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Impact of the Use of Artificial Intelligence in the Planning, Organization and Control of Business Management in SMEs in Chota.

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Abstract - Artificial Intelligence (AI) and business management (BM) complement each other in the commercial development of SMEs, i.e. AI facilitates customer segmentation and drives the development of operations without the need to increase manpower, helping to make decisions based on data analysis. The problem sought to test the relationship between the use of artificial intelligence (AI), in terms of design, planning and implementation with business management, considering planning, organization and control in SMEs in Chota, Peru. The study was a quantitative, non-experimental, cross-sectional correlational design, with a sample of 203 collaborators, who answered two questionnaires; the results show that most SMEs use AI in a limited or partial way, business management is basic, regular and deficient, there is no influence of AI in organizational planning, nor is there evidence of the impact of AI planning on the structural and operational organization, the use of AI is not affecting organizational control and above all there are challenges and opportunities to integrate the use of AI with business management; The research concluded that there is a significant positive relationship between the use of AI, considering its design, planning and implementation dimensions, and organizational management in terms of planning, organization and control in SMEs in Chota, Peru; therefore, the hypothesis is accepted.

Key words: Artificial Intelligence, design, planning, implementation, business management, planning, organization and control.

I. Introducción

Artificial Intelligence and business organization in the business world have the problem of integration, in order to increase sales, gain market share and integrate into the global market seeking to reduce input costs and labor savings. In the second World Forum on AI held in November 2021, the agreement of Kranj - Slovenia was signed, where all member countries assumed the first global ethical framework for using AI, the fact was a primary step to assume concrete commitments in the organization of companies on the planet, the call was for all public or private organizations, inducing to implement the use of AI in the framework of a common good, attending to the achievement of the 17 Sustainable Development Goals (SDGs) [1]. The above, induces business groups to commit to the establishment of procedures that lead to compliance with safety standards and avoid risks that contravene the legislation of each country; in this sense, UNESCO demands compliance with the ethical agreement, following the monitoring parameters of the Business Council for AI Ethics.

The implementation of the use of AI in the business world in Latin America and the Caribbean region, presents technology problems, since the development of capabilities to implement the use of AI in the business organization goes unnoticed, where ethics in the use of technologies in online sales, is subject to scams, demanding companies to implement the use of AI with great care. At the second Summit of high-level business authorities held in Montevideo, Uruguay, it was noted that only 10% of organizations use five key nuclei of technological development: Sao Paulo - Brazil stands out in Fintech, Mexico in commerce, Bogota in mobility, Santiago de Chile in insurance and Buenos Aires in agribusiness; however, 70% of business organizations have gaps in technology management, the participants called on the governments of the region, companies and value chains [2]. Undertaking the implementation of a digital economy from SMEs, leads to use digital tools that develop skills articulated to the fourth industrial revolution contextualized with the implementation of AI, investing in training of workers and collaborators in order to reorient strategic planning in business organizations.

In Peru, the implementation of AI in companies is still underestimated, despite being on the threshold of technology and information development; although it is true that SMEs use some AI applications to market their operations, they still do not use it to its full extent, given the lack of knowledge and distrust of owners and managers. The Republic of Peru signed with UNESCO an agreement that leads the country to implement the Readiness Assessment Methodology (RAM) in response to the recommendations on AI ethics; on May 3, 2024, such agreement became a reality in the city of Paris, the agreement leads the Peruvian authorities to use necessary tools that help regulate the development of AI within the ethical framework established in the agreement, in order to transform the economic and industrial development of enterprises, under Law 31814 that approves the implementation of the National Strategy of AI /ENIA 2021-2026. The objective is to

"establish the conditions that guarantee the development and responsible use of AI" [3]. For this reason, the RAM proposed in the country constitutes a significant advance for the implementation of AI in the organization and operation of public and private companies.

In the Cajamarca region, the implementation of AI in the MYPES is slow, due to the deficient technology that the region has; in a context, where business development is conditioned to the use of technology, the business sector is obliged to implement the use of AI to develop an organizational management that is integrated to the use of technology. The Regional Government of Cajamarca, with the desire to improve the development of technology, implemented the digital transformation policy from Cajamarca, imposed between 2019 - 2022, the purpose was to transform the change management, process improvement and digitization to implement platforms, software and programs that energize the organizational development of institutions [4]. The digital transformation initiated in the region allowed the advertising of museums, tourist sites and attractions, leading to the reactivation of MYPES, and providing public information on the management of organizations.

The reality of the use of AI and organizational management in MSEs in the province of Chota is not alien to the regional or national reality, since the dynamics of businesses that use technological tools take advantage over companies that have not yet implemented the use of digital technology. An alternative to the solution of the problem is the use of AI and organizational management in the MYPES, variables that demand attention to realize the operations that help to develop commercial activities, both in advertising, management of financial statements, market access and identification of competition. In view of the above, the following problem was formulated: How does the use of artificial intelligence (AI), in terms of design, planning and implementation, relate to organizational management, considering planning, organization and control, in SMEs in Chota, Peru?

The work was justified by the need to have a research topic of interest, which addresses the use of AI and GE, being novel, feasible and feasible to study, given that knowledge is needed of the information processes that support the use of AI in its dimensions: design, planning and implementation; GE as its dimensions: planning, organization and control. The development of the research is relevant because we had the experience for the development of the work, the knowledge to obtain the information that supports the variables, the methodological process, and the processing of results. Methodologically, the research is framed in the basic type, quantitative approach, non-experimental, cross-sectional design [5]. It only sought to demonstrate the relationship between the use of (IA), in terms of design, planning and implementation, with business management considering planning, organization and control, in SMEs in Chota, Peru, is presented under the parameters of the hypothetical deductive method.

The study pursued the achievement of the general objective: To verify the relationship between the use of artificial intelligence (AI), in terms of design, planning and implementation with organizational management, considering the planning, organization and control in SMEs in Chota, Peru, concretized with the specific objectives: To identify to what extent Artificial Intelligence and Organizational Management are used; as well as to analyze how artificial intelligence (AI) design influences organizational planning, how artificial intelligence (AI) planning impacts on structural and operational organization, to examine how artificial intelligence (AI) implementation affects organizational control, and to identify the challenges and opportunities that arise in SMEs in Chota, Peru, when integrating artificial intelligence (AI) in their organizational management processes; while the established hypothesis was: The use of artificial intelligence (AI), considering its design, planning and implementation dimensions, is positively related to organizational management, in terms of planning, organization and control, in SMEs in Chota, Peru.

Among the international antecedents that support the study is the reference [6], which in its article: AI in business management today, developed with the objective of verifying the use of AI in the business management of companies and be leveraged in business decisions; the study was of qualitative type, worked with companies that use AI in their business operations; The results indicated that the projections of the use of AI in companies is promising, since there is a positive impact on each of the operations they perform, facilitates the atomization of processes, analyze data easily, interaction with customers through the use of algorithms, helps the optimization of the supply chain, improves security and cybersecurity, human-machine collaboration, allows the development of new products and venture into new services. The work concluded that AI becomes a powerful tool to transform the organization and management of companies, transforms the work and customer service, facilitates the interaction between customers and workers, providing security and adaptation to the workforce and good service innovating technology that demands AI applications to develop innovative actions. The reference [7], in his article: Artificial Intelligence and Business Management: some human reflections, studied with the purpose of relating the variables, from the analysis of information of companies that are using AI to interact in the market and how the organization of the company is using it in the modification of its culture; the research finds that companies using AI are taking off in the increase of sales of goods and services, thanks to the various AI applications they use to promote their market; the management of the company is conditioned to the use of digital tools that makes its attention more flexible, since the use of AI allows to establish strategic objectives that operationalize its benefits. The study concluded that AI has a significant relationship with business management, allowing to organize jobs based on the management of technologies, and these in turn, have the predisposition to shorten gaps in

customer service, since the management of AI makes the company more competitive. The reference [8], in the scientific article: The use of AI as an effective tool in the activities of international trade, developed with the objective of analyzing the behavior of the categories in the usefulness of commercial activities, followed the mixed approach, descriptive exploratory, used as theoretical support the theory of systems integrated to the development of technology integrated to artificial intelligence in the business environment, articulated to the international business. The quantitative and qualitative systematic analysis used the documentary analysis guide to research related to the use of AI in the international trade of SMEs; as well as surveys to companies immersed in the international market. The results indicate that the use of AI through ICT devices and internet are becoming an essential tool in the commercial chain, every day innovating the offer and new ideas in the supply of services and goods that energizes the economy of the countries. The study concluded that AI is an effective tool for data analysis and valuable information to make decisions in commercial activity at the commercial level; AI automates processes reducing errors improving the speed and accuracy of commercial activities, making efficient and effective. Among the important findings is that AI in international trade requires optimal technological infrastructure, as well as personnel prepared to handle it. The reference [9] in his scientific article: Artificial intelligence in business models as a tool for managing digital risk in international markets, developed with the objective of analyzing AI in business models, the work was qualitative, worked from the method of literature review of research through a documentary analysis guide, in order to identify the management of digital risks in international business. It found as outstanding results, that AI is the support to the connection of the resources of companies and governments to venture into the international business and to face the risks that may arise; it is a tool used by several companies due to the commercial dynamization. The paper concluded that: the main factors that are determined in the use of artificial intelligence are the use of a business model and the way it is used to manage digital risks; the literature review summarizes the vision of its use and implication in each business operation. The references [10] and [11] in their articles concerning the use of AI in organizational management, whose objective is to diagnose Research and Development (R&D) following the quantitative bibliographic approach, developed under the systematic analysis of articles published in Scopus and Web of Science databases, found as results that AI benefits the organizations that use it, has the potential to attract customers based on the services they offer, dynamizes the economy in the market, helps the reduction of work and time in each activity they perform.

In the national field, the research of [12], in the article: Artificial Intelligence in Peruvian companies and labor impacts on workers, developed with the purpose of exploring and describing the use of Artificial Intelligence and its impact on workers as a result of the generation of new jobs, followed the qualitative approach, used as an instrument the survey, interview and document analysis: The results indicate that the use of artificial intelligence in companies is still incipient, but that there is a tendency to intensify over time, given that competition requires the implementation of technology to companies to have market presence. With the information the study concluded that companies, whatever their size, are in the obligation to use artificial intelligence to improve organizational management, since technological development demands organizations to diversify its use to streamline business operations and customer demand. The reference [13], in the article: Impact of (AI) in corporate financial management, worked with the objective of verifying the impact of (AI) in corporate financial management, was studied from the systematic review of scientific articles published database Scopus, WOS and Scielo, Dialnet and Redalyc, used as an instrument a documentary analysis sheet, the results indicate that most studies specify that there is a positive impact of AI in the financial management of companies, according to the results of 63 articles, currently companies that are using AI are those that have a great impact on the growth of their companies, thanks to the ability to store, receive, work and process various data, streamlining decision making in the financial field. With the information, the study concluded that AI has a significant impact on financial management, by facilitating the automatic processing of information, helping to make decisions quickly in the financial field, allowing for greater profitability and reducing investment risks in the production process. The reference [14], in the article: Information and Communication Technology (ICT) in business management: A scientometric analysis, worked with the objective of analyzing the use of ICT in business management, the study followed the qualitative approach, using the review of publications made in Scielo and Scopus between 2018 - 2022, where the results indicate that there are divergences and trends in the use of ICT; each company uses information according to the type of activities and operations they perform, highlighting in growth of organizations that have attachment to the use of technology, regardless of size or item. The study concluded that: the limitation of the use of technological applications in business is due to the lack of knowledge and management of the same, or in any case the inadequate use, fact that induces to implement with technological means articulated to the ICT to lead the growth of the company. The reference [15], in the article: Artificial intelligence and its impact on the Peruvian labor market, developed with the objective of knowing the use of AI in the Peruvian labor market, leading to verify the changes in the management of labor relations in the various economic sectors of the country. The study was of a qualitative, analytical and descriptive type that focuses on explaining the connection between AI with work, analyzes the risks and advantages of work using AI, highlights the scenario of the labor market in Peru and its use of AI in the various sectors, explains the alternatives for regulating the use of AI to create a specialized standard, in the face of the attempt to regulate its use in the

country. With the information the paper concluded that: AI is a growing phenomenon on the planet, its impact is gaining more strength in the labor market every day, leading to strengthen the skills of workers with the management of applications integrated to AI to develop an effective work; AI is influencing the markets of the various sectors of the country, such as: mining, electronics, education, health, gastronomy, etc.

Artificial Intelligence is a tool that provides an organization with communication diversity to make its operations dynamic and known through the use of technological means. The reference [16] specifies that companies are facing the opportunity to devise and implement commercial development using technological means of Artificial Intelligence, being a perfect ally for consumers to know the products and services offered, as well as to identify customer behavior. Undoubtedly, the use of Artificial Intelligence in commercial development is inducing organizations to implement new marketing strategies as communicative allies in market interaction. It is a tool that allows designing, planning and implementing actions linked to the use of applications that integrate commercial development using ICTs with ethics and social responsibility [17]. The reference [18] refers that political, economic, social, technological, ecological and legal factor as dimensions are linked to the application of AI, where each factor, from its approach, are essential for the implementation of actions demanded by AI, highlighting that the use of technology is essential for current business development. The above demands that organizations that implement the use of AI, have to address factors that are linked to the design, planning and implementation of AI, assuming ethical practices that generate benefits to consumers and companies.

The use of AI is important in business because it is increasingly recognized as a transformative force that improves operational efficiency, customer engagement, and competitive advantage. Reference [19] highlights that AI technologies enable organizations to analyze vast data sets, automate processes, and personalize customer experiences, ultimately driving growth and innovation. Key aspects of AI's importance in business include: improved operational efficiency, which automates repetitive tasks, allowing employees to focus on strategic initiatives, thereby improving productivity. Predictive analytics helps businesses identify risks and optimize resource allocation, leading to cost savings [19]. Improved customer iteration by analyzing customer behavior to provide personalized recommendations, increasing customer loyalty and sales. Companies can leverage AI for targeted marketing campaigns, improving customer satisfaction and engagement [20].

Support for governance and compliance by helping corporate governance to ensure transparency and integrity in transactions, which is crucial for maintaining stakeholder trust. The implementation of AI in companies helps to promote service, serve customers in an organized manner, and comply with regulations more effectively, reducing legal risks [21].

Among the dimensions of the AI variable are design, planning, and implementation [17]. Designing AI, integrating AI, designers can improve creativity, efficiency, and sustainability, while addressing ethical considerations [22]. Planning the use of AI, which seeks to integrate AI into their strategic planning and management processes to improve efficiency and adaptability while addressing the complexities of modern business environments [23]. The implementation of AI use, as an opportunity for efficiency and innovation, also raises concerns about the ethical implications and potential unintended consequences [24].

The study is based on AI theory, which seeks the integral development of knowledge by focusing on the creation and operation of intelligent systems. It is based on a bionic approach, which draws parallels between artificial systems and biological processes, particularly the human nervous system. This analogy helps to understand how intelligent systems can be structured and function similarly to human intelligence [25]. At the core of AI theory is the study of neural-like elements and multidimensional neural-like growth networks. These networks mimic the structure of the human brain, which consists of interconnected elements that process information in a manner similar to neurons in biological systems. AI theory encompasses the exploration of both temporal and long-term memory systems. These memory systems are crucial to the functioning of intelligent systems, enabling them to learn from experiences and retain information over time. The functional organization of the "brain" of artificial intelligent systems includes various components such as sensory systems, modulatory systems, and motor systems. These components work together to enable the system to perceive, analyze, and respond to stimuli in the environment [26]. It also examines conditioned and unconditioned reflexes, which are essential to understanding how intelligent systems can exhibit purposeful behavior and motivation. This aspect is crucial for developing systems that can learn and adapt based on their experiences.

A theoretical model for the use of AI in an enterprise encompasses operational value creation, data-driven decision making, predictive analytics, customer insight, agility, ethical considerations, continuous learning, and collaboration. These elements work together to improve the effectiveness of digital business models in the contemporary marketplace [27]. The key elements of a theoretical model for the use of AI in a company are: Operational value creation, which leads to value generation, achieving improved efficiency and effectiveness of processes, which contribute to the overall success of the business model; data-driven decision making, which provides information that helps decision makers make the best decisions according to business areas; predictive analytics, which leverages historical data to forecast future outcomes, allowing companies to anticipate market trends and customer behaviors, aligning their strategies to meet objectives; customer insights and personalization, which enables companies to understand data analytics, allowing them to deliver personalized experiences, which can improve customer

satisfaction and loyalty; agility and responsiveness, which promotes agility in business operations, optimizing decisions in real time, adapting quickly to market changes or consumer preferences; ethical considerations, that as AI technologies advance, companies must understand the ethical implications of their use, leading to balancing innovation with privacy rights and ensuring that the use of AI applications does not compromise customer trust; continuous learning and improvement, where AI systems can learn from new data, allowing companies to continuously refine their processes and strategies; collaboration and integration, which through successful AI implementation requires collaboration between different departments within a company. Integrating AI across various business functions ensures that its benefits are maximized and aligned with overall business goals.

Organizational management of SMEs is a tool used to develop processes for efficient organization, planning and control of material and human resources of an organization or company, the purpose of which is to achieve the planned objectives [28]. It aims to integrate its operations in technological means to facilitate the analysis of the information it handles. Business organization refers to the structure and framework within which companies operate. The paper discusses the evolution of business organizations, focusing particularly on the legal and structural changes that have occurred over time [29].

The dimensions of organizational management are determined by the planning, organization and control processes that are developed as part of the management of a company; each action is aimed at efficiently using the material and human resources of an organization or company, whose purpose is to achieve the planned objectives. Planning, organization and control in SME organizations are crucial components of strategic management, where each seeks the articulated operation in order to achieve the planned results [30]. Planning, the first dimension of strategic management, involves outlining the actions to be taken during specific periods to achieve the organization's objectives. Organization, which focuses on structuring the various activities within the business, includes determining how tasks are distributed among the different departments and ensuring that each area functions independently but cohesively toward the common goals of the organization. Control, which involves monitoring and evaluating the progress of the strategic plan, this dimension ensures that the organization stays on track to meet its objectives by evaluating performance against established goals. The integration of the three dimensions allows the company's organizational management to be integrated; together, they improve the organization's ability to respond to challenges and opportunities and, ultimately, have an impact on its profitability and competitive advantage.

The study is supported by the organizational theories supported by Barnard, are those that provide an understanding of how organizations adapt and thrive in a rapidly changing environment, are essential to understanding how organizations adapt and thrive in a rapidly changing environment [31]. Emphasizes structural concepts include the individual, cooperative systems, formal organizations, complex formal organizations, and informal organizations. These elements are crucial to understanding how organizations are built and function. Barnard also introduced dynamic concepts such as free will, cooperation, communication, authority, decisive processes, dynamic equilibrium and executive responsibility. These concepts highlight the fluid nature of organizations and the importance of interpersonal relationships and decision-making processes. Theories emphasizing cooperation and communication in Barnard's theory are echoed in contemporary theories such as relational theory and network theory. These theories explore how relationships and networks within and outside organizations contribute to their success and adaptability [31].

También tiene fundamento en los modelos teóricos de la organización empresarial, particularmente en el contexto de la gestión de la innovación, destacan el modelo sistemático, que integra varias competencias organizacionales necesarias para una gestión eficaz de la innovación, destaca la importancia de generar nuevos conceptos, desarrollar productos o servicios, innovar procesos y adquirir tecnología como tareas esenciales para las organizaciones. Modelos de red, que hace hincapié en la flexibilidad y la adaptabilidad, alienta a las organizaciones a fomentar una cultura de innovación mediante una mayor colaboración e interacción con las partes interesadas externas, lo que mejora su capacidad para responder a los cambios ambientales. El ciclo de Deming (planificar – hacer – verificar – actuar), que sirve como marco fundamental para muchos modelos de gestión de la innovación. Este ciclo promueve la mejora continua y la toma de decisiones eficaz, que son fundamentales para fomentar la innovación dentro de las organizaciones [32].

II. METHODOLOGY

The study followed the process of the quantitative approach, non-experimental, cross-sectional and correlational design, of basic type, not manipulating the variables; it was limited to collecting information at a single moment, describing it, analyzing it and establishing the corresponding correlations according to the objectives. Quantitative studies of descriptive, cross-sectional and correlational design, are only limited to seeking information at a certain time, the results are analyzed and interpreted according to the established purposes [33].

The population was determined by the set of SMEs operating in the city of Chota. The population in a research work is constituted by a set of subjects or objects that have similar characteristics and are developed in a certain geographical area [34]. The district of Chota has 3200 registered MSEs [35], all of which form the population of the present study. The sample is a part of the population; it is selected pyrobalistically or non-probabilistically, choosing sampling techniques that facilitate its identification and inclusion [33]. In the study, the sample selection was non-

probabilistic, by convenience or self-determination, and was made up of 2003 collaborators (owners or managers) of SMEs.

The technique and instrument used to obtain the information was the survey and the questionnaire, which were tools used by the researcher to collect information articulated to the objectives established in the study [34]. The first questionnaire was used to measure the variable Use of AI, it is composed of 3 dimensions and 21 items (7 for each dimension); the second to measure GO, based on 3 dimensions and 21 items (7 for each dimension). Before being applied to the sample, the questionnaires went through a validation process of expert judgment and application of a pilot test to 30 representatives of SMEs, whose reliability analysis gave values of 0.948 and 0.952, indicating that both instruments are excellent for application to the sample [36].

In the data analysis, descriptive statistics were used to demonstrate the extent to which AI and GO are used in SMEs in the city of Chota, and inferential statistics to determine the nonparametric or normal distribution tests according to the Kolmogorov-Smirnova analysis because the sample is greater than 50, and based on the results to determine whether the Pearson or Spearman correlation coefficient is used in the hypothesis testing, according to the parameters established in the reference [37]. The SPSS version 27 statistical software was used in the analysis.

III. RESULTS

TABLE 1

EXTENT TO WHICH ARTIFICIAL INTELLIGENCE IS USED IN SMES IN THE CITY OF CHOTA - PERU, 2024

	AI Design		AI Planning		Implementation of AI		Use of AI	
	fi	%	fi	%	fi	%	fi	%
No use	64	31.53	64	31.53	62	30.54	63	31.03
Limited use	55	27.09	64	31.53	57	28.08	59	29.06
Partial use	59	29.06	56	27.59	60	29.56	61	30.05
Full use	25	12.32	19	9.36	24	11.82	20	9.852
Total	203	100	203	100	203	100	203	100

The results in Table 1 present the frequency and percentage values in relation to the use of AI in MSEs in the city of Chota - Peru, 2024; in the dimension of AI design it is specified that 31.53% do not use it, 29.09% use it partially, 27.09% use it to a limited extent and only 12.32% use it completely; in the dimension of AI planning 31.53% do not use it or use it partially, 27.59% use it partially and only 12.32% use it completely; in the dimension of AI implementation 31.53% use it partially and 9.36% use it completely; in the dimension of implementation of AI, 27.59% use it partially and 9.36% use it completely. 53% do not use it or use it limitedly, 27.59% use it partially and 9.36% perform complete planning; in the AI implementation dimension, 30.54% do not use it, 29.56% perform it partially, 28.08% use it limitedly and 11.82% implement AI; in the variable it stands out that 31.03% do not use AI, 30.05% use it partially, 29.06% use it limitedly and only 9.85% use it completely.

TABLE 2

EXTENT TO WHICH ORGANIZATIONAL MANAGEMENT IS DEVELOPED IN SMES IN THE CITY OF CHOTA - PERU, 2024

	Planning		Organization		Control		Business management	
	fi	%	fi	%	fi	%	fi	%
Deficient	32	15.76	27	13.3	29	14.29	29	14.29
Basic	75	36.95	81	39.9	77	37.93	76	37.44
Fair	72	35.47	65	32.02	73	35.96	69	33.99
Good	24	11.82	30	14.78	24	11.82	29	14.29
Total	203	100	203	100	203	100	203	100

The results in Table 2 show the frequency and percentage values in relation to business management in MSEs in the city of Chota - Peru, 2024; in the planning dimension, 36.95% do basic planning, 35.47% do it regularly, 15.76% do it poorly and only 11.82% do it well; in the organization dimension, 39.90% organize their activities in a basic way, 32.02% do it regularly, 14.78% do it well and 13.30% do it poorly; in the control dimension, 37.93% do basic control, 35.96% do it well and 13.30% do it poorly; in the organization dimension, 37.93% do basic control, 35.96% do it well and only 11.82% do it poorly. 02% do it regularly, 14.78% do it well and 13.30% do it poorly; in the control dimension, 37.93% perform basic control, 35.96% do it regularly, 14.29% do it poorly and only 11.82% do it well; in the variable, 37.44% perform basic business management, 33.99% do it regularly and 14.29% do it poorly or well.

TABLE 3

KOLMOGOROV-SMIRNOV[A] NORMALITY TEST

		Statistic	gl	Sig.
Dimensions and variable Use of AI	AI Design	,138	203	,000
	AI Planning	,114	203	,000
	AI Implementation	,126	203	,000
	Use of AI	,138	203	,000
Dimensions and variable Business Management	Planning	,124	203	,000
	Organization	,159	203	,000
	Control	,156	203	,000
	Business Management	,147	203	,000

a. Lilliefors significance correction

The verification of the relationship of the variables was subject to the data obtained from the application of the instrument, according to the analysis of the Kolmogorov-Smirnov normality test, since we worked with a sample of more than 50 subjects, the statistical values show that a p value < 0.005 is obtained in both dimensions and the two variables, asserting that the data do not have a normal distribution, values that lead to the use of Spearman's Rho Correlation Coefficient to contrast the hypotheses raised.

TABLE 4

RELATIONSHIP BETWEEN THE USE OF ARTIFICIAL INTELLIGENCE (AI), CONSIDERING ITS DESIGN, PLANNING AND IMPLEMENTATION DIMENSIONS, AND ORGANIZATIONAL MANAGEMENT IN TERMS OF PLANNING, ORGANIZATION AND CONTROL IN SMES IN CHOTA, PERU

Dimensions	Spearman's Rho	Planning	Organization	Control	Business Management
AI Design AI Planning	Correlation coef	,774**	,767**	,760**	,782**
	Sig. (bilateral)	,000	,000	,000	,000
AI Implementation AI Design	Correlation coef	,802**	,804**	,798**	,816**
	Sig. (bilateral)	,000	,000	,000	,000
AI Planning	Correlation coef	,828**	,804**	,803**	,826**
	Sig. (bilateral)	,000	,000	,000	,000
Use of AI	Correlation coef	,822**	,809**	,806**	,828**
	Sig. (bilateral)	,000	,000	,000	,000
N		203	203	203	203

**. Correlation is significant at the 0.01 level (bilateral).

The statistical data presented in Table 4 indicate that the relationship between the use of artificial intelligence (AI), considering its dimensions of design, planning and implementation, and organizational management in terms of planning, organization and control in SMEs in Chota, Peru, has a significant positive correlation, since the correlation values in all cases are above 0.760** with a bilateral significance of 0.000 in all correlations, showing that $p < 0.05$; a value that accepts the hypothesis established at the general level. 000 in all correlations, showing that $p < 0.05$; a value that accepts the hypothesis established at the general level; therefore, the use of artificial intelligence (AI), considering its dimensions of design, planning and implementation, is positively related to organizational management, in terms of planning, organization and control, in SMEs in Chota, Peru.

TABLE 5

IMPACT OF ARTIFICIAL INTELLIGENCE (AI) PLANNING ON THE STRUCTURAL AND OPERATIONAL ORGANIZATION OF SMES IN CHOTA, PERU

	Value	gl	Asymptotic significance (bilateral)
Pearson's Chi-square	1227,267[a]	702	,000
Likelihood ratio	561,892	702	1,000
Linear by linear association	141,015	1	,000
N of valid cases	203		

a. 756 boxes (100.0%) have expected a count of less than 5. The minimum expected count is ,00.

The values obtained from the analysis of the results of AI planning in the structural and operational organization of SMEs indicate that both variables are dependent, obtaining an asymptotic significance (bilateral) of 0.000, less than 0.05 ($p < 0.05$), values that reject the hypothesis of independence, therefore, AI planning does not impact organizational control, since both variables are associated.

TABLE 6

HOW THE IMPLEMENTATION OF ARTIFICIAL INTELLIGENCE (AI) AFFECTS ORGANIZATIONAL CONTROL IN SMES IN CHOTA, PERU

	Value	gl	Asymptotic significance (bilateral)
Pearson's Chi-square	1014,649[a]	676	,000
Likelihood ratio	532,585	676	1,000
Linear by linear association	136,588	1	,000
N of valid cases	203		

a. 729 boxes (100.0%) have expected a count of less than 5. The minimum expected count is ,00

The values expressed in Table 6 indicate that the bilateral asymptotic significance is 0.000 value less than 0.05 ($p<0.05$), the data reject the hypothesis of independence, therefore, the implementation of AI does not affect organizational control, since both variables are associated.

TABLE 7

CHALLENGES AND OPPORTUNITIES THAT ARISE IN THE SMES OF CHOTA, PERU, WHEN INTEGRATING ARTIFICIAL INTELLIGENCE (AI) IN THEIR ORGANIZATIONAL MANAGEMENT PROCESSES

	Challenges	Oportunidades
Integration of AI into organizational management processes	Lack of quality data	Improved operational efficiency
	Resistance to change	Access to advanced information and analysis
	Lack of training	Increased competitiveness

The information in Table 7 indicates that among the challenges that arise in SMEs in Chota, Peru, when integrating artificial intelligence (AI) into their organizational management processes, are the lack of quality data, where many SMEs may lack adequate information to train AI models effectively; resistance to change, where some companies may be reluctant to adopt new technologies, affecting implementation; and lack of training, as adequate training of staff is needed to handle AI tools, which can be a challenge in terms of investment and time. Among the opportunities are the improvement in operational efficiency, since AI can optimize organizational processes, reducing costs and production times; access to advanced information and analysis, with quality information, SMEs can make more informed decisions, boosting their business strategy; and increased competitiveness, since according to reports specified in the contents, 37% of companies in Peru already use AI, which puts pressure on others to adapt and not be left behind. It is essential for SMEs to consider these aspects when seeking to integrate AI into their processes.

IV. DISCUSSION

Responding to the first specific objective, the results on the use of AI in SMEs in Chota, Peru, the items or questions indicate that in three dimensions: design, planning and application of AI, the highest results are distributed between the possibilities of disagreeing, agreeing or neither agreeing nor disagreeing; the statistical data show that the AI applications demanded by business management are not being used adequately. The information contradicts the study of the reference [8], who highlights that AI is an effective tool for data analysis and valuable information to make decisions in commercial activity at the commercial level; AI automates processes to reduce errors, improving the speed and accuracy of commercial activities, making them efficient and effective; in the same way, it contradicts the study of the reference [7], who in his research finds that companies that use AI are taking off in increasing sales of goods and services, thanks to the various AI applications they use to promote their market. The statistical values serve to induce companies to put into practice the theoretical approaches of the reference [16], by specifying that companies are faced with the opportunity to devise and implement business development using technological means of Artificial Intelligence, being a perfect ally for consumers to know the products and services offered, as well as to identify customer behaviour.

In response to specific objective 2, on planning, organisation and control of business management in SMEs in Chota, Peru, the responses that stand out in the proposed items are agree, neither agree nor disagree and agree, in a lower percentage totally disagree and totally agree. The statistical data contribute to the study of the reference [10], finding that AI benefits a large number of organizations operating in the commercial field, has potential to attract customers based on the goods and services offered by the business, energizes the economy in private and commercial sectors; AI is a means of helping the reduction of work and time in the commercial activity that operates. It agrees with the reference [11], indicating that organisational management has great challenges and problems to face due to the rapid technological progress, highlighted by the use of Artificial Intelligence in the various sectors of administration. It contributes to the theoretical approaches of reference [31], indicating that organisational theories are essential to understand how organisations adapt and thrive in a rapidly changing environment.

The concretisation of specific objective 3 indicates that the impact of AI planning on the structural and operational organisation of SMEs in Chota, Peru, when applying Pearson's Chi-square test, has a bilateral significance of 0.000, a value that rejects the hypothesis of independence, therefore, AI planning does not have an impact on GO, since both variables are associated. The results contradict the study of reference [14], by demonstrating that the limitation of the use of technological applications in business is due to lack of knowledge, management, and inadequate use; contradicts the work of [9], by demonstrating that the main factors that determine the use of artificial intelligence are: the use of a business model and the way it is used to manage digital risks.

In the fourth specific objective, it is shown that the implementation of AI does not affect organisational control in SMEs in Chota, Peru, the bilateral asymptotic significance of 0.000 rejects the hypothesis of independence, in this sense, the implementation of AI does not affect organisational control, since both variables are associated. The statistical data contradicts the research of the reference [8] by pointing out that AI in commerce requires optimal technological infrastructure, as well as personnel trained to handle it; however, the advantages for streamlining business processes can be evidenced; It also contradicts the reference of [15], explaining that AI is a growing phenomenon on the planet, its impact is increasingly gaining strength in the labour market, leading to strengthen the skills of workers with the management of applications integrated with AI to develop an effective work; likewise AI is influencing the markets of various sectors of the country, such as: mining, electronics, education, health, gastronomy, among others.

The fifth specific objective, the challenges and opportunities that arise in the SMEs of Chota, Peru, when integrating AI with organisational management processes, is the lack of quality data, resistance to change and lack of training; while as opportunities are: The information strengthens the study presented in the reference [12], by specifying that companies, whatever their size, are obliged to use artificial intelligence to improve organisational management, given that technological development requires organisations to diversify its use to streamline business operations and customer demand. It contributes to the work of the reference [11], by highlighting that organisational management has great challenges and problems to face due to rapid technological progress, highlighted by the use of Artificial Intelligence in the various sectors of administration, a fact that leads to the development of a reengineering in the strategic planning of companies, in order to be at the forefront of technological advances.

Finally, responding to the general objective: Relationship between the use of artificial intelligence (AI), considering its dimensions of design, planning and implementation, and organisational management in terms of planning, organisation and control in SMEs in Chota, Peru, there are significant positive correlations with values above 0.760** with a bilateral significance of 0.000 in all correlations, where $p < 0.05$; a value that accepts the hypothesis established at the general level. The statistical information is consistent with the study of [13], which concludes that AI has a significant impact on financial management, since it facilitates the automatic processing of information, helps to make decisions quickly in the financial sphere, allows for greater profitability and reduces investment risks in the production process. It also

agrees with the research of [6], finding that AI has a significant relationship with business management, since it allows the organisation of jobs based on the management of technologies, and these in turn, have the predisposition to shorten gaps in customer service, since the management of AI makes the company more competitive.

Generally, the findings contribute to the theoretical contributions of [26] by highlighting that the functional organisation of the 'brain' of artificial intelligent systems includes various components such as sensory systems, modulatory systems and motor systems. These components work together to enable the system to perceive, analyse and respond to environmental stimuli; reference [25] states that interactions between neural-like elements in AI systems generate control signals that regulate cognitive and reflective activities, while reference [27] indicates that the integration of artificial intelligence (AI) into business models is increasingly recognised as a vital component for success in the digital age. It also complements the theoretical approaches of reference [31] by stating that Barnard's Organisation theory emphasises the importance of both structural and dynamic concepts in organisations. Structural concepts include the individual, cooperative systems, formal organisations, complex formal organisations and informal organisations. These elements are crucial to understanding how organisations are built and function.

V. CONCLUSIONS

It was determined that the relationship between the use of artificial intelligence (AI), considering its dimensions of design, planning and implementation, and organizational management in terms of planning, organization and control in SMEs in Chota, Peru, are significantly related, therefore, the hypothesis stated is accepted.

It was identified that MSEs in the city of Chota - Peru, 2024, do not use Artificial Intelligence, in lesser percentages it is limited or partial.

It was identified that the development of Organisational Management in the majority of MSEs in the city of Chota - Peru, 2024 is basic, regular and deficient.

It was analysed that the design of artificial intelligence (AI) does not influence the organisational planning of SMEs in Chota, Peru, as it deals with associated variables.

It was analysed that there is no impact of artificial intelligence (AI) planning on the structural and operational organisation of SMEs in Chota, Peru, since the significance value of 0.000 rejects the hypothesis of independence, therefore, AI planning does not impact on organisational control, since both variables are associated.

It was examined that the implementation of artificial intelligence (AI) does not affect organisational control in SMEs in Chota, Peru, given that significance of 0.000 rejects the hypothesis of independence, therefore, AI planning does not impact organisational control, as both variables are associated.

It was identified that the challenges and opportunities that arise in SMEs in Chota, Peru, when integrating artificial intelligence (AI) in their organisational management processes are: lack of quality data, resistance to change, lack of training and lack of quality data; while the opportunities are: improvement in operational efficiency, access to information and advanced analytics, increase in competitiveness and resistance to change.

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