. Obtaining a general diagnosis and discerning the information provided by the handling and operations of the ERP for database retrieval (Figures 1 and 2).

**Figure 1. ERP Integrator Software Home Page**


**Figure 2. Entrance to the Commercial Area Module**

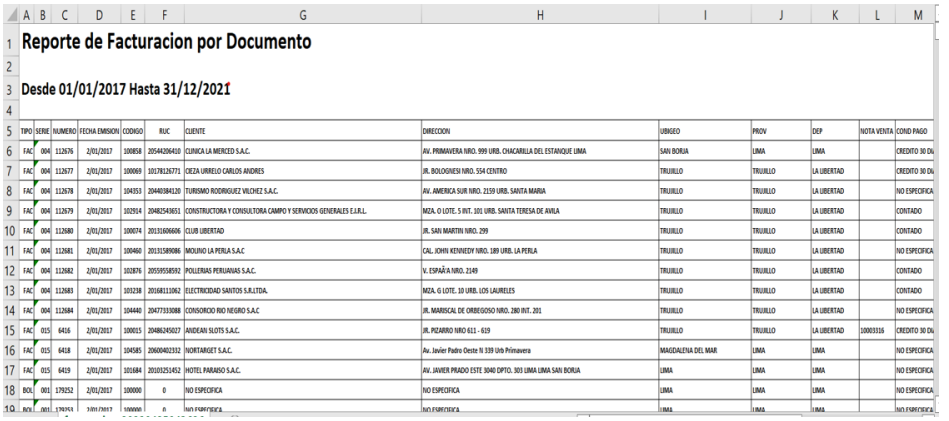


In monthly periods, the commercial advisors deliver to the general manager a detailed report reflecting the number of units sold, sales rates by department, number of new clients, achievement of goals by advisors, and rates for the solution of technical visits for service reasons. This data is described in a double-entry table specifying the essential elements for management analysis. Unfortunately, the table is expansive and not very understandable or useful for supporting decision-making. This is one problem the general manager goes through to make mistakes in timely decisions. In addition, the ERP Integrator software includes the general data of the commercial area, generating reports that are difficult to read, causing problems for the area leadership to solve problems and make decisions.

The suggested solution to achieve better results is using Power BI, software that generates statistical graphs of greater comprehension, integrating various databases. In addition, graphs can be obtained according to the general management, including indicators, to enhance managerial decision-making. Finally, the data included is presented in the dashboard (Figure 3).

To facilitate the transition of the data into Power BI, the necessary data tables were created and stored under a Microsoft Excel platform. To ensure accuracy and uniformity, we thoroughly edited any entries with duplicate information or blank spaces out (refer to Figure 4), thereby eliminating any

**Figure 3. Report Generated by ERP Integrator**

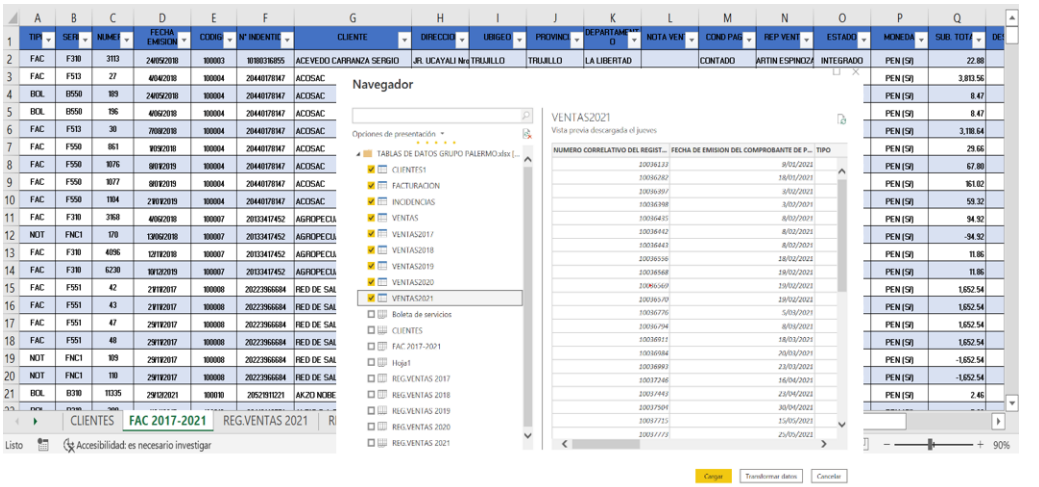


Reporte de Facturacion por Documento

Desde 01/01/2017 Hasta 31/12/2021

| TIPO | SERIE | NUMERO | FECHA EMISION | CODIGO | RUC | CLIENTE | DIRECCION | UBIGEO | PROV | DEP | NOTA VENTA | COND PAGO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FAC | 004 | 112676 | 2/01/2017 | 100858 | 20544206410 | CLINICA LA MERCED S.A.C. | AV. PRIMAVERA NRO. 999 URB. CHACARILLA DEL ESTANQUE LIMA | SAN BORJA | LIMA | LIMA | | CREDITO 30 DI |
| FAC | 004 | 112677 | 2/01/2017 | 100069 | 10178126771 | CIEZA URRELO CARLOS ANDRES | JR. BOLOGNESI NRO. 554 CENTRO | TRUJILLO | TRUJILLO | LA LIBERTAD | | CREDITO 30 DI |
| FAC | 004 | 112678 | 2/01/2017 | 104353 | 20440384120 | TURISMO RODRIGUEZ VILCHEZ S.A.C. | AV. AMERICA SUR NRO. 2159 URB. SANTA MARIA | TRUJILLO | TRUJILLO | LA LIBERTAD | | NO ESPECIFICA |
| FAC | 004 | 112679 | 2/01/2017 | 102914 | 20482543651 | CONSTRUCTORA Y CONSULTORA CAMPO Y SERVICIOS GENERALES E.I.R.L. | MZA. O LOTE. 5 INT. 101 URB. SANTA TERESA DE AVILA | TRUJILLO | TRUJILLO | LA LIBERTAD | | CONTADO |
| FAC | 004 | 112680 | 2/01/2017 | 100074 | 20131606606 | CLUB LIBERTAD | JR. SAN MARTIN NRO. 299 | TRUJILLO | TRUJILLO | LA LIBERTAD | | CONTADO |
| FAC | 004 | 112681 | 2/01/2017 | 100460 | 20131589086 | MOLINO LA PERLA S.A.C | CAL. JOHN KENNEDY NRO. 189 URB. LA PERLA | TRUJILLO | TRUJILLO | LA LIBERTAD | | NO ESPECIFICA |
| FAC | 004 | 112682 | 2/01/2017 | 102876 | 20559558592 | POLLERIAS PERUANAS S.A.C. | V. ESPAÑA NRO. 2149 | TRUJILLO | TRUJILLO | LA LIBERTAD | | CONTADO |
| FAC | 004 | 112683 | 2/01/2017 | 103238 | 20168111062 | ELECTRICIDAD SANTOS S.R.LTDA. | MZA. G LOTE. 10 URB. LOS LAURELES | TRUJILLO | TRUJILLO | LA LIBERTAD | | CONTADO |
| FAC | 004 | 112684 | 2/01/2017 | 104440 | 20477333088 | CONSORCIO RIO NEGRO S.A.C | JR. MARISCAL DE ORBEGOSO NRO. 280 INT. 201 | TRUJILLO | TRUJILLO | LA LIBERTAD | | NO ESPECIFICA |
| FAC | 015 | 6416 | 2/01/2017 | 100015 | 20486245027 | ANDEAN SLOTS S.A.C. | JR. PIZARRO NRO 611 - 619 | TRUJILLO | TRUJILLO | LA LIBERTAD | 10003316 | CREDITO 30 DI |
| FAC | 015 | 6418 | 2/01/2017 | 104585 | 20604402332 | NORTARGET S.A.C. | Av. Javier Pedro Oeste N 339 Urb Primavera | MAGDALENA DEL MAR | LIMA | LIMA | | NO ESPECIFICA |
| FAC | 015 | 6419 | 2/01/2017 | 101684 | 20103251452 | HOTEL PARAISO S.A.C. | AV. JAVIER PRADO ESTE 3040 DPTO. 303 LIMA LIMA SAN BORJA | LIMA | LIMA | LIMA | | NO ESPECIFICA |
| BOL | 001 | 179252 | 2/01/2017 | 100000 | 0 | NO ESPECIFICA | NO ESPECIFICA | LIMA | LIMA | LIMA | | NO ESPECIFICA |

**Figure 4. Updated Table in Excel**



potential incorrect entries by personnel. Following that, the database tables that have been analyzed in the preceding stage are exported to the Power BI platform to be utilized in the Dashboard's formation following the managers' preferences (Figure 5).

After extracting the tables, the information is organized to create the relationships of the different tables, including required indicators, through the Dashboard presentation. After exporting the tables in Power BI, they executed the relationship through a star schema that contains data for analysis, surrounded by the dimension tables. This follows the Valero's (2017) approach to generating a data model formed by a table of facts containing the data for analysis, surrounded by dimension tables. The model being discussed condenses the business process data into facts and dimensions, which respectively comprise quantitatively measurable values and the descriptors associated with the figures from these facts. For example, a shortcoming can be observed in the company's ERP system in the commercial module when exporting total sales information over a set period, as exemplified in Figure 6, where five tables must be generated for each individual year.

With the consolidation of all tables, comprehensive reports may be generated to provide a clear and succinct overview of management's requested indicators. At this stage, the indicator displays the cumulative sales collected by the commercial advisor and can be instrumental in assessing whether their target is being met. Furthermore, the Dashboard provides visual aids to analyze the magnitude of sales by each commercial advisor, allowing management to use filters and assess the sales associated with each commercial advisor. Moreover, their application can access the KPIs achieved each year (Figure 7).

In the next phase, they developed a Dashboard to visualize the total sales made by the company in the last five years, allowing managers to see and analyze the company's performance and thus decide if it is necessary to implement new strategies (Figure 8).

The clients' Dashboard was then generated, allowing for the observation of the income ranges that each client attained; gauging which clients yielded the most income and ascertaining who is deemed most important through the assistance of Power BI Dashboard filters, enabling for the segmentation of information by department, client and year (Figure 9).

The team then developed the Dashboard to monitor total sales, appraise the income generated from each region, and determine where the firm can invest more to maximize their gains (Figure 10). This analysis allows management to assess which locations have generated the highest returns.

**Figure 5. Migrating Excel Tables to Power BI**

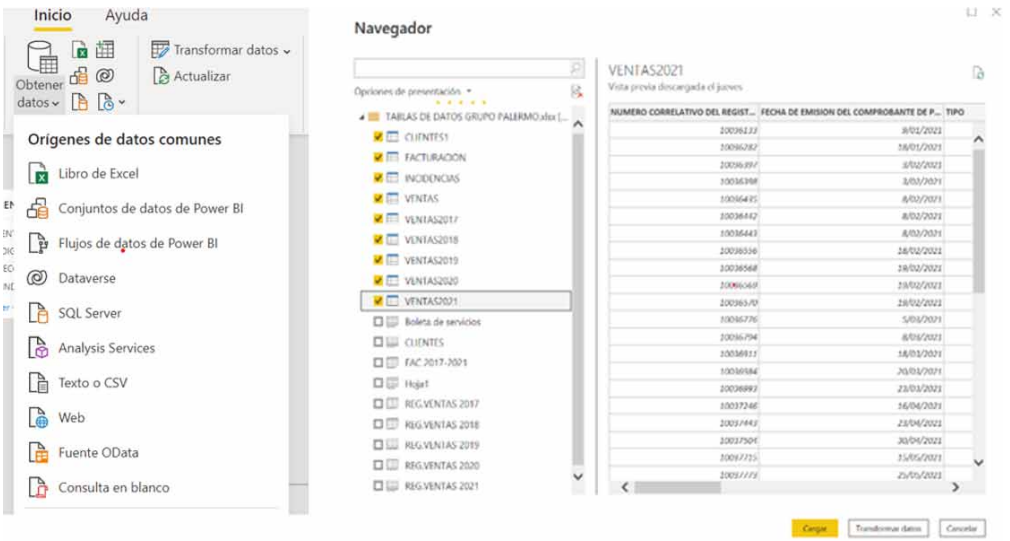


**Figure 6. List of Tables**

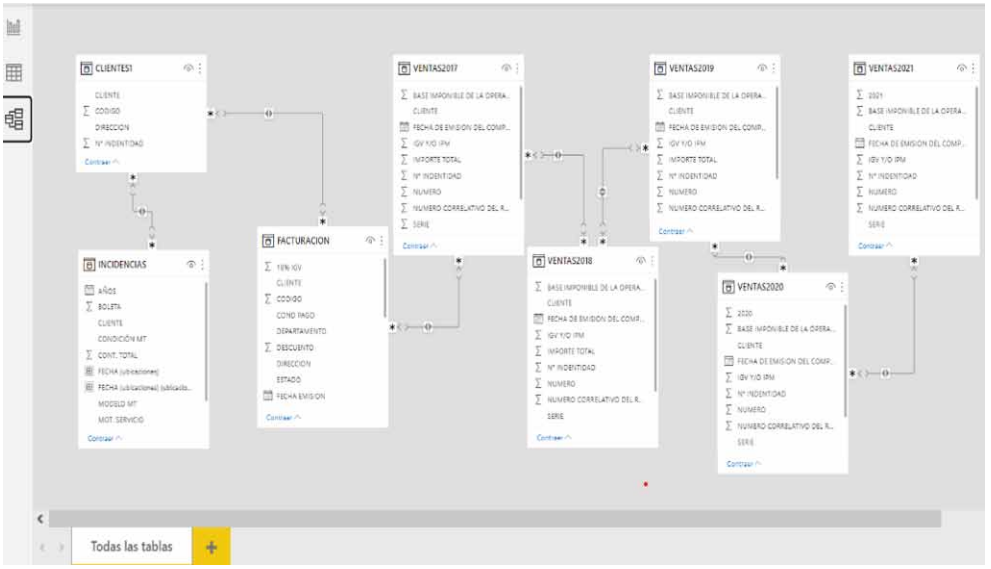
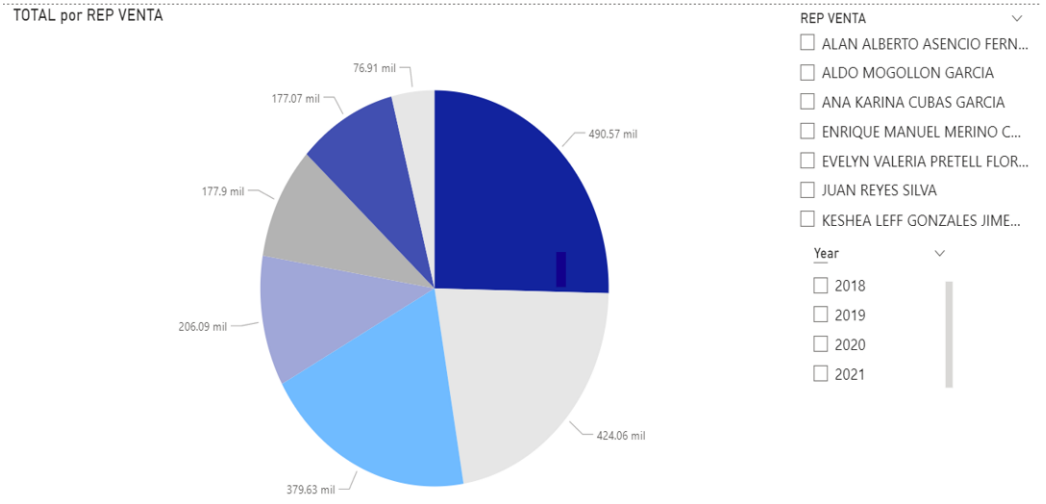



**Figure 7. Dashboard Presentation, Sales by Commercial Advisor**




Subsequently, the company analyzes and evaluates the summary of services supplied to clients, and in this Dashboard managers can identify the level of services and the professionals who provide them. Further, the "data segmentation" function is utilized to stratify by service, name of the technicians, and the people who benefited. It is feasible to visualize the full range of services executed (Figure 11).

As shown in the test report, different indicators were used in the figures shown according to managements' requirements, and filters can be placed in each figure, and the information needed can be selected, such as only observing data from a certain year, or from a certain costumer, or have the information by departments and thus make decisions based on real data. By linking the data to Power BI and extracting it from the company's ERP, all employees can create summaries of the information

**Figure 8. Sales in the Last Four Years**

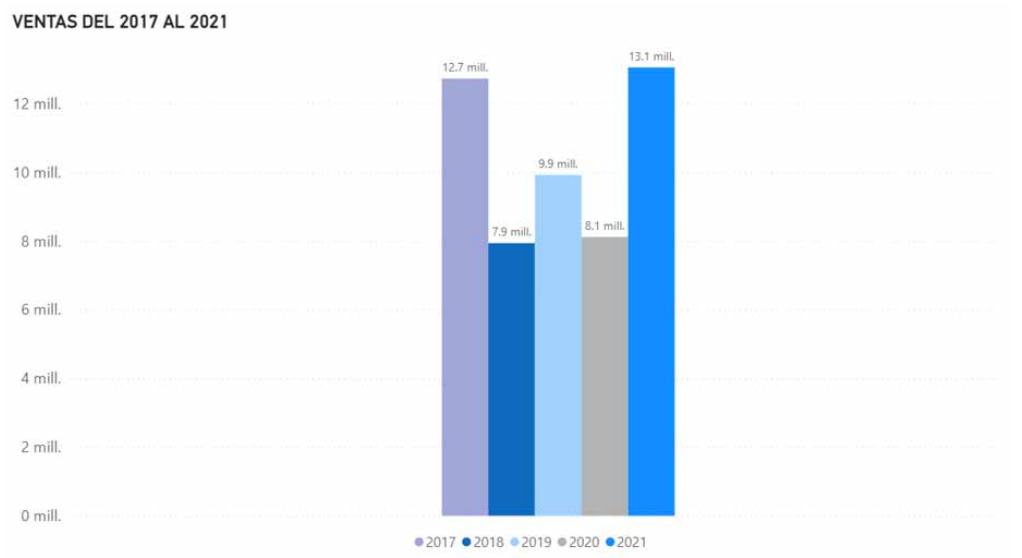
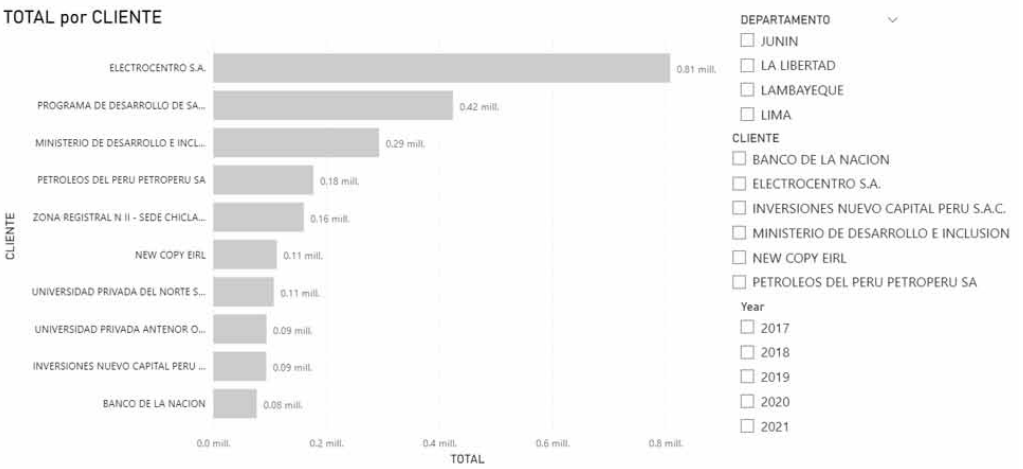



**Figure 9. Income From Clients**




that is straightforward and simple to read. The indicators used were the total sales per commercial advisor, the sales in the last four years, helping managers assess whether the company is improving or is making losses. Also, in the customer graph, we observe the potential customers or cities with the highest income per year or different filters that can be applied directly in Power BI. The Dashboard and relevant data can be concisely presented on a single page. Additionally, information can shown over several pages, and graphs can be added to facilitate detailed scrutiny, as visualized in Figure 12.

The suggested solution to achieve better results is the use of Power BI, software that generates statistical graphs of greater comprehension, integrating various databases. In addition, graphs can be obtained according to management's requirements, including indicators to better understand the data included, finally presented in the Dashboard.

**Figure 10. Total Sales by Department**

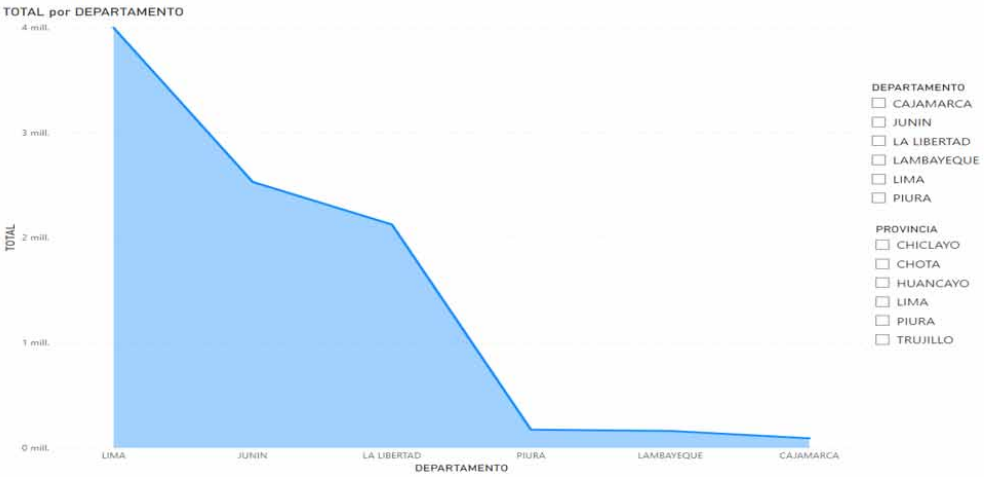
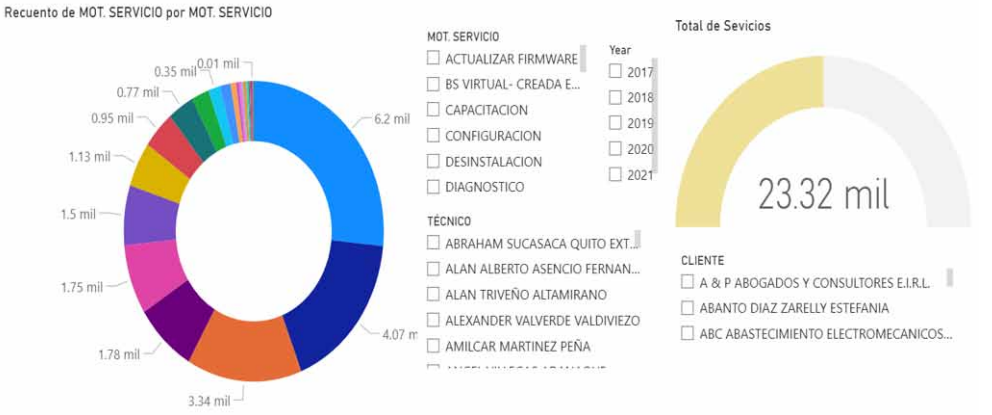



**Figure 11. Number of Services**

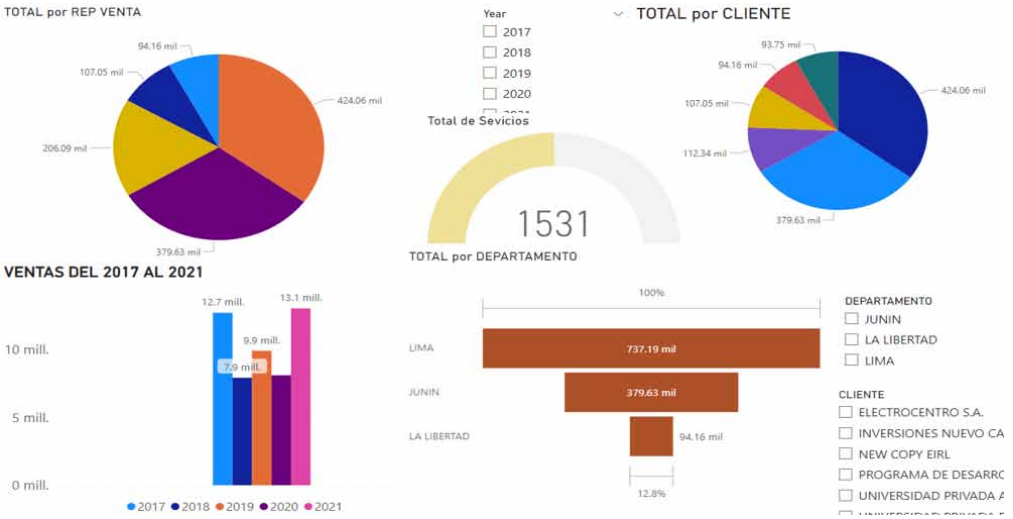



## DISCUSSION

The main objective was to propose using the Microsoft Power BI Business Intelligence tool, to strengthen the organization of information, contributing to the best decision-making in the digital services company of the province of Trujillo, 2022. According to Microsoft Corporation (2017), the Business Intelligence tool is used not only to obtain current information but also to predict trends regardless of the customer's need, thus allowing the organization to act quickly and provide high-demand products, generating a competitive advantage over others in the market. global market. In the investigation it was found that currently the digital services company complies with the use and management of the integrated system ERP Integrator, which presents difficulties for the corresponding management, such as, it integrates a large magnitude of data and little understandable, difficult reading of reports that directly harm decision making.

To promote better organization and performance in the digital services company, it was proposed to implement the Power BI tool. Its utilization has enabled well-crafted tables with accurate information and facilitated the creation of related data tables. Additionally, through the production of statistical

**Figure 12. General Dashboard**




graphs, management has been granted a complete understanding of their leadership. Ultimately, this implementation has enhanced the company's decision-making. For example, in the study carried out by Carhuallanqui Bastidas (2017) they evidenced that through a Business Intelligence solution that allows the integration of sales data and others to the support area, generating key information for decision-making. As a result, it was possible to identify critical success factors for the sales area, reduce the time to determine loyalty campaigns, and improve productivity in decision-making. Furthermore, Cordero et al. (2020) considered that the study on Business Intelligence shows management that this technological tool allows better information analysis in faster, more real ways, and you will see. From the revised theory, and the results analyzed, we can verify that the Power BI tool contributes to decision-making to improve business performance, promoting competitive advantage.

Navarrete Carrasco (2002) considered that various companies have deficiencies in their business processes; for this, it is necessary and important to implement the concept of Business Intelligence to know the importance of its real structure and benefits in the organization. Most organizations have abundant data, but a dearth of knowledge; performance metrics, and the most relevant information resources continue to be lost in a sea of numbers and disconnected systems. In addition, most companies have dispersed systems, each with its data sources and representation mechanisms. This makes keeping information up to date across departments and business units extremely difficult. Because of that, companies use KPIs as key indicators to measure the actions carried out, and a company's effective use of KPIs can assess the situation and make faster and more accurate decisions. After exporting the tables in Power BI, we constructed a star schema containing quantitative and dimensional data. This schema includes facts that show measurable data and dimensions that describe those facts. The dimensional tables encompass the data while providing necessary attributes.

To achieve greater strength in the above, Valdivieso (2011) states that Business Intelligence is a set of strategies and tools used to manage and create knowledge from analyzing existing information from various sources within the company. Through Business Intelligence, it is possible to consolidate and analyze the information with reasonable detail and precision to support making accurate business decisions. As organizations grow and their information needs increase, they must use increasingly complex information analysis techniques. It is then that metrics are used for the corresponding data analysis, Esan (2016), that metrics are presented by numbers generated in one or several operations that answer the questions referring to considerable quantities. These indicators will help to use the

Power BI tool when displaying the information on the dashboard and only showing the information required by the headquarters. It is essential to recognize that a Power BI Dashboard encompasses a single page and communicates an overarching narrative with visualizations. A carefully crafted dashboard must include only the most noteworthy elements to maximize effectiveness.

Murillo Junco and Cáceres Castellanos (2013) investigated Business Intelligence and highlighted how the tool's purpose is to provide a comprehensive solution and generate value for strategic and operational decision-making in companies. Users perceive using technological tools to optimize operations and improve processes by streamlining decision-making at all organizational levels. It is clear to recognize that, using this tool, the area that benefits the most is finance because it simply and effectively accesses the visualization, analysis, and monitoring of information in real-time. According to Pena (2006), Business Intelligence eases administrative problems that present disagreement because of the limited handling of information and the need to take advantage of the organization's knowledge to have tools for decision-making. Business intelligence is an evolution that is impossible to ignore, comprising taking advantage of the value of data to detect new opportunities, identify market niches, and develop new products. It is also difficult to extract value from it, since it requires aligning strategy and desirable business behaviors.

After the theoretical discussion and results, the digital services company must continue monitoring the effects of Business Intelligence since it is an efficient way to make the best decisions. Business intelligence depends not only on the ability and knowledge of the user but also on the financial technology provided by the company. Integrating business intelligence into current organizations is committed to centralizing all their data in an efficient and obvious way to achieve the best long-term performance. Business intelligence allows digital services to transform raw data into meaningful and useful information to manage the company with the help of a set of techniques and tools. It is frequently used in various companies, aiding to support basic operations decisions or strategic goals, or determining objectives and priorities., which may involve specific objectives and priorities. The aim is to allow a better and easier interpretation of a large volume of data. Sizable datasets become more intelligible through business intelligence, and, when combined with market information, generate an all-encompassing understanding of the business.

## CONCLUSION

The research objective of this study was to propose the use of the Business Intelligence tool called Microsoft Power BI to strengthen the organization of information, contributing to the best decision-making in the digital services company in Trujillo province in 2022. Following implementation, we found that providing data to the stakeholders enhanced the system with concise summaries and straightforward readings. Furthermore, there was a greater arrangement of statistical graphs, avoiding extraneous data, improving the grasp of relevant details related to administration and overall management, thus facilitating better commercial and organizational choices for the Digital Service Corporation (Figure 12).

Based on the first objective to evaluate the suitability and operation of the database of the ERP Integrator system currently used by the digital services company of the province of Trujillo, we concluded that within the system, there are different modules addressed to the areas that make up the company (Figure 1). Therefore, it was possible to analyze the data extraction from the commercial area module, evidencing within the billing reports various fields required to filter the information search, considering elements such as the document, reports, clients, date, and formats (Figure 2), to obtain accurate sales reports in each period.

After reviewing our second objective to detect the personnel involved in implementing and managing the ERP Integrator network, we concluded that six operators and one supervisor are accountable for manipulating and incorporating data into the ERP Integrator system.

Concerning the third objective to evaluate the capacity of the ERP Integrator system for the effectiveness of the data table extraction allowing the export to Power BI, we concluded that the current system produces tables with disorganization and superfluous information, incomplete tables, difficult comprehension, and holes in the data storage. After conducting the data integration and analysis of management, it is significant to consider that such data are often vast and difficult to comprehend for effective assessment (Figure 3). We established an updated table in Excel to facilitate the development of a Power BI proposal,

After careful consideration and examination, the utilization of Power BI as a suggested remedy was implemented to increase decision-making efficacy. This course of action ultimately proved successful, resulting in more orderly business models. In addition, by implementing tables constructed with accuracy and correctness, analytics and charts were created to allow for further clarity and comprehension, thus facilitating optimal decisions within the digital company (Figures 8-11).

During this investigation, it became clear that obstructions limited the development of a theoretical framework pertinent to Business Intelligence Power BI because of the lack of companies in Peru that successfully integrate and deploy the software. Subsequently, a closer and more specific theoretical base pertinent to the tool was adopted to create a successful theoretical and conceptual framework. Additionally, access to the technological areas of the company revealed that the ERP Integrator system faced difficulties, most notably the ineffective management of the said tool by the organization's personnel, leading to severe operational issues such as duplicate information, inconsistent or incorrect data, inadequate modules, and data-deprived processes. This research project is a reference for future studies concerning Business Intelligence, revealing the importance of correctly integrating ERP with Power BI for these tasks. This work may also benefit other organizations looking to implement Business Intelligence within their structures.

## COMPETING INTERESTS

There was no conflict of interest between the researchers and participants.

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