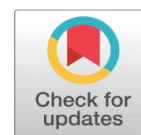


THE VALUE OF IT DATA

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ABSTRACT

This research was carried out to design a data strategy focused on the relationship management of a company in the financial sector in Colombia. For this purpose, different knowledge activities were developed; initially, deepened knowledge of it of the organization and its business initiatives. Based on the identified needs, the data that support these initiatives were identified and known, using as a basic instrument the design of a conceptual model. Likewise, the life cycle of the data was documented and its interaction with business processes was analyzed. Also, the state of the general capabilities in data management was known. Based on the knowledge achieved, the work plan was designed to ensure that the highest value of the data is obtained in the area selected as a pilot (relationship management).

Keywords: Data Strategy, Data Management, Data, Decisions Make

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1. INTRODUCTION

Nowadays, organizations are in a dizzying race to be more competitive, particularly financial companies seek to improve their product portfolio, increase their offer to value, get closer to their customers from a quick and efficient interaction with both the commercial force and the products themselves. That is why we have seen a broad growth at the technological level in this sector, with initiatives that seek to meet the demand and financial needs through different channels.

At present, one of the most important characteristics that companies aspire to have, is competitiveness. For several years, there has been talk of how the proper use and management of company information is directly related to the increase in this competitiveness and their success [Fernando \(2002\)](#). Today, in organizations, leaders and managers are more aware of the importance of the data that is generated in each of the processes that are executed in the day to day of their operations. However, there are few companies that correctly manage their data and obtain some value of them that allows them to have a better perspective of their business, their customers, or their services.

For the association of academies of the Spanish language, at the economic level, an asset is the "set of all the goods and rights with monetary value that are owned by a company, institution or individual" [Rae \(2011\)](#). From this concept, it can be understood that the data of a company is part of that set of assets and therefore should be managed as an asset. However, this



asset has different characteristics from those of the other assets both in the way of guarding it, and in the way of valuing it and ensuring its proper use.

The greatest value of this asset is in the use give it; this is how its management is not only oriented to the use of tools and technology that allows its registration, consultation, and processing, but it is essential to design strategies to ensure its reliability, security, and privacy to obtain the most precious: the achievement of business initiatives from the accurate use of data.

For this purpose, it is necessary to design a plan to follow that initially allows having the clarity of the business initiatives that will be driven by data and what will be the way in which data can drive these initiatives. Having the above clear, you can identify the data that is required to manage and analyse to comply with each of the identified initiatives. According to [Marr \(2020\)](#), after being clear about the needs of the business, the data that will support these needs, how the data will be analysed, how it will be visualized and what technological tools are required, it is necessary to define an action plan that allows to carry out the data strategy designed. Likewise, it is important to have a solid business case to present to the organization in which the advantages of using data can be clearly identified and how these advantages are related to the business objectives.

Some companies have defined data strategies seeking to make these the main input for decision-making, others have sought to improve operability and processes, and others have created new services or products from the data that are generated by themselves [Varshney and Allen \(2020\)](#). This does not mean that you can only take advantage of the data that is generated within companies. In some cases, strategies have been designed in which it is decided to acquire data from suppliers or capture the data through new technologies; for example, the capture of data from social networks to understand customer behaviour, the use of sensors on the Internet of Things, prediction, or segmentation data from data science, among others. The most important thing is to be clear about the use that will be given to the information and the benefit that will be obtained from it.

Today, it can be evidenced how some large companies through a correct management of their data, have managed to increase their revenues, either by reducing costs or improving the value offer through new products and services designed to suit their customers. In turn, other companies have used their data to increase their productivity, redefine their processes looking for greater efficiency, improve their security, define business strategies, or define new products and services among others.

One of the success stories of companies that manage their data as an asset is that of the BBVA bank, a recognized company in the financial sector worldwide, which began to focus on ensuring the quality, veracity and storage of the data that allows to support the decisions that are made in the business. The data becomes the source for the construction and definition of financial products and services to the measurement of customers. In one of the internal events held by the bank to show the status of the company's significant projects, a web platform was presented that works with transactional data and converts anonymous data from purchases made with debit or credit cards into useful information for its customers' businesses. In the same way, the renewal of the home insurance system that is used in the bank's offices was shown. In this system, an improvement was implemented from the management of external data, with which they managed to streamline the process; the customer only gives his full address, and the system retrieves the rest of the data from the official cadastre. [Tena \(2018\)](#)

In the case of research, a company from the financial sector of Colombia was selected that aspires to be the financial advisory and services company of preference for clients, assuming the challenge of making their financial projects a reality. For this, from the different business units have set goals and objectives that are aligned with the company's strategy and that seek to be achieved through initiatives that will improve and strengthen the tools and professional teams that manage the products in which customers can invest.

Since its foundation, the company has had an important growth in Latin America, positioning itself as one of the market leaders in the financial sector and in Colombia, being the leading company among stockbrokers. This leadership has brought with it critical challenges in all areas of the organization, all of which are related to data. One of the biggest challenges is to have a transversal vision of the company in each country and from now on, a regional vision on the IT projects that leverage the initiatives and business objectives.

Similarly, the organization has had a significant growth in the value of managed assets, the number of collaborators, the number of applications that support the operation, and in the volume of data that is generated throughout the different processes, also. The objectives of the business unit are focused on having a constant growth in both clients and managed assets, which brings with it a continuous evolutionary change in the information systems that support the products offered by the firm. That is why, from Asset Management and each of the business units, projects are defined to improve or evolve the applications that need to be modified to support the new products of the business or the modifications that were defined for the existing products. Similarly, at the regulatory level, requirements are defined with which the business logic that has been implemented in the company's information systems is impacted, which have a compliance date for their implementation.

The management and execution of these projects generate data that must be managed in an organized and timely manner by TI team, so that they can be used later in the generation of information. This information allows identifying the progress, impacts, priorities, costs, capabilities of the relationship area and the software factories, which manage and implement the requirements specified by each business unit. Likewise, this information becomes an input that supports decision-making related to IT projects.

Additionally, the company is currently implementing a regional model that allows it to have standardized processes despite the particularities that each country in the region has in its organizational structure and at the regulatory level. Due to this, at the transversal level of the company it is necessary to have an overview of the requirements that are in progress and of the possible projects that in the short term will begin their implementation process in each country of the region.

IT area of the company, there is a business relationship management (BRM) which is responsible for managing the initiatives that involve some type of technological implementation and that are defined by the different business units.

Currently, the relationship management has few standards on the processes of collection, storage, analysis, and use of the data generated in the execution of its tasks. Likewise, some structured data and most unstructured data are not being analysed in their entirety. For this reason, there are opportunities for improvement in the process with which you can obtain greater confidence in the data and a better use of it. As well, it is possible to have improvements in operational efficiency, since,

on some occasions, the necessary data have not been available and in a timely manner so that the sponsor or interested parties of the initiative can make decision on their requirements. The lack of standards and good practices in data management has generated delays in the decisions that must be made on the development of initiatives. Also, there have been impacts of delay in meeting the expectations that the business has on the execution of these. These delays directly impact on the business objectives because they prevent the contractual compliance established with the clients to manage the different investment assets and put at risk the reputation of the company if any regulatory requirement is not met.

It is worth highlighting the importance of clearly knowing what are needs of the organization are in terms of business, remembering that the data will not make any sense if from them you cannot obtain the greatest value that allows the organization to meet its objectives. Data requirements are derived directly from business requirements as well as it is necessary to ensure that processes and technology allow the creation, transformation, storage, assurance, and use of data according to business needs. Likewise, it is important to highlight the importance of data for any organization and with this understand that there is a need for them to be managed correctly; "Within and between organizations, data, and information are essential to running business" [Dama \(2020\)](#). It is vitally important for companies that their decisions are backed by data and not only by the experience of business executives.

With the above, the need to design an effective data strategy is identified and the relationship management of a company in the financial sector is taken as a case study, in order to identify the necessary data to support the decision-making of the organization. In the same way, the strategy defines the necessary guidelines of a data management and governance program that allow to meet the objectives of the designed strategy. This allows the company's business units to have higher quality information and make more accurate and timely decisions, managing to respond to the needs of the market, customers and the different external changes that may affect the business. Similarly, in relationship management you can improve your information management processes, looking for them to be more efficient and of higher quality.

Data management is one of the most important contemporary tools to facilitate processes within organizations and thus enable decision-making. For this reason, a bibliographic survey is carried out to different projects and research experiences in different productive sectors at the international and national level in relation to information management. This bibliographic search exercise was done through tools such as: the repository of degree works that the Colombian School of Engineering has, electronic databases such as Scopus, Academic Search Ultimate, and Google Academic.

First, reference is made to the research carried out in the electric vehicles sector by Jichao Hong, Zhenpo Wang and Peng Liu, in Beijing (China) in 2018 which was based on the forecast of thermal failures of the battery system for electric vehicles based on the use of data. A thermal management system in batteries is necessary and essential because high temperatures affect driving performance and safety in electric vehicles.

This research presents a method of real-time diagnosis and forecasting of thermal failures in batteries caused by thermal leaks, through monitoring of battery temperature during vehicular operations. Much of the monitoring of this voltage is done in real time. The data is derived from the National Center for Electric Vehicle Service and Management (NSMC-EV) in Beijing which has the function of monitoring

and capturing data from electric vehicles that are in circulation such as the voltage and temperature of the battery system. In addition, a thermal safety management strategy for thermal leaks is presented under the Z-score approach. The results illustrated that the proposed method can accurately forecast both the time and location of the temperature fault within the battery packs of electric vehicles. The feasibility, reliability, and stability of the prognostic capacity of the proposed method were also discussed and verified by analysing extensive monitoring data.

It could be concluded that the proposed method is flexible and applicable to several systems in which abnormal fluctuations occur, regardless of data types and fields of application, thus having a potential for widespread application not only in the electric vehicle sector, but also in other areas with complex environments that fluctuate abnormally [Mei et al. \(2018\)](#).

Secondly, Daniel K. Papiernik, Dhruv Nanda, Robert O. Cassada and William H. Morris in 2000, presented a case study based on the implementation of a Data Warehouse in the Virginia Department of Transportation (DTV), with which they sought to become the most effective public agency in the United States and with a one hundred percent customer-oriented approach. Likewise, this implementation was part of the company's technological investment strategy and aimed to store business data that was in legacy systems or external sources, to have a set of services based on data that can acquire, integrate, prepare, and manage them to allow access, visualization, and analytical interpretation and thus support decision making. This initiative was also driven by the intermodal transport efficiency law, which sought to integrate transport systems, data standardization and accessibility to them. It was concluded that the implementation of the Data Warehouse allowed to have integrated data and access to the end user, improving reports, queries, processing capacity and analysis. From this implementation, the best business practices in data management within DTV have been institutionalized through the area of data management [Papiernik et al. \(2000\)](#).

Every day there are more companies that want to take advantage of data, generating information that allows to ensure knowledge and thus obtain a competitive advantage in the market, be more efficient and support the achievement of their objectives. This is evident in the research reviewed, as well as in the various marketing strategies that have been deployed through social networks, which have clarity about our tastes and interests, among others.

Currently, there are many ways to capture information, today many sensors are used that are embedded in different parts in the manufacturing processes, in cases such as the one narrated by Bernard Marr in his book "Data Strategy" [Marr \(2017\)](#). It about the Rolls-Royce company which has assembled sensors in the aircraft engines it manufactures, to transmit in real time, the operation of the engine to the monitoring stations and with this to be able to detect possible failures to also investigate and prevent some type of disaster. A key aspect that Bernard Marr indicates and that must be considered with respect to the information that is captured, is to be clear that the data that is collected must address some business needs and must generate some type of value for the organization and with this help the company to achieve its strategic objectives.

There are other very interesting cases such as the use of data in smart cities, where through cutting-edge technologies a lot of data is generated that supports different work fronts such as education, health, and mobility with the purpose of improving the quality of life. However, one can misinterpret the use of these technologies and use them for "technological fashions" hoping that, by implementing Big Data, Business Intelligence, or data science, among others, the

problems will be solved on their own, without understanding the real purpose of the implementation of such technologies. The goal is not to collect data for the sake of collecting it, it must start from a clear purpose in which both the data necessary to support business initiatives and the way in which said data will be used to effectively achieve the indicated support planned.

For [Gallant and Fleet \(2018\)](#) data strategy is defined in how an organization improves specific business objectives by strategically using its data as assets. A strategy lies between business strategy and data management or data governance strategy. It's about how your organization will maximize its leverage on data to generate the greatest business impact [Gallant and Fleet \(2018\)](#).

Therefore, the beginning of the design of the strategy could be considered with the definition of its mission, vision, and objectives, highlighting which objectives of the strategy will be focused on generating value for the company and being fully aligned with the strategic objectives of the organization. Based on the understanding of these components and the knowledge of the organization, its data, and its capabilities in data management, it will be possible to define the activities that will allow meeting the established objectives.

2. METHODOLOGY

This research is framed within the qualitative approach, since it is responsible for studying the phenomena within their real and natural context, allows investigating not only about the practice itself, but also about the role played by each of the participants and other aspects that have relevance within the research process, as stated by [Blasco and Perez \(2007\)](#): "Qualitative research studies reality in its natural context and how it happens, drawing and interpreting phenomena according to the people involved" [Blasco and Perez \(2007\)](#).

For [Sampieri](#), qualitative research provides depth to the data, dispersion, interpretive richness, contextualization of the environment or environment, details, and unique experiences. It also brings a "fresh, natural and holistic" point of view of phenomena, as well as flexibility [Sampieri \(2018\)](#). In this sense, the qualitative approach offers a diversity of instruments for the collection, collection, and classification of information, essential aspects within research because they condense the data collected through structured, semi-structured interviews and surveys. Data collection occurs in the natural and everyday environments of the participants or units of analysis.

These instruments allow the researcher to have a direct contact with the reality in which the investigated phenomenon occurs, which at this point is not defined in its entirety, on the contrary, it is once the exploration and description phase is finished, where the aspects that are evidenced as transformation needs are problematized.

In addition, the qualitative approach allows tracking, investigate, identify, and describe the environments in which the relevant aspects of the investigated phenomenon are developed, to recognize the needs, relational situations, and dynamics of the process that in no way constitute absolute truths.

Therefore, it is sought from the qualitative, to account for the answer to the problem question How does the data of the relationship management support business initiatives? At this point it should be noted that, as this research arises and develops within the same dynamics of relationship management, it adapts to

qualitative research, as it is developed in the real context of a company in the financial sector in Colombia.

In qualitative research, the information or data that interests to be collected are concepts, perceptions, mental images, beliefs, interactions, thoughts, experiences, processes, and experiences manifested in the language of the participants, either individually, group or collectively. They are collected to analyse and understand them, and thus answer research questions and generate knowledge.

The information collection instruments used in this project were semi-structured interviews, surveys, and documentary analysis (Requirements Formats, Test Formats, Heatmaps, Changos System).

Semi-structured interviews: The qualitative interview is more flexible and open. This is defined as a meeting to discuss and exchange information between one person (the interviewer) and another (the interviewee) or others (interviewees). In the interview, through the questions and answers, communication, and the joint construction of meanings regarding a topic are achieved. Interviews are divided into structured, semi-structured or unstructured, or open. Semi-structured interviews are based on a guide to issues or questions and the interviewer is free to introduce additional questions to specify concepts or obtain more information about the desired topics (i.e., not all questions are predetermined) [Sampieri \(2018\)](#).

To obtain the information related to the objectives, goals and business initiatives, an interview was designed, which was applied to the product manager of the Asset Management business unit to understand the business needs, and likewise, identify the data that is required to support decision-making related to the management of the initiatives that drive the achievement of organizational objectives.

On the other hand, another interview was designed, which focuses on collecting information related to the decision making that is made from the business units with the advice and information managed by the relationship management. This interview was addressed to the relationship manager leader, managers, and analysts.

Within the process of analysing the interviews, the questions asked were organized and the answers given in each interview were transcribed in a matrix way, to analyse each of the answers and thus be able to group them by topics. Likewise, answers were identified that did not answer the question asked, but that in a certain way complemented another question asked in the interview, in these cases that answer was reclassified in the respective topic.

Surveys are an information collection tool where their answers allow data to be obtained to be later analysed. Qualitative surveys are exploratory. Its main goal is to understand the way a group thinks, their opinions, and their attitudes about a particular topic. For this reason, a survey was designed to evaluate the level of maturity of relationship management, in different areas that comprise information management. To determine the level of maturity, a rating scale was implemented for the answers to each question, which is in a range of one to four, where one is Strongly Disagree and four Strongly Agree. To calculate the grade of each question, the sum of the different answers is made and multiplied by five, which is the maximum rating that a question can have. This value is divided by the maximum rating that each question could have if all its answers were four, this value depends on the number of answers given. Once the grade of each question is obtained, the average is calculated between the grades of the questions that make up each area evaluated, with this the level of maturity by area is obtained. To obtain the level of

general maturity, the average is calculated between the grades of each area evaluated.

Documentary analysis plays a fundamental role in the project since it allows us to understand the way in which the different processes and information within the company have been built and documented throughout its history. It is essential to verify the authenticity of documents and formats and the relationship they have in the different processes. On the other hand, it is necessary to question: how is the material or element linked to the problem statement?

In the present investigation, the following corporate documents such as requirements formats, test formats and Heatmaps were considered.

3. FINDINGS

To analyse the information collected, the categories shown in [Table 1](#) were defined, so that they respond to the objectives of this research. Likewise, these categories were defined to identify the needs of the business through its goals, objectives, and initiatives, since this knowledge is the foundation of the data strategy. In the same way, it seeks to have clarity on the decisions that are made from the business unit and from the relationship management, which support those identified business initiatives. On the other hand, the data category seeks to identify those that are required to make decisions that support the fulfilment of the initiatives and likewise, identify the uses that will be given to them.

Table 1 Analysis categories	
Category	Subcategory
Business needs	Goals
	Objectives
	Initiatives
Decision making	Business Unit
	Relationship Management
Data	Identification
	Uses

In this category there are three subcategories related to the needs of the business are presented which are: Goals, Objectives, and Initiatives. In that sense, the vision of the company is presented below, as well as the goals and objectives that are in the Asset Management business unit, which was selected for the research work. Likewise, the business initiatives that will be supported by the data identified in the data strategy design process will be described. It should be noted that this business unit generates a large part of the company's revenue and is also managing assets valued at kind of ten billion dollars (figure as of June 2020).

Through the interview with the asset management product manager, it was possible to identify that in this business unit, it seeks to position itself as a brand and become the most representative Latin American investment manager in the region. Similarly, this business unit wants to be the most important placement agent in Latin America; a “placement agent” is that agent who is responsible for placing products from other fund houses in institutional investors.

Likewise, the interview allowed to identify the objectives of the unit which are focused on the growth at the level of assets managed in Colombia which is expected to reach 9%. As well, it is sought that the flagship funds of Luxembourg, reach the figure of 1 trillion dollars. Another objective of the unit is to continue developing real estate, infrastructure, and private debt practices, it wants to close another infrastructure fund that allows financing 5G roads in Colombia, and we have the first efforts in private debt that what we seek is to have a fund oriented to the economic reactivation of the country. This is difficult to measure, but what is wanted is to continue consolidating these practices. That is, to continue growing our funds and even take out new ones.

On the other hand, it was also possible to identify the initiatives that are led by Asset Management, which will help achieve these proposed objectives. The product manager of the unit affirms that they are working on initiatives with which they seek to have collective investment funds that have the best standards in investment administration and management. Nowadays, solutions are needed at the application level, at the system level that minimize the number of operational errors that occur in the operations log. Likewise, solutions are needed that help control and monitor different policies or limits that occur from the construction of a regulation and the definition of an investment policy to the execution of investments on a day-to-day basis. Likewise, it is required to have specialized software that allows access to the entire universe of investible assets, today the platform viewed in an objective way allows valuation of fixed income securities, equity securities and what has been done through time is to accommodate certain types of assets that resemble fixed income or equities. This allows the further development of the practice of Alternative Latin American Assets, among which are real estate and infrastructure practices.

The different initiatives identified in the interview with the product manager of the business unit require some type of implementation or technological improvement. In this sense, the data strategy defined in this research exercise is focused on the decision-making that is made from the business unit to implement in a way timely the initiatives that will allow achieving the proposed objectives. For making these decisions, the main input is the information that is generated and managed on the relationship management team.

Therefore, in this research it was decided to ask the interviewees about the decisions that need to be made and the questions that need to be answered, to execute in an effective and timely manner the initiatives proposed by the business unit.

In relation to the category of decision-making, two subcategories of analysis are presented, which are: Business Unit and Relationship Management. The initiatives defined by the business unit must be managed in the IT area by the team of relationship managers throughout the life cycle of their implementation. Throughout the management process that is carried out between the business unit and the relationship managers, there is a joint interaction, which is focused on making the necessary decisions to implement the initiatives that were defined in the required time. Therefore, it was considered necessary to know what are those decisions that are made from the unit that are related to the initiatives that have a technological impact.

For the Product Manager of Asset Management, it is necessary that their initiatives have a correct planning of the necessary capabilities for their implementation and that one of these is always being advanced. Likewise, it is necessary to identify how each of the initiatives developed improve the internal and

external user experience, and in turn, how much impact it has on customer satisfaction. At the same time, it is necessary to continue learning to determine which initiatives are important, which are urgent, which are those that have regulatory compliance, and which have great impacts on the experience of users who interact with Asset Management. On the other hand, from the business unit it is necessary to identify the capabilities of the software factories that implement their initiatives to know where there is greater capacity or availability of these resources and thus have a better planning.

Regarding the perspective of the business relationship management, questions were identified that are asked from the business units and those that originate throughout the demand management process, also. The analysis carried out on the information collected in the interviews shows that management needs to make decisions related to the prioritization of requirements, the capabilities of factory resources, managers, administrators, and users. In the same way, questions are generated that allow decisions to be made that add value to the business, likewise, that support decision-making on aspects such as response time and compliance with the delivery dates of the requirements, the availability of users for processes of information gathering and certification of tests, the traceability of the requirements, capabilities of the different resources, what are the costs and number of hours of effort for the implementation of a requirement and what is the total time of the effort made for the implementation of each of these.

As for the category of data, two subcategories related to these are presented, which are: identification and use. In the analysis of this category, the data related to the business initiative selected for the research exercise were identified, and in turn, the data that is required to support decision-making related to the management of business initiatives. The interviewees answered the questions related to this category and evidenced the data described below as necessary. In reference to the selected initiative, it aims to access the universe of investable assets which allows the further development of real estate, infrastructure, and private debt practices that strengthen the positioning of the asset management brand. An alternative asset type can be real estate or infrastructure. The types of real estate assets seek to obtain profit through any type of contract that can be generated on a property. They can also participate in projects of construction of business or commercial buildings and purchase of lots. On the other hand, infrastructure asset types seek to make a profit from financing works such as 5G roads in Colombia. The different types of assets require defining an operational management model that allows you to record all the operations that are executed daily, and likewise, define management models that facilitate you to execute all the tasks they require for the fund to operate correctly. Investments in these types of alternative assets are made through a collective investment fund that in its investment policy has defined to buy assets of this type. The alternative funds in turn have defined an investment committee that is responsible for the control and good management over the investments that are made from these.

The second area of interest was defined as “business”. In this area are concepts related to the selected initiative such as “product” which represents the different investment mechanisms that a client of the “business unit” of Asset Management has when constituting an investment. These products can be of different “types” among which are traditional and alternative collective investment funds, voluntary pension funds, private equity funds and portfolios of investment solutions that fit the needs of clients. In addition, the business unit has many initiatives that allow it to potentiate its products to improve the value offer and achieve the objectives that are

taken as a unit. These initiatives can be of different types and have a main motivator for their implementation which can be of technological renewal, operational improvement, process improvement, version update, regulatory compliance, improved service availability, experience improvement, operational efficiency, increase in income or a new product. As well, an initiative seeks to generate an impact on the product by improving its management standards, in such a way that they allow improving the value offer to the client, through the investments made in the universe of assets that exist in the market.

Among the data identified are data from the other areas of IT and user areas to be able to make a much clearer analysis on the availability, impact, time required of resources, capabilities in test environments, technical dependencies between requirements, technical impacts, costs, deviations, start and end date of a requirement in its lifting stages, development, testing and production, implementation times, number of requirements, number of projects, management indicators in tests and development, quality delivery environments, number of hours invested per manager, per factory per business unit, level of satisfaction of human resources and users.

The interviewees were asked about the missing data to support decision-making, from the answers given data were obtained such as the availability of each area to designate projects and requirements, capacities of the areas for test execution, hours available per week and date availability, road map of the areas, a work plan involving all company projects, end-user time consumption, relationship managers, application administrators, developer capabilities, factory, administrator, factory planning, developer performance, state of factory resources (disabilities, vacations, etc.), requirements delays, change of priorities and response times for incidents, errors, developments, and estimates.

Likewise, one of the things that was sought to identify in the process of collecting information, were the possible uses that can be given to the data that were defined by the respondents, among which some uses related to decision-making were described through descriptive and predictive analysis on capabilities, resources required for a project, efficiency and improvement in processes, prioritization of requirements and an identification of opportunities for improvement. Likewise, topics such as the visualization of information through heat maps were found to identify the capacity of the areas involved in the different stages of the process of implementing requirements and control boards that allow to have a 360 vision of the company in terms of the initiatives that are planned to be able to make a timely follow-up on each of the company's initiatives.

On the other hand, uses related to operational improvements were proposed, among which it is sought to identify and improve the performance of the team, based on the way in which they collect the data and prepare the reports that are presented to the business units, thus allowing to improve the opportunity to deliver the information and have a more accurate measurement of the indicators.

Regarding regulatory compliance, it was identified that the necessary data is available to meet audit requirements, but that this process requires an important effort because the information is scattered, disordered, and cannot be traced; a significant effort is required on the part of the managers to obtain this information.

The maturity assessment in data is a tool that allows to identify the level of evolution that is in each of the areas of knowledge framed within the data management. Today, there are different models focused on processes and good practices that must be implemented on each front that comprises data management.

In this research, we worked based on the DCAM model defined by the Enterprise Data Management Council, to define a survey to collect information to identify the level of maturity that is in the relationship management with respect to the information management process. For this, it was defined to evaluate five of the eight categories defined by the model and one of culture in data that is not part of the DCAM model, among the areas that were evaluated are the data strategy, data management program, data governance, data design and modelling, data quality, architecture, and culture in data. These areas of interest were selected as they were the most relevant points to analyse in the company related to information management and the objective of this research, likewise the criteria and knowledge of the researcher to choose the areas of knowledge that were evaluated was very relevant.



Figure 1 Results maturity assessment by area of interest

Figure 1 shows the results of the evaluation carried out on each defined area of interest. Although at the business level there is strategic planning, at the data level there are several opportunities for improvement related to the scope, objectives, and monitoring that is done on the data management program so that it generates the desired impact.

Currently, in the company there are identified business cases that can be driven by data, but there is not clearly defined and documented data strategy in which those data that are necessary to meet the business objectives are identified. Likewise, there is no roadmap for its implementation. In the company there are policies for the use and access to data and in some cases those responsible for these are defined, however, the role of owner of the data has not been defined, and the interested parties do not have participation in the definition of policies and standards. Now there is no clear evidence of the evolution of the data governance program. As for this area of knowledge, the company has several opportunities for improvement related to the graphical representation of data models that allow to have knowledge about the different data domains and all their components, as well as the concepts and terms that are used throughout the business processes. In reference to the issue of quality in the data, it was possible to identify that there is no preventive approach, in addition, there are no defined processes focused on the cleaning and purification of the data that help improve the quality of these. Although the company is clear about the importance of data quality, there are no defined roles responsible for defining, preserving, and ensuring the quality of the data and there is no training on the subject. Regarding the level of culture in data of the

organization, it was identified that it is a high pain point since it is necessary to have a knowledge of the business data in a transversal way that facilitates the understanding of what the business does and the importance of the quality of the data when making decisions based on these. The leaders of the business units seek to make better decisions based on the information generated throughout the processes and seek to manage data as an asset. However, in the company you do not have a 360 view of the data and its origin, some analyses are done periodically, but you do not have much confidence in the information that is generated. In addition, now there are no data-focused trainings that allow a better knowledge about data management.



Figure 2 Maturity assessment result

Based on the results of the survey conducted in [Figure 2](#), it is shown that the level of maturity in data in relationship management is 2.6, which indicates that it is at the level defined as "Repeatable". Currently in the organization is acquiring a level of awareness about the importance of quality in data and a correct management of the information generated in the company, however, there are opportunities for improvement in the areas of knowledge evaluated.

4. DISCUSSION

Day by day, there are more companies that want to manage their data as an asset, in different scenarios the power of the data that is created and managed throughout the processes that are carried out in the daily operation of an organization has been evidenced. The growth in volumes of information for companies has an exponential trend that brings with it already known challenges related to the ability in hardware to store all the data that is generated daily. Society today is very changing and demanding with the services or products offered by companies through the web and this is something that has also generated a great impact on different sectors of the economy worldwide and one of those is the financial sector. This sector has been presenting an important growth at the level of services offered virtually and with this has left some figures at the transactional level that support that growth. From this, companies in the financial sector have been making a large investment at the technological level, seeking to have greater competitiveness and positioning in the market, improving their products or services offered based in some cases on the knowledge they obtain from their customers based on the data that they themselves have been generating.

Defining a data strategy, establishing a management plan for defined data, and ensuring its governance is today a challenge that is increasingly necessary to achieve the survival of organizations, considering the best standards and good practices that

allow to have accuracy, opportunity, and quality in the information that is generated from these.

In the company that was taken as a source of study for the present research, the data that is currently generated in the processes of management of the demand of the maintenance and evolution of the software that supports the daily operation of the company were identified. These data are used to present to the different business units the traceability of the technological requirements that leverage their initiatives, and likewise, they are used to supporting decision-making related to the capabilities of business and IT resources that intervene in the life cycle of the implementation of these initiatives.

In the research process, the above data were detailed and in the same way it was possible to know the importance that these have in the decision-making of the business unit that are related to the successful and timely implementation of the requirements defined in favour of its objectives. At the same time, data was mapped that helps strengthen the information that is needed as an input for that decision-making and that is not being collected in the processes that management currently has defined.

On the other hand, the points at which the data is created, updated, and stored were detailed in the processes of the relationship management. These processes allowed showing that the data is stored in different sources and each manager has the responsibility of guarding the files in which the data of each requirement are located. It was also possible to evidence the little documentation that exists on the software testing processes, now there is only one format in which the test that was done and the result of this and in some cases, the evidence of the test performed are documented. Likewise, it identified manual tasks necessary to consolidate part of the data that are managed when performing descriptive analyses based on said data and when visualizing the information generated were identified. In turn, the low use of the information generated information in the process of prioritizing requirements was evidenced. Indeed, there are opportunities for improvement in the revised processes, at this time the way the data is being managed prevents having a better accuracy, quality, and timeliness in the information that is generated from these.

For any business it is necessary to have the availability, opportunity, and accessibility to the data generated in its operation. Therefore, it is necessary to design the data strategy and implement it by defining efficient processes and focused on always ensuring that each of these needs is met. Currently, there are companies that continue to make their decisions based on the judgment of experts and do not have the capabilities to do otherwise. The design of efficient data strategies has been evolving for more than a decade and among the number of positive things that have been achieved from their implementation and monitoring, is the fact of eliminating the dependence on the knowledge of some people in the company and ensuring the use of these from the design of the data strategy and the management of these. It should be clarified that to achieve a correct data management, it must be shielded with the implementation of standards and good practices that allow to meet those needs of internal or external information that the business has. If companies understand the power, they have in the data that is generated throughout their processes, they will begin to preserve, protect, and safeguard it as one of their assets. The information of the companies is built in the business units from the data that is managed in one or many of their processes and in some cases based on external data that are generated by other organizations or that are part of the universe of open data. That is why having processes focused on

the management of the data identified in the data strategy as a business focus, becomes an indispensable skill for the management of the business, customers and the market making intelligent decisions, being more competitive and ensuring permanence in the market. Likewise, other companies are looking to improve their data management processes from different frameworks that help them be more effective and efficient throughout the data lifecycle. With this, it seeks to guarantee the generation of quality, timely and accurate information that supports decision-making, improvement, or the offer of new products or services.

On the other hand, in the research process it was also possible to identify that at the level of the relationship management descriptive analyses of the data collected in their processes are made, with which they seek to have a reference to make the planning of the capacities of resource to meet the backlog of requirements. In the same way, it seeks to identify from these analyses' bottlenecks throughout the process in order to make decisions about it and be able to solve the capacity problem that is detected. Descriptive analyses allow you to summarize historical data and evidence patterns that normally have some meaning through measures of central tendency, frequency analysis, and measures of dispersion and position. Any type of analysis you want to do requires information, and the quality of the information generated in these processes depends on the quality, accuracy, and timeliness of the data they use for analysis. Therefore, it is essential to define processes focused on guaranteeing these characteristics necessary for the analysis to be cleaner and the output of information to generate a high level of trust to decision makers. Another benefit of a correct data strategy and data management is the improvement that can be had in the processes of building reports and visualizing information. Just as it has evolved in different frameworks focused on data management, there has also been an important evolution in the tools that help improve and automate these information presentation processes. With the present research, it was possible to show that the processes of information visualization in the relationship management take a long time due to its manually and the lack of opportunity to have the data. Despite having processes, formats, files, and applications defined to collect information, in some cases the data is not available at the time it is needed, and these must be searched so that the report or presentation is not incomplete. This shows a low quality in the execution of the processes at the points where some managed data necessary for the reports must be registered or modified.

Having specialized tools in data visualization is an opportunity for improvement that is evident in the processes that are currently in the relationship management, in which the manually generates inopportune and low level of response to the needs of the business. Similarly, by automating tasks that are currently executed manually, you are obtaining a reduction in response times and an optimization of resources. These tools also allow you to consolidate information from different sources and have defined dashboards, reports, or presentations that are required to be viewed. Likewise, these tools allow decision makers to have a view from different perspectives on the panorama of the company or the business unit, and now it is something that takes a lot of time to build the relationship team. Decision-making for any company is a fundamental and transcendental task because they define the way forward and the future of the business. Managing data under standards and good practices requires the implementation of business processes that are focused on data, it is also vital to highlight the importance of permeating the value of data in the company's culture. Because of this, many organizations that are making large investments in the definition of processes that are focused on guaranteeing the accuracy of the information that is generated in the company through proper data management.

5. CONCLUSIONS

In the process of designing a data strategy, it is essential to identify the objectives that the business has so that these are the basis of the plan that you want to define. At the company level, initiatives are defined from the business units that leverage the achievement of the aspirations that are had at the organizational level. A key point in the strategy design process is to identify the data that is required to support the implementation of these initiatives so that they are the main input of this. To collect this data, it is very important to identify the key people in the business, such as a manager or area director, who has a transversal vision of the company and can provide the data that allows mapping those business objectives.

On the other hand, data models are a very useful tool when it comes to mapping and understanding business concepts. These allow to have a better understanding of the data through graphic representations in which the relationship that exists between the different concepts can be evidenced. Another support tool that was used to identify the data required in the present research is the data inventory. With this instrument, the concepts that were graphed in the conceptual diagram were detailed, as well as the attributes of each of these. It is key to this process, to have clarity about what is the use that will be given to the identified data, so as not to collect data that will not have any use or that does not make sense for the objective of the strategy.

In the same way, maturity models played a substantial role in the design of the strategy, since through these it was possible to identify the level in the company's capabilities to manage information under standards and good practices. Based on the critical points and opportunities for improvement that were identified from the maturity assessment, the areas of interest that are to be improved with the designed strategy were defined. At the same time, an analysis of the weaknesses, opportunities, strengths, and threats that exist at the data level in the company was carried out, which served as an input to define the type of strategy to be designed. With the above, it was possible to identify that in the relationship management, there is not all the information identified in the investigative process. As well, opportunities for improvement in the information management process that is done in management were identified, which will be mitigated through the guidelines defined in the roadmap for the implementation of an information management program that is articulated by a data governance program.

As a result of this research work, future research focused on the implementation of the projects derived from the designed data strategy can be defined. Likewise, we can work on predictive analysis models that allow generating forecasts related to the capabilities necessary for the execution and implementation of business initiatives.

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