

## The Development of Artificial Intelligence as An Influential Factor in Procrastination

Sofía Emilce Belleza-Torrejón<sup>1</sup>, Cecilia Celeste Mendoza Aguilar<sup>2</sup>, Nelly María Pérez De la Cruz<sup>3</sup>, Elías Manuel Guarniz Vásquez<sup>4</sup> and Jenny Martha Quispe-López<sup>5</sup>

### Abstract

*The purpose of the scientific article was to determine the development of artificial intelligence and its influence on procrastination, for this purpose a non-experimental explanatory causal correlational methodology was developed, in which 250 collaborators were had as a population and under a census sample, selecting the 250 collaborators, under a non-probabilistic sampling for convenience, based on the statistics, ordinal logistic regression was used to determine the influence of the independent variable on the dependent variable, based on the results, a sig. of less than 0.05 was obtained where it is possible to reject the Ho and accept the Hg, in addition to this under the Nagelkerke value of 0.966, it can be clarified that the variable Artificial Intelligence manages to predict procrastination in 96.6%, Finally, it was concluded by mentioning that the development of artificial intelligence significantly influences procrastination.*

**Keywords:** *Artificial Intelligence, Influential Factor in Procrastination*

### INTRODUCTION

The purpose of this work is to try to understand how artificial intelligence (AI) and its development can cause and/or deepen social inequalities. While artificial intelligence is improving our living conditions and is expected to bring great benefits in the future, the risks and challenges it poses cannot be ignored. In this context, artificial intelligence, especially that based on neural networks and deep learning, can be defined as the simulation of human thought and reasoning by machines. In the same way, it can be defined as the discipline in charge of creating systems that can reason and make decisions like humans, often influencing and provoking procrastination. (Trigo-Geddes, 2019)

Likewise, the international context for the International Found Monetary (2024) In developed economies, AI could affect around 60% of jobs. About half of the jobs represented could benefit from AI integration, which would help improve productivity. On the other hand, AI applications can perform tasks currently performed by humans, which could reduce the need for labor, leading to lower wages and employment. In the most extreme cases, some professions may disappear. However, in developing and low-income countries, the impact of AI is expected to be 40% and 26% respectively. These results suggest that AI will cause less disruption in emerging markets and developing countries. At the same time, many of these countries lack the infrastructure or skilled labor needed to reap the benefits of AI, increasing the risk that the technology will lead to greater inequality between countries over time.

As for 2021, the Economic Commission for Latin America and the Caribbean (ECLAC) in its report "The Future of Labor Skills Mismatch in Latin America" warns of the possibility of significant job losses globally for workers with limited skills and training (Gontero and Novella, 2021). However, a study of history reveals deviations from the current situation and highlights that these changes did not occur without difficulties. However, the present differs from the past in two ways: the speed at which changes occur and the enormous sense of inequality they can create (Baldwin, 2019). While AI has proven useful in some companies, it has yet

<sup>1</sup> Universidad Cesar Vallejo Chimbote, Peru. E-mail: [sbelleza@ucvvirtual.edu.pe](mailto:sbelleza@ucvvirtual.edu.pe), Orcid: <https://orcid.org/0000-0002-0700-9628>

<sup>2</sup> Universidad Cesar Vallejo Chimbote, Peru. E-mail: [cmendozaag@ucv.edu.pe](mailto:cmendozaag@ucv.edu.pe), Orcid: <https://orcid.org/0000-0002-5495-7129>

<sup>3</sup> Universidad Cesar Vallejo Chimbote Peru. E-mail: [nperezde@ucvvirtual.edu.pe](mailto:nperezde@ucvvirtual.edu.pe), Orcid: <https://orcid.org/0000-0001-6758-6980>

<sup>4</sup> Universidad Cesar Vallejo, Chimbote, Peru. E-mail: [manuelperu09@hotmail.com](mailto:manuelperu09@hotmail.com), Orcid: <https://orcid.org/0000-0003-4269-8606>

<sup>5</sup> Universidad Cesar Vallejo Chimbote, Perú. E-mail: [jmquispel@ucvvirtual.edu.pe](mailto:jmquispel@ucvvirtual.edu.pe), Orcid: <https://orcid.org/0000-0001-7624-9695>

to have a significant impact on the labor market. However, many experts predict that in the near future artificial intelligence will completely change the way companies operate, which in turn will affect the employment situation. To better understand, many activities have been carried out under the influence of AI in the last 5 years (Hernández, 2022).

The technology that organizations use best during the pandemic is artificial intelligence, as pointed out in an article published by the newspaper El Peruano (2021) based on IBM research indicates that 21% of IT professionals from all sectors are using AI in their companies and 43% of these professionals say that their organization has accelerated the adoption of AI due to the Covid pandemic - 19; The study also shows how Latin American companies have adapted to the current situation by improving their customer service approaches, as well as their marketing and sales processes. From what is presented in the study, it can be deduced that organizations are interested in improving their processes and services using artificial intelligence technology due to the good results they obtain.

The employability criteria of Artificial Intelligence vary widely and are currently used mainly in industries such as computer science and robotics (Vázquez, Jara, Riofrío, & Teruel, 2018); But that's not all, because its capabilities reach many fields, for example the social sciences, and its potential is to support business sciences, where strengthening real-time value assessments and the enormous amount of data that must be processed requires the implementation of AI. -system. (Miaïhe, 2018). It is also impossible not to mention modern solutions in the field of artificial neural networks and data processing systems based on genetic algorithms, which are increasingly popular technologies and actively used in scientific research and stock market dynamics. (Badaro, Ibáñez, Agüero, 2013).

Artificial intelligence (AI) is a method of simulating the intellectual capabilities of the human brain. (Badaro, Ibáñez, Agüero, 2013). AI is also a branch of computer science that deals with the design of intelligent systems, i.e. systems with characteristics that we associate with intelligence in human behavior. Mariño and Primorac (2016) delve into this issue, arguing that artificial intelligence is understood as a subset of computer science that allows providing "a variety of methods, techniques and tools to model, visualise and solve problems by simulating cognitive behaviour.

On the other hand, artificial intelligence can be understood in the terms proposed by Herrera and Muñoz (2017), who in this context see it as a science focused on finding a deep understanding of intelligence, including its definition. capacities and describes them as an extremely complex task.

In this way, Haenlein and Kaplan (2019) provide a very specific definition of artificial intelligence, which refers to the ability of a system to accurately interpret external data, learn from that data, and use it to achieve specific goals and objectives. Flexible configurations. Therefore, artificial intelligence is usually defined as the ability to solve problems and methods to achieve objectives in situations where the available information has a certain complexity. The methods used are relevant to the problem presented by the situation and are the same regardless of whether the one who solves the problem is a human, a Martian or a computer program, being dimensioned by the use of technology, advantages of artificial intelligence and the alternative approach (Collins et al., 2021).

Thus, procrastination is defined as intentionally postponing assigned tasks or responsibilities knowing that this could have tragic consequences, since such behavior is often associated with anxiety, lack of motivation or interest in completing a certain task; If this issue is not addressed promptly and effectively, it can have a negative impact on work or school performance (Martín et al., 2022). It should be noted that this phenomenon can directly or indirectly affect anyone, regardless of age, sex or level of academic preparation, so it is important to pay attention to the signs that can cause this problem and try to prevent them from continuing. productive life from an academic or professional perspective. According to Delgado et al. (2017), people with procrastination can experience high levels of stress and anxiety, leading to physical and mental disorders, which in turn lead to low levels of satisfaction with work, school, and social life.

Procrastination is a problem limited to many different areas of life, such as school, healthcare, family or partner care, professional development and learning, and even the use of leisure time. This phenomenon does not

necessarily mean that the work has not been satisfactorily performed, the task itself, but rather the experience of procrastination often leads to the failure of the task (Garzón et al., 2020).

As stated by Wong et al. (2022), who proposed two types of procrastination: general procrastination and academic procrastination, general procrastination is to leave an uninteresting task for later, causing subjective discomfort; for example, preferring to establish social relationships instead of focusing on daily tasks. On the other hand, the tendency to delay the start of school is called academic procrastination and is very common in education. In any case, this is a problem that consumes a lot of time and money for individuals and related groups.

This being the case, the research problem arises, how artificial intelligence influences procrastination.

According to Álvarez (2010), there are three psychological approaches that can be used to explain procrastination:

Psychodynamic approach, in which Freud mentioned that the role of anxiety in task avoidance is explained in his books *Inhibitors, Symptoms and Anxiety*. This fear is expressed as a warning signal from the ego, indicating unconsciously repressed material that arises along the path of the threat, so that when it detects it, the ego will activate many different defense mechanisms that will allow it to avoid that particular task.

B. Skinner's behavioral approach tells us that behavior is maintained when it is reinforced, so behavior is maintained through its consequences. However, people tend to procrastinate because they have achieved success, so the person tends to repeat the behavior that has been reinforced because what is happening in the environment has allowed them to develop the delay of the behavior. Finally, procrastination is understood as a time-based avoidance or avoidance behavior.

Cognitive approach. According to Ellis and Knaus (1997), procrastination is caused by feelings of fear because a person has erroneous beliefs about the correct way to complete the task (irrational beliefs). A person often sets lofty and unrealistic goals, which leads to failure. Then, in an effort to minimize unwarranted consequences, delay the start of the task until it has been completed correctly. In this way, we avoid doubts about the abilities and skills necessary to perform a specific task.

The development of the scientific article is justified in a theoretical way since the research will be supported by authors and definitions that will allow us to know the variables and promote their development, it is also justified in a social way, because it is intended that the study can be reflected in other institutions and companies, allowing us to know how one variable affects the other. In the same way, it is justified in a practical way since it is sought that through the development of the research it is expected to be able to know the relationship between the variables in a causal way, manifesting the prediction of one variable over the other, finally it is justified in a methodological way since questionnaires will be used for both variables which will be measured on an ordinal scale.

In this way, the general objective will be to determine the development of artificial intelligence and its influence on procrastination, as well as specific objectives to establish artificial intelligence

Finally, the general hypothesis will be The development of artificial intelligence significantly influences procrastination and as an alternative hypothesis Artificial intelligence does not significantly influence procrastination

## **METHODOLOGY**

For the development of the research, a basic methodology was used, because it seeks to collect information, theories and definitions which will promote the development of the research, as well as a quantitative approach, since we will use tables which will be written and compiled through the Spss by the use of statistics, In this way, a non-experimental causal correlational design will also be used because the variables will not be manipulated, we will simply dedicate ourselves to observation, we will also look for the relationship between the variables trying to see how one variable manages to explain the other, finally it will be causal of cross-

sectional because we will look for the explanation of one variable over the other, collecting the information at a single time under a certain sample. (Hernández et al., 2018)

For the determination of the population, 250 people were taken into account, taking as an inclusive criterion the management and administrative personnel and as exclusive criteria the surveillance personnel, doctor, cleaning personnel in which a census sample will be developed, taking the 250 people chosen within the population, using a non-probabilistic sampling for convenience because we will intentionally select the sample.

Thus, for the processing of the data we will use programs such as Microsoft Excel and the statistical program Spss Statistics 27.0, which will allow us to know the levels of artificial intelligence used and the level of procrastination, we will also use the use of ordinal logistic regression to be able to know the influence of one variable on the other. respecting the integrity of the participants, as well as the consents for the development of the research.

**RESULTS**

**Table 1 Level of Artificial Intelligence and its dimensions**

		f.	(%)
VARIABLE	Artificial intelligence	Efficient	47 18.8
		Middle	162 64.8
		Inefficient	41 16.4
DIMENSIONS	Uses	Efficient	43 17.2
		Middle	178 71.2
		Inefficient	29 11.6
	Advantages	Efficient	44 17.6
		Middle	152 60.8
		Inefficient	54 21.6
	Alternative approach	Efficient	48 19.2
		Middle	128 51.2
		Inefficient	74 29.6
TOTAL		250	100

*Note.* Retrieved from the Spss (2024)

Based on the results, it can be observed that with respect to the artificial intelligence variable, 64.8% state that the development and help by it is average at the time of carrying out their work, in addition to this with respect to the uses, 71.2% state that if it provides them with a correct use and contribution, in addition to this, 60.8% indicate that it provides medium advantages for their tasks or activities to be carried out, finally indicating that 51.2% of respondents do it in an average way for the issue of development of activities of alternative approaches such as the use for games, entertainment and other functions, coinciding with Haenlein and Kaplan (2019) who provide a very specific definition of artificial intelligence, which refers to the ability of a system to accurately interpret external data and coincides with Herrera and Muñoz (2017), who in this context see it as a science focused on finding a deep understanding of intelligence, including its definition. capacities and describes them as an extremely complex task.

**Table 2 Level of procrastination and its dimensions**

		f.	(%)
VARIABLE	Procrastination	High	47 18.8
		Stocking	166 66.4
		Slight	37 14.8
DIMENSIONS	Psychodynamic approach	High	59 23.6

	Stocking	134	53.6
	Slight	57	22.8
Behavioral approach	High	52	20.8
	Stocking	174	69.6
	Slight	24	9.6
Cognitive approach	High	55	22.0
	Stocking	133	53.2
	Slight	62	24.8
	TOTAL	250	100

Note. Retrieved from the Spss (2024)

With respect to table 2, it can be observed that for the procrastination variable, 66.4% reflect developing a medium procrastination, in addition to this, 53.6% show a medium psychodynamic approach, 69.6% a medium behavioral approach, and 53.2% also a medium cognitive approach, thus evidencing the regular procrastination developed in the majority of respondents. agreeing with Delgado et al. (2017), who mention that people with procrastination can experience high levels of stress and anxiety, which leads to physical and mental disorders, which in turn lead to low levels of satisfaction with work, school, and social life; agreeing with Martin et al. (2022) who define it as intentionally postponing assigned tasks or responsibilities knowing that this could have tragic consequences, since such behavior is often associated with anxiety, lack of motivation, or interest in completing a certain task.

**Table 3** Cross-table of variables

		Artificial Intelligence Level						Total	
		Efficient		Middle		Inefficient			
		f	%	f	%	f	%	f	%
Level of procrastination	High	47	18,8%	0	0,0%	0	0,0%	47	18,8%
	Stocking	0	0,0%	161	64,4%	5	2,0%	166	66,4%
	Slight	0	0,0%	1	0,4%	36	14,4%	37	14,8%
	Total	47	18,8%	162	64,8%	41	16,4%	250	100,0%

Note. Retrieved from the Spss (2024)

Based on the development of table 3, it can be seen in the cross table that the most outstanding level of intelligence is the medium level with 64.8% and the medium procrastination level with 66.4%, establishing that, as long as a medium development of artificial intelligence is established, a procrastination will be established in an average way evidenced under 64.4%

**Table 4** Normality test

	Normality tests		
	Kolmogorov-Smirnova		
	Statistical	Gl	Gis.
Artificial intelligence	0.910	250	<.001
Procrastination	0.087	250	<.001

Note. Retrieved from the Spss (2024)

Based on the normality test, the Kolmogorov test will be taken into account because there is a sample greater than 50, in the same way under a sig. less than 0.05, it is necessary that the data do not follow a normal distribution, thus employing a non-parametric statistic such as ordinal logistic regression

**Table 5** Artificial intelligence and its influence on procrastination

Model tuning information					Pseudo R square	
Model	Logarit. Likelihood -2	Chi-square	Gl	Gis.	Cox and Snell	0.796
Intersection only	379.199				Nagelkerke	0.966
Final	0.000	379.199	2	<.001	Mcfadden	0.914

*Note.* Retrieved from the Spss (2024)

Based on the analysis of table 5 we can mention that under a sig. less than 0.05 we can reject the null hypothesis and accept the alternate one which mentions that the development of artificial intelligence influences procrastination, in addition to this under the Nagelkerke value of 0.966, it can be clarified that the variable Artificial intelligence manages to predict procrastination in 96.6%

**Table 6 Artificial intelligence and its influence on the psychodynamic approach to procrastination**

Model tuning information					Pseudo R square	
Model	Logarit. Likelihood -2	Chi-square	Gl	Gis.	Cox and Snell	0.572
Intersection only	231.501				Nagelkerke	0.659
Final	19.501	212.000	2	<.001	Mcfadden	0.419

*Note.* Retrieved from the Spss (2024)

Based on the analysis of table 6 we can mention that under a sig. less than 0.05 we can reject the null hypothesis and accept the alternate one which mentions that the development of artificial intelligence influences procrastination, in addition to this under the Nagelkerke value of 0.659, it can be clarified that the variable Artificial intelligence manages to predict procrastination in 65.9%

**Table 7 Artificial intelligence and its influence on the behavioral approach to procrastination**

Model tuning information					Pseudo R square	
Model	Logarit. Likelihood -2	Chi-square	Gl	Gis.	Cox and Snell	0.462
Intersection only	177.605				Nagelkerke	0.578
Final	22.480	155.124	2	<.001	Mcfadden	0.386

*Note.* Retrieved from the Spss (2024)

Based on the analysis of table 7 we can mention that under a sig. less than 0.05 we can reject the null hypothesis and accept the alternate one which mentions that the development of artificial intelligence influences procrastination, in addition to this under the Nagelkerke value of 0.578, it can be clarified that the variable Artificial intelligence manages to predict procrastination in 57.8%

**Table 8 Artificial intelligence and its influence on the cognitive approach to procrastination**

Model tuning information					Pseudo R square	
Model	Logarit. Likelihood -2	Chi-square	Gl	Gis.	Cox and Snell	0.600
Intersection only	242.830				Nagelkerke	0.691
Final	13.560	229.270	2	<.001	Mcfadden	0.452

*Note.* Retrieved from the Spss (2024)

Based on the analysis of table 8 we can mention that under a sig. less than 0.05 we can reject the null hypothesis and accept the alternate one which mentions that the development of artificial intelligence influences procrastination, in addition to this under the Nagelkerke value of 0.691, it can be clarified that the variable Artificial intelligence manages to predict procrastination in 69.1%

## CONCLUSION

As a conclusion, it can be mentioned that as main points it was possible to identify that the artificial intelligence variable was at a medium level with 64.8%, while for the procrastination variable an average value of 66.4% was found, thus incurring that while an intelligence was developed in an average way, a medium procrastination was developed. evidenced below 64.4%.

Likewise, based on the statistical tests, we can mention that under a sig. less than 0.01 observed in table 5, it was possible to reject the null hypothesis and accept the general one which indicated that the development of artificial intelligence influences procrastination, in addition to this under the Nagelkerke value of 0.966, it can be clarified that the variable Artificial Intelligence manages to predict procrastination in 96.6%.

Finally, it can be mentioned based on the results that artificial intelligence is the ability of a system to accurately interpret external data, learn from that data, and use it to achieve specific goals and objectives (Haenlein & Kaplan, 2019), which manages to influence procrastination, which is defined as intentionally postponing assigned tasks or responsibilities knowing that this could have tragic consequences. (Martín et al., 2022); thus mentioning that the greater the use and development of artificial intelligence, the greater the level of procrastination that people develop due to the facilities that the independent variable provides.

## REFERENCES

- Álvarez. L. (2007). General and academic procrastination in a sample of secondary school students from Metropolitan Lima. *Persona 13 Magazine*, 159.
- Badaró, S., Ibañez, L., & Agüero, M. (2013). Expert systems: fundamentals, methodologies and applications. *Science and Technology*, 13, 349-364. Doi: <http://dx.doi.org/10.18682/cyt.v1i13.122>
- Collins, C., Dennehy, D., Conboy, K., & Mikalef, P. (2021). Artificial intelligence in information systems research: A systematic literature review and research agenda. *International Journal of Information Management*, 60, 102383. <https://doi.org/10.1016/j.ijinfomgt.2021.102383>
- Delgado-Tenorio, A. L., Oyanguren-Casas, N. A., Reyes-González, A. A. I., Zegarra, Á. Ch., & Cueva, M. E. (2021). The moderating role of procrastination on the relationship between academic stress and psychological well-being in undergraduate students. *Purposes and Representations*, 9(3). <https://doi.org/10.20511/PYR2021.V9N3.1372>
- El Peruano. (2021, May 19). Implementation of artificial intelligence grows in times of pandemic
- Ellis, A. & Knaus, W. (1997). *Overcoming procrastination*. New York: Signet Boo. Ellis
- Garzón, A., Gil Flores, J., & de la Fuente, J. (2020). Demographic, academic and personal traits associated with three types of procrastination in university students. *Staff. Journal of Pedagogy*, 72(1), 49–65. <https://doi.org/10.13042/Bordon.2020.01.69513>
- Haenlein, M., & Kaplan, A. (2019). A brief history of artificial intelligence: On the past, present, and future of artificial intelligence. *California Management Review*, 61(4), 5-14. <https://doi.org/10.1177/0008125619864925>
- Herrera, L., & Muñoz, D. (2017). Artificial intelligence and natural language. *Modern Languages*, 19, 157-165. <https://lenguasmodernas.uchile.cl/index.php/LM/article/view/45790>
- International Found Monetary (2024). The world economy transformed by artificial intelligence. <https://www.imf.org/es/Blogs/Articles/2024/01/14/ai-will-transform-the-global-economy-lets-make-sure-it-benefits-humanity>
- J. Hernández (2022) Artificial intelligence: what it contributes and what changes in the world of work
- Mariño, S., & Primorac, C. (2016). Methodological proposal for the development of supervised artificial neural network models. *IJERI: International Journal of Educational Research and Innovation*, 6, 231-245. <https://www.upo.es/revistas/index.php/IJERI/article/view/1654/1569>
- Martín-Antón, L., Aramayo-Ruiz, K., Rodríguez-Sáez, J., & Saiz-Manzanares, M. (2022). Procrastination in pre-service teachers: the role of learning strategies and academic achievement. *Education XX1*, 25(2), 65–88. <https://doi.org/10.5944/EDUCXX1.31553>
- Mialhe, N. (2018). Competing in the Age of Artificial Intelligence: The State of the Art of AI & Interpretation of Complex Data. *Focus (SCOR Global P&C)*.
- R. Baldwin (2019) *The Globotics Upheaval: Globalization, Robotics, and the Future of Work*
- S. Gontero, R. Novella (2021) *The Future of Work and Skills Mismatches in Latin America*.
- Trigo-Guedes, R. & Palma-Dos-Reis, A. (2019). Essays on the post-artificial intelligence society: Potential effects of its diffusion. *Iberian Conference on Information Systems and Technologies, CISTI*. <https://ieeexplore-ieee-org.accedys.udc.es/document/8760879/>
- Vázquez, M., Jara, R., Riofrío, C., & Teruel, K. (2018). Facebook as a tool for collaborative learning of artificial intelligence. *Revista Didasc@lia: Didáctica y Educación*, 9(1), 27-36. <http://runachayecuador.com/refcale/index.php/didascalia/article/view/2565>
- Wong, M. M. A., Panaqué, C. R., & Fernández, R. J. N. (2022). Academic procrastination and types of motivation in students of a university in Metropolitan Lima. *Peruvian Journal of Educational Research*, 14(16) <https://doi.org/10.34236/RPIE.V14I16.286>