INFLUENCE OF DATA MINING ON THE MANAGEMENT OF BUSINESS PROCESSES IN LIMA PERU, 2020

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RESUME

The general objective of the research was to determine the influence of data mining on business process management. The method used was hypothetical deductive, the research approach was quantitative, the design was non-experimental, cross-sectional, the research level was explanatory-causal, and the type was applied. Regarding the study population data, it was made up of 81 collaborators, due to this the entire population was taken as a sample, however, as a data collection technique the survey was used and the instrument was the questionnaire, made up of 19 items , which was validated through an expert judgment. To determine the reliability of the instrument, the Cronbach's alpha coefficient was applied and the result was 0.863, which indicates that it is reliable. According to the results obtained with the Spearman Rho statistic, the correlation level was 0.573, which indicates that there is a considerable positive correlation, on the other hand, the significance level of the general hypothesis was 0.000, due to this. The alternative hypothesis was approved and a level of influence between the independent and dependent variable of 32.8% was concluded, which is why it is concluded that there is a significant influence of datamining in the management of business processes.

Keywords: Data mining, Management, processes, business.

I. INTRODUCTION

At present, companies have been accumulating a large amount of data and information on their processes and different activities of their management, all that accumulated information is a great resource that used correctly through the ordering and analysis of them will serve to take strategic decisions objectively based on data and results, which will allow to prevent and adapt to changes that may occur in the organization's environment. On the other hand, many of the companies seek to increase their position in the market, investing the necessary resources, using various strategies which seek to improve their processes in order to achieve efficiency and the fulfillment of objectives in a profitable and sustainable way. Therefore, an efficient management of the information of large volumes of data from business activities can serve as a point of reference to efficiently apply actions that optimize organization processes.

The newspaper El Periódico (2018) in the article How to get clients with Data mining or data mining ?, published on 11-20-2020 reported that today many companies are accumulating an abundant amount of information and data which are the The result of many processes oriented to their operations, which are stored through various systems, which are not usually fully exploited, due to this, organizations do not usually take advantage of this great resource in an optimal way, making decisions improvised or subjective.

Cetina (2016) in his article "Process management with BPM", indicated that, given the evolution of process management, companies currently seek to obtain competitive and differential advantages, for this they have to constantly adapt to their own changes markets and today we see that many organizations fail to do so.

The company Calling SAC, Given the strong competition, the magnitude of the clients, the high complexity of the services offered and the importance of keeping each client loyal, constantly invests in technology to develop its functions in an optimal way, but it has been verified that resources are used without considering efficiency by company policy, all business activity is usually stored in the ERP systems they use, but this information is not used properly, despite its importance to prevent problems and make decisions.

The research is pertinent because it was sought, to detail in depth new methodologies and resources that allow companies in the national sector to be competitive, since according to the portal Pqs.pe (2019), it indicates that 4 out of 10 individuals have the purpose to create a company; This results in the birth of 4 thousand companies per year, but more than 75% close their operations before the 4th year. In the social field, it will benefit the collaborators of specialists and company executives, since it will be investigated what is the level of influence

that data mining has on the company's BPM, with the Theoretical value, it is broad given that it will provide supported information and methodologies that allow companies to optimize. Because the scientific method has been used, this work may serve as a reference for other investigations.

The general objective of the research was to determine the influence of datamining on BPM; Specific, Determine the influence of data processing on business process management, Determine the influence of data analysis on business process management, Determine the influence of datamining valuation on business process management. The general hypothesis raised was: There is influence of datamining in the management of business processes, having as specific hypotheses: There is influence between Datamining and the technological levels, There is influence between Datamining and the performance measurement indicators There is influence between Datamining and the specialist of the business / process.

II.   THEORETICAL FRAMEWORK

The scientific articles considered as antecedents in relation to Data mining are the following: Raghavendra (2019) aimed to demonstrate how artificial intelligence and datamining have changed the way of handling marketing, the results indicated that marketing supports tools 100% technological and data, which demonstrates more efficiency than a traditional marketing operation, however, Richins, Stapleton (2018), aimed to demonstrate how data mining positively impacts the accounting field, the results indicated that the datamining does have a positive impact on accounting management, due to the quantifying and data ordering approach that it presents, which facilitates any process linked to accounting administration, on the other hand Bartoletti, Pes, Serusi (2018), had as objective, demonstrate that thanks to dataminng it is possible to detect Ponzi-type scams, the cryptocurrency market, Lo r Results show that thanks to datamining, Ponzi scams can be accurately detected, quantifying and discovering the redundant patterns of any illicit actions in the cryptocurrency environment.

On the other hand, Cheng, O'Leary (2016) aimed to demonstrate how the data mining carried out on Twitter serves to generate predictive models to satisfy customer needs and the results indicated that Twitter can provide high-value information thanks to datamining which can be applicable for the management of intelligent strategies, Taranu (2016) as datamining can anticipate the trends of medical conditions of a patient, the results indicate that datamining allows to locate predictive patterns that vary the medical condition of patients, which help to preventive work. Kenedy, Moss (2015) aimed to demonstrate how dataminng can efficiently extract knowledge from social networks, the results indicate that dataminng allows acquiring high-value information from social network users for different applications, which leave constantly updating

Likewise, the research took into account the mathematical theory of communication, which was raised by Shannon and Weaver in the 1940s in their scientific article entitled mathematical theory of communication, focusing on the problems that arise in systems designed to manipulate information and how to obtain the best information, on the other hand, it develops an explanation about the information transfer process in which a cybernetic entity receives and captures information, encodes it and converts it into an encrypted transmission system, thus passing it to a coordination center that decodes it, to then make decisions

Regarding the business process management (BPM) variable, the scientific articles taken as background are: Radolsavljevic (2019) aimed to demonstrate the relationship between BPM and the improvement of people management, the results indicate that, if there is a relationship between the improvement of people management and BPM, given that the technology that supports BPM is in charge of automating all the processes that involve both, on the other hand. Hammer (2018), aimed to demonstrate how BPM can optimize in an integrated way all the processes of a company at risk and the results indicate that BPM does optimize the processes of a company at risk but that it is necessary to apply sustainability strategies.

However, Lamont (2019), aimed to demonstrate how BMPs can effectively help to comply with the GDPR, the results indicate that due to the nature of automation and control that BPM has, it is an efficient option to comply with the GPDR, Mendling, Weber, Von Brocke (2018) aimed to demonstrate how BPM serves to have better control over Block Chain technology, the result indicates that BMP allows to optimize the control of Block Chain technology, given that BPM is focuses on managing processes consistently and Block Chain is a technology with highly complex processes. On the other hand, Melinova, Mendling (2018) aimed to demonstrate how BPM is its key success factor in organizations, the results indicate that BMPs can optimize the management of any organization due to its adaptable nature.

With respect to scientific theories related to research, the General Theory of Systems (TGS), also called General Theory of Systems (TGS) Proposed by Bertalanffy in 1950, has been taken as a reference base, It studies the complexity of each process of a system , in order to understand the contribution of each part and how each of these processes influences the final result of the system activity

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Bertalanfly (1968) indicates that general systems theory is an instrument that provides models that can be used and transferred between different fields and elements (interaction and interdependence) to be quantitatively and qualitatively measured and analyze how the modification of an element of the system alters the result. Regarding the definitions of the study variables, Kantardzic (2019) defines that data mining seeks to obtain high-value information, extracting it from a raw data source, uses various methods that are supported in technology, it becomes a source reliable for intelligence-based decision making, however the dimensions of the independent variable are Data processing

According to Brown (2014) defines that data processing refers to the validation of the quality of the data, the indicators used for this dimension are: dimensioning of the data, quality of the data and precision of the processing. Regarding the dimension analysis of results, Brown (2014) indicates that the analysis of results is a process where we verify if the process used has been efficient and in turn verify if the results are within expectations. as a basis the indicators, operating costs, operating times, effectiveness of the result, referring to the valuation dimension According to Brown (2014) defines that it is a process where the level of contribution (value) of the model created for data analysis is reviewed, To measure this dimension, the indicators level of precision and knowledge obtained are used.

Respecto a la variable dependiente gestión de procesos de negocio (BPM) Hitpass (2017) define que son métodos de análisis de gestión direccionadas a procesos que mejoran la eficiencia y eficacia de los servicios que producen valor, dándose soporte constante en la tecnología, medición y control de los procesos manuales y automáticos, con el fin de innovar y optimizar los procesos de principio a fin, para poder medir la variable se aplicaran los siguientes dimensiones :nivel tecnológico Sarsanedas (2017) indica que es el conjunto de los medios técnicos disponibles para realizar las tareas para ello se aplicó los indicadores la actualización tecnológica, nivel de automatización y calidad de la tecnología. No obstante, también se aplicó la dimensión Indicadores de medición de desempeño (KPI) el cual según Hitpass (2017) son aquellos hitos o señalizadores claves del desempeño y mide el cumplimiento de los objetivos y sus deviaciones. De igual manera se ha utilizado la dimensión dueño/especialista del proceso, que según Hitpass (2017) precisa que suele ser un colaborador de la alta dirección de la organización y encargado de una línea de negocio completa y de plasmar la estrategia del proceso de negocio, los indicadores utilizadas en dicha dimensión son conocimiento certificado, gestión de recursos y capacidad resolutiva.

III. METHODOLOGY
The research is applied, the design is non-experimental, cross-sectional, causal explanatory research level, hypothetical-deductive method and quantitative research approach.

The study universe was made up of 81 collaborators specialized in information management from the Calling company, given that there are facilities to take the entire population as a study sample, the 81 collaborators will be taken, the technique to collect the data has been the survey and the instrument the questionnaire, The validity of the instrument was achieved with the method of judgment of experts specialized in the field, with respect to the reliability of the instrument, there was a reliability of 0.863 that according to the Cronbach's alpha coefficient scale is very high reliability.

IV. RESULTS
According to the descriptive and inferential analysis, the results were the following:

Table N ° 1. Descriptive results of the grouped datamining

independent variable

Table 1: Grouped Data Mining	Frequency	Percentage
Occasionally	4	4,9
Usually	65	80,2
Forever	12	14,8
Total	81	100,0

The results shown in table 1 of the surveys carried out to the collaborators of the company Calling Perú SAC, referring to the application of datamining that includes the dimensions of data processing, analysis of results and assessment, in their contribution to the organization As a data management instrument, they indicated the following: 80.2% consider it almost always, 14.8% always and 4% occasionally.

Table N ° 2. Descriptive results of the dependent variable business process management (BMP) grouped

Table 2	Frequency	Percentage
Ralery	2	2,5
Occasionally	14	17,3
Usually	63	77,8
Forever	2	2,5
Total	81	100,0

Regarding the results of the dependent variable, we can indicate that According to the results obtained from the surveys carried out with the employees of the company Calling Perú SAC shown in table 2, referring to the application of business process management (BPM) that includes the dimensions of technological level, performance measurement indicators (KPI) and owner of the process, in their contribution to the organization as an instrument for process optimization, indicated the following: 77.8% almost always consider, 17.3% occasionally, 2.5 % always and 2.5% almost never.

Table 3: General Hypothesis Test Results

Model	R	R squared fitted	Standard error of the estimate	Next Change in F
1	,573[a]	0.328	0.42966	0.000

Regarding the results of the general hypotheses raised, it has been determined that according to the results shown in table 3, the Spearman Rho correlation coefficient is 0.573, it is considered a considerable positive correlation, on the other hand it is also verified that the R2 Adjusted (coefficient of determination) is 32.8%, information that allows to conclude that the independent variable data mining influences the variable management of business processes by 32.8%, however the significance shown in table 3 is 0.00 and according to the decision rule Sig. α <0.05 the null hypothesis is discarded and the alternative hypothesis is accepted; therefore, it has been determined that there is a considerable positive influence between the variables data mining and business process management-

Table N ° 4 Results of specific hypothesis test 1

Model	R	R squared fitted	Standard error of the estimate	Next Change in F
1	,512[a]	0.2621	0.5807	0.0318

Regarding the specific hypothesis 1, it is found that Spearman's Rho correlation coefficient is 0.512, it is considered as a considerable positive correlation, on the other hand it is also verified that the adjusted R2 (determination coefficient) is 26.21% which is shown in the Table 4, information that allows to conclude that the independent variable data mining influences the technological level dimension by 26.21%, however the significance is 0.03 and according to the rule Sig. α <0.05 the null hypothesis is discarded and the alternative hypothesis is accepted; therefore, it has been determined that there is an average positive influence between the data mining variables and the technological level dimension.

Table N ° 5: Results of the specific hypothesis 2

Model	R	R squared fitted	Standard error of the estimate	Next Change in F
1	,554ª	0.306	0.51768	0.000

Regarding the specific hypothesis 2, it is verified that According to the results shown in table 5, the Spearman Rho correlation coefficient is 0.554 ", it is considered a considerable positive correlation, on the other hand it is also verified that the adjusted R2 (determination coefficient) is 30.6%, information that allows to conclude that the independent variable data mining influences the technological level dimension by 30.6%, however the significance is 0.00 and according to the decision rule Sig. $\alpha < 0.05$ the null hypothesis is rejected and the alternative hypothesis is accepted; Consequently, it has been determined that there is a considerable positive influence between the data mining variables and performance measurement indicators.

Table 6: Results of specific hypothesis 3

Model	R	R squared fitted	Standard error of the estimate	Next Change in F
1	,547ª	0.299	0.59620	0.001

Regarding the specific hypothesis 3, it indicates that according to the results shown in table 6, the Spearman Rho correlation coefficient is 0.547, therefore it is considered a considerable positive correlation, on the other hand it is also verified that the adjusted R2 is of 29.9% information that allows to conclude that the independent variable data mining influences the technological level dimension by 29.9%, despite the significance shown of 0.01 and according to the rule Sig. A <0.05 the null hypothesis is discarded and accept the alternate hypothesis; therefore, it has been determined that there is a considerable positive influence between the data mining variables and the owner / specialist dimension of the process.

V. CONCLUSIONS

5.1. Datamining has been determined to have a considerable 32.8% influence on business process management.

5.2. It has been determined that datamining has an average influence of 26.28% on the dimension of the independent variable technological level.

5.3 It has been determined that datamining has a considerable influence of 31.6% on the independent variable dimension of performance measurement indicators (KPI)

5.4 It has been determined that datamining has a considerable 29.9% influence on the owner / process specialist independent shape.

VI. RECOMMENDATIONS

6.1. That the operations and business intelligence areas of the company manage quality control procedures of the data database to prevent any problem or error that occurs in the datamining process; to ensure quality and avoid management errors.

6.2. Management and company headquarters must apply a constant policy of evaluation and verification of the quality of data processing, applying control methodologies and technological solutions for each stage; to minimize the probability of errors and do not produce operational incidents in the BPM

6.3. Operations management must apply constant validation and reliability protocols in the data analysis processes that are executed since the degree of influence that said datamining process has is important to

optimally carry out BPM, in the same way it is pertinent If a reliable analysis process is detected, it is replicable and scalable to all areas of the company, to optimize management.

6.4. Operations management must execute strategies to replicate all processes in which the highest value of information obtained thanks to data mining has been obtained, in this way, high-quality information usable in all processes can be ensured.

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