

UNIVERSIDAD DEL ROSARIO



**Universidad del
Rosario**

HOW DO NEW VENTURES USE AI TO ENHANCE CREATIVE MARKETING?

TRABAJO DE GRADO

VALERIA GUERRA FORERO

RENNES, FRANCIA

2022

UNIVERSIDAD DEL ROSARIO



HOW DO NEW VENTURES USE AI TO ENHANCE CREATIVE MARKETING?

TRABAJO DE GRADO

VALERIA GUERRA FORERO

DIRK SCHNECKENBERG

ADMINISTRACION DE NEGOCIOS INTERNACIONALES

MSC. STRATEGIC AND DIGITAL MARKETING

RENNES, FRANCIA

2022

Declaración de originalidad y autonomía

Declaro bajo la gravedad del juramento, que he escrito el documento de título “ HOW DO NEW VENTURES USE AI TO ENHACE CREATIVE MARKETING?”, en la opción de grado de Administración de Negocios Internacionales y que por lo tanto, su contenido es original.

Declaro que he indicado clara y precisamente todas las fuentes directas e indirectas de información y que este trabajo no ha sido entregado a ninguna otra institución con fines de calificación o publicación.

Signature: Valeria Guerra Forero

Declaración de exoneración de responsabilidad

Declaro que la responsabilidad intelectual del presente trabajo es exclusivamente de su autor.

La Universidad del Rosario no se hace responsable de contenidos, opiniones o ideologías expresadas total o parcialmente en él.

Signature: Valeria Guerra Forero

Tabla de contenidos:

Resumen.....	6
palabras clave:.....	6
Abstract	7
Key words:	7
1. Introduction	9
2. Literature review	10
2.1. Artificial intelligence.....	10
2.1.1 Artificial neural networks.....	14
2.1.2. Machine learning.....	18
2.1.3. Deep learning.....	19
2.2. Humans and AI	22
2.2.1. Technology analyzed: Sophia, the robot.....	23
2.2.2. AI Bias.....	25
2.3. AI and new ventures	26
2.3.1. AI adoption by Startups.....	29
2.4. Marketing and AI	33
2.4.1. The software analyzed: HubSpot.....	37
2.5. Strategic marketing	41
2.5.1. Segmentation Targeting and Positioning (STP) model.....	42
2.5.2. Future of Marketing	46
2.6. Creativity	48
2.6.1. Software Analyzed: Dalle-E.....	50
2.7. AI implemented in creative marketing by new ventures.....	57
2.7.1. Software analyzed: Pelico	58
3. Methodology.....	62
3.2. Proposed topic:	65
3.3. Visual Materials proposed	67
3.4. Interview analysis:	68
3.4.1. AI as a tool.....	68
3.4.2. AI and decision making.....	69
3.4.3. AI and its limitations and challenges.....	71
3.4.4. AI implementation.....	73
3.4.5. Future of marketing and AI.....	73
3.4.6. AI and new ventures.....	75
4. Analysis & results	76
5. Conclusions & Practical recommendations.....	77
6. Limitations & Future Directions.....	80
7. Bibliography.....	81

List of Tables:

Table 1: <i>AI through the marketing stages</i>	27
Table 2: <i>Hubspot AI</i>	30
Table 3: <i>STP model. Simplification</i>	34
Table 4: <i>AI-Driven marketing software exploration.</i>	38
Table 5: <i>Apps using AI for Marketing</i>	40
Table 6: <i>Schedule of the interviews</i>	55

List of Figures:

Figure 1. Venn diagram of AI	13
Figure 2. Neuron Image	14
Figure 3. Analytical model building process	16
Figure 4. Neuron introducing nonlinearity	17
Figure 5. Deep multilayered neural network.	20
Figure 6. Deep learning	21
Figure 7. Sophia with Ethiopian Prime Minister	24
Figure 8. Design uploaded to Researchgate.net	29
Figure 9. Kili technology	32
Figure 10. Kili Technology (2022)	33
Figure 11. Demo screenshot of Acxiom, 2022.	44
Figure 12. Image by OpenAI	54
Figure 13. Image by Open AI. 2022	54
Figure 14. Open AI. 2022	55
Figure 15. Pelico, (2022)	59

Glosario

AI: Artificial Intelligence

ANNs: Artificial Neural Networks

ABM: account-based Marketing

CP: Customer perception

CRM: Customer Relationship Management

DL: Deep Learning

DLADM: Deep Learning-Augmented Decision-Making

PTMs: pre-trained models

ML: Machine learning

Resumen

En la última década, el desarrollo de las tecnologías digitales ha dado a las empresas entre industrias muchas oportunidades para crecer y ser más eficientes y eficaces. La Inteligencia Artificial está revolucionando la naturaleza de la creación de nuevas empresas, las operaciones de las organizaciones y todas las áreas inherentes a ellas (Nambisan, Wright y Feldman, 2019). De ese modo, también fomenta un modelo cambiante para perseguir el marketing. Dado que, en su esencia, es la sinergia entre el análisis de datos y la creatividad, la adaptación de la IA como herramienta de estrategia de marketing se está convirtiendo en clave para alcanzar el éxito y mayores ingresos (Thiraviyam, 2018). Este trabajo tiene como objetivo analizar cómo se pueden impulsar las actividades de marketing de los emprendimientos mediante la implementación de la IA como un asistente inteligente; al mismo tiempo, presenta una serie de softwares que demostraron aportar valor a los esfuerzos de marketing.

palabras clave: Emprendimiento, marketing, mercadeo, Inteligencia Artificial, AI, Creatividad.

Abstract

In the last decade, the development of digital technologies has given companies between industries many opportunities to grow and be more efficient and effective. Artificial Intelligence is revolutionizing the nature of new venture creation, the operations of organizations, and every area inherent to them (Nambisan, Wright, & Feldman, 2019). In that way, it also encourages a shifting model to pursue marketing. Since, at its essence, it is the synergy between data analysis and creativity, adapting AI as a marketing strategy tool is becoming key to achieving success and higher revenues (Thiraviyam, 2018). This paper aims to analyze how new ventures' marketing activities can be boosted by implementing AI as an intelligent assistant; at the same time, it presents a series of softwares that proved to bring value to marketing endeavors.

Key words: Entrepreneurship, marketing, Artificial Intelligence, AI, Creativity.

1. Introduction

In the last decade, the development of digital technologies has given companies between industries many opportunities to grow and be more efficient and effective. Artificial Intelligence is revolutionizing the nature of new venture creation, the operations of organizations, and every area inherent to them (Nambisan, Wright, & Feldman, 2019). In that way, it also encourages a shifting model to pursue marketing. Since, at its essence, it is the synergy between data analysis and creativity, adapting AI as a marketing strategy tool is becoming key to achieving success and higher revenues (Thiraviyam, 2018).

AI is the Intelligence held by a machine (Obschonka & Audretsch, 2019). It has the power to process both structured and unstructured data in a fast-paced and reliable manner. Leading it to become a powerful tool for decision-making and leading new ventures to get a high benefit since it shapes the uncertainty inherent to entrepreneurship (Nambisan, Wright, & Feldman, 2019).

AI has proven to bring value in terms of revenue and customer knowledge. Nevertheless, like any other tool, it has its limitations and downsides. For markets, it can lead to losing the ability to build deeper connections with their customers since the use of AI, if perceived by them, is considered less emphatic (Kozinets & Gretzel, 2021). There are also other limitations marketers face, such as the vulnerability of the data, disconnection with reality, and incomprehensibility.

The correlation between AI, Creativity, New ventures, and Marketing frames the problem. This paper aims to expose its implications, use cases, and limitations, allowing us to understand better the potential uses of AI in Marketing for start-ups. Then, interviews with AI lead experts in start-up cross-sectors (Supply Chain, Automovilistic and Medical) give a technical overview of the implications of this new technology; Interviews with Marketing experts (Academics) bring their vision on AI applications. Finally, interviews with new venture

CEOs and Cofounders add their experience on the limitations, risks, and approaches to AI implementations in Marketing.

This paper starts by describing the historical implications of the industrial revolution that were the roots of technological developments and other AI creations and exploration, followed by a detailed investigation of the four main topics: AI, creativity, new ventures, and marketing. The initial section is about understanding AI: Machine Learning and Deep Learning. Then interconnecting with the other fundamental topics creating a clear correlation that allows software identification and frames implementation, giving a holistic vision of how new ventures use AI to enhance creative marketing—leaving space for the practical implementation of AI per necessity in new ventures, leading to an applicable output for start-ups desiring to transform their data to AI-boosted quality data while analyzing its implications.

2. Literature review

Entrepreneurs are driving their new ventures in a complex and volatile context. “It’s not difficult to argue that marketing in the future will make increasing use of AI” (Thiraviyam, T., 2018), but how will these implications impact the way marketing is being done today? How can entrepreneurs adapt AI for their marketing efforts? The following study analyzes AI and its impact on marketing, creativity, and new ventures.

2.1. Artificial intelligence

The industrial revolution started in Great Britain in 1760 and impacted the world, going from hand-made production to mechanized production systems. Indeed, this historical moment settled a turning point. Every industry, company, economy, society, and individual got affected

somehow by this event. It was the first of a series of industrial revolutions and was considered the mechanical production age.

After this first industrial revolution, several more have taken place throughout the years. The second Industrial revolution took place early 20th century, and it was the definition of a technological revolution marked by a fast-paced scientific discovery as a result of the ICT (Information Communication Technologies) and improved value creation by mass production (Obschonka & Audretsch, 2019). This technological innovation represented an improvement in people's quality of life and shaped "virtually every existing sector of human activity along industrial lines, while also creating many new industries" (Freddie Wilkison, 2020). The third, better known as the digital revolution, happened in the 1950s introduced semiconductors, the digital internet revolution, and brought to reality the cloud, disrupting the way we store virtually. This period greatly impacted information technology, electronics, and the supply chain.

Now, we are living in industry 4.0. It started in the late 2010s and is characterized by the IIoT (Industrial Internet of Things) with a high focus on machine learning, big data, and Artificial Intelligence. At this moment, machines are more independent than ever in history time since they are enabled to automate a task that before was done manually. Additionally, they are starting to play a huge role in decision-making processes and value creation. Here is where Artificial Intelligence takes place.

Artificial Intelligence as a discipline date back to 1956, and ever since then, it has continued improving in a fast-paced way, but what is it that we are referring to when talking about AI? It now seems like a fuzzy concept. Well, a definition that has been accepted for AI among researchers is "intended to make computers do things, that when done by people, are described as having indicated intelligence" (Brooks, 1991). Nonetheless, some argue the

terminology of the word Intelligence and question it. This is because it addresses a specific type of intelligence related to mathematics and logic.

Now, defining intelligence is an important work to comprehend better up to which point AI can go. Even if the first approach of AI goes to planning, adapting data to logical solutions, and learning with a problem-solving approach, there has also been demonstrated that it can comprehend emotional knowledge and creative and critical thinking (De-Bruyn, Beh, & Brock, 2020) But it has a limited scope. In that sense, it is a *narrow AI* since it cannot learn from the content carefully set to the algorithm to perform a specific task. If it was the other way around, the machine ‘learn learning’ would be considered *Artificial General Intelligence*. In general terms, AI is understood as the intelligence showcased by engines.

To understand AI, it is necessary to comprehend the data because it is the heart of it. For AI to exist, it requires information; the more it gets, the better it will work. Therefore, AI needs a data infrastructure to be “assimilated, processed and actioned in a rapid manner” (Obschonka & Audretsch, 2019). This data comes in several forms. There are three basic types: Structured data, semi-structured data, and unstructured data depending on the collected data format and its definition.

The following diagram (*Figure 1*) is inspired by the visualization of the relationship of the main ‘techniques’ AI implies (França, R. P., Monteiro, A. C. B., Arthur, R., & Iano, Y., 2021). The following concepts will be further explained: Machine Learning and Deep Learning, as well as their relation.

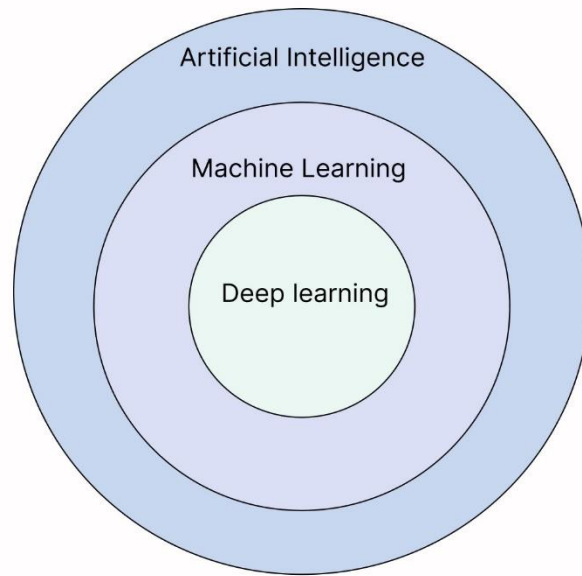


Figure 1. Venn diagram of AI based on “An overview of deep learning in big data, image, and signal processing in the modern digital age. Trends in Deep Learning Methodologies, 63-87”

The way to properly read the diagram is that Deep Learning algorithms are Machine learning algorithms, and Machine learning algorithms are, in the same way, AI algorithms. Following that logic, not all AI includes Machine Learning algorithms, nor do all Machine learning algorithms include Deep Learning algorithms.

Now, it is noticeable that there is a direct relationship between human brains and machines; there is, indeed in both neurological networks. This metaphor came from the idea that initially, intelligence was a subject only related to humans. When this paradigm was refuted, all the similarities between how machines learn and how humans learn became evident. In the case of AI, it was a gathering of artificial neural networks (ANN, Artificial Neural Networks). In effect, “AI comprises any technique that enables computers to mimic human behavior and reproduce or excel over human decision-making to solve complex tasks independently” (Janiesh, C. Zchech, P. Heinrich, K, 2021).

2.1.1 Artificial neural networks. ANNs were created by inspiration from the biological neural connectors and information processes in the human brain. It is a simple representation of the complex human brain. A neural network contains several neurons that are processors of information; each one creates a succession of “real-valued activations” (Schmidhuber, J, 2015) Neurons are then created artificially to recognize the environment with values that are true or false. The Learning process starts when the ANNs perform the desired behavior, such as identifying a face, an animal, a text, and its content and categorizing it in the right order, among others, depending on the objective.

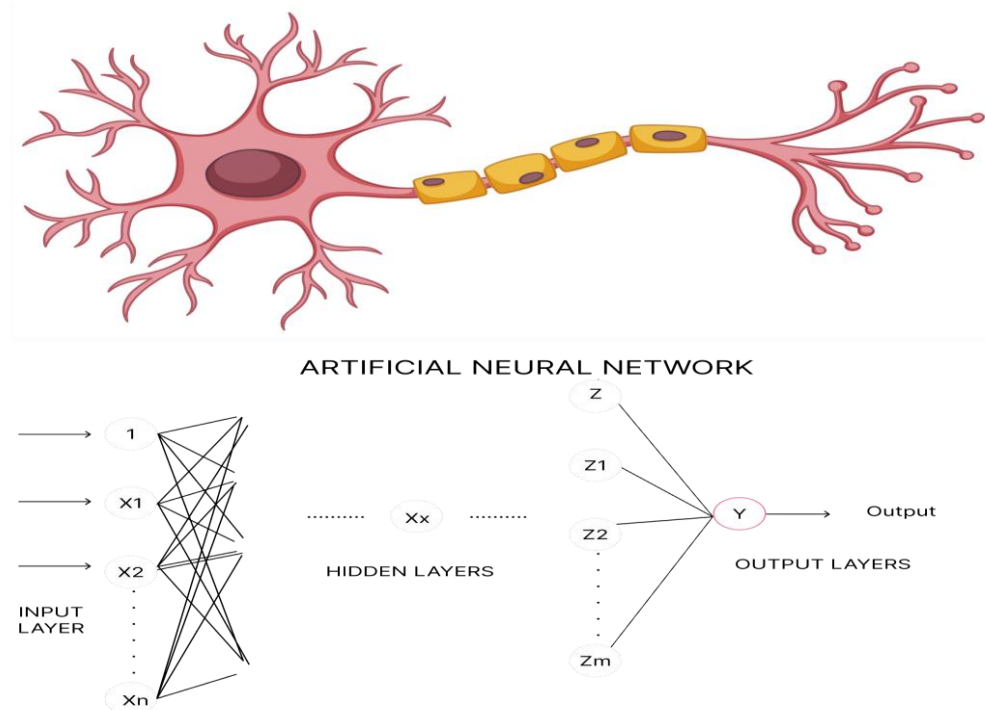


Figure 2. Neuron Image: freepik.com; Inspired by Artificial Intelligence and Digital Microscopy Applications in Diagnostic Hematopathology. (El Achi, H., & Khoury, J. D. (2020.)

Depending on the challenge set to the machine, it might need more or fewer layers of networks, or it will activate or deactivate some connections. Similar to our human brain work, as represented in *Figure 2*. The artificial neural network is a simplified model of how the human

network functions; the inputs get processed by complex organic processes that serve as an inspiration for the creation of learning artificial methods that improves its past outputs and efficiently optimize the process of logical output generation. (Russell, S. J., & Norvig, P., 2021). It is not out of its idea generation; all the opposite, it is a delicate but dense system of data that interconnects one to another to generate expected outputs that fill out the expectations of the initial human challenge.

This process is non-linear, meaning that “deep learning is about accurately assigning credit across many such stages” (Schmidhuber. J, 2015). This transformation of the data from input to output is a process that is impossible for human brains to do in such a fast and efficient way;. In contrast, humans can process a large amount of information, it is impossible to get the same amount as a machine can store and process. That is the power that AI has nowadays; it overcomes tasks that are hard for humans to accomplish. Nonetheless, all the process is guided and supervised by human iterations.

But how do these Neural Networks (NN) learn? Geoffrey E. Hinton, a psychologist and computer scientist recognized for their work related to AI, in his article *Learning multiple layers of representation* (2007), explains in detail this subject:

“To achieve its impressive performance in tasks such as speech perception or object recognition, the brain extracts multiple levels of representation from the sensory input.”

To enable learning, the first mathematical model that worked was: Back-programmatic learning. It allowed NNs to learn multiple layers of information by labeling training data for the first time. This procedure was limited and challenging to escalate. Nevertheless, it was overcome by implementing multilayer NNs that create insightful data and connections, creating *sensory data* rather than just classified data. (Hinton, G. 2007)

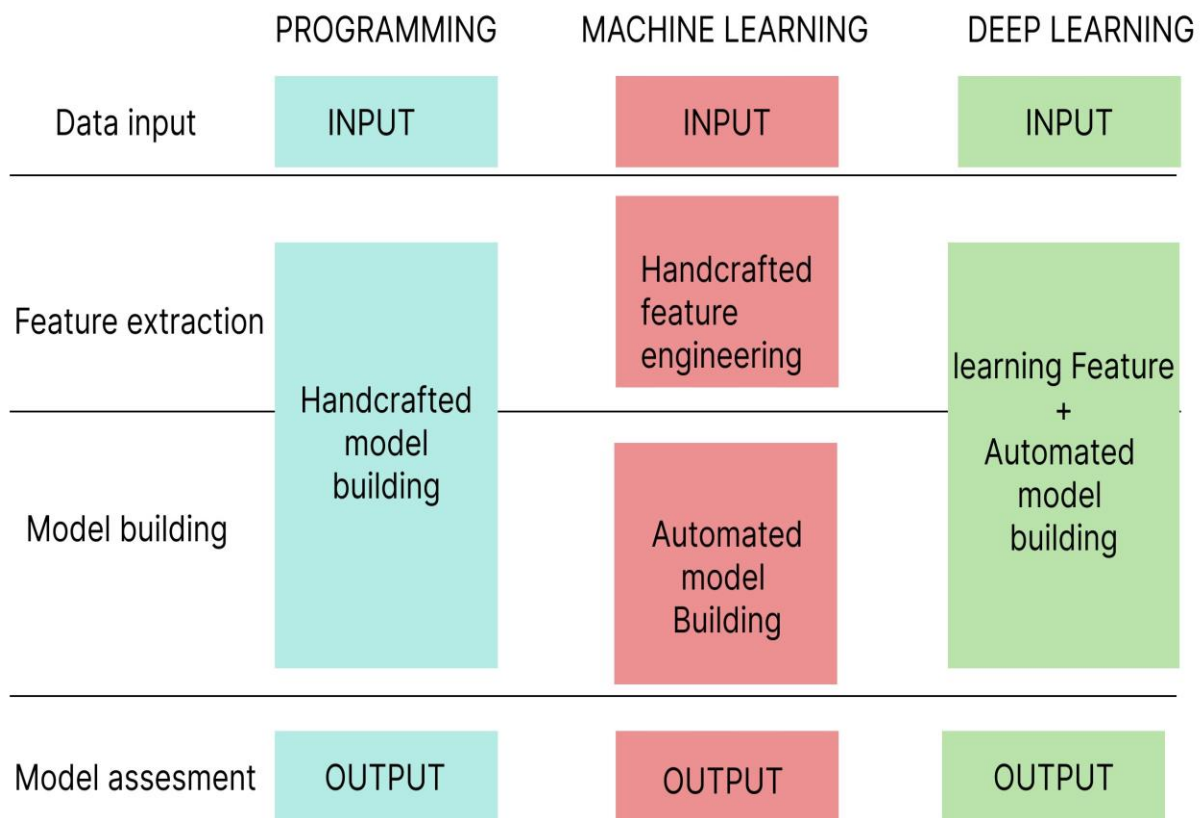


Figure 3. Analytical model building process inspired by: Goodfellow. 2016, p.10 and Janiesch, Zschech, Heinrich. 2020, p.5

As a vast simplification, the way ANNs works is that the *neuron* grabs a feature that is more known as an input and its weight parameter, its specifications, and then it estimates an output. In the last figure, we can easily recognize the differences between regular programming, machine learning, and deep learning. All of them get a data input that can have a different length depending on the process, then the feature extraction that assigns the weights of the data is either done manually or automated. Then, the parameters are created in the model building phase that can also be automated or handcrafted, and finally, the model assessment is

the result of this process. What can be quickly deduced from this graph is that deep learning is mainly automated by learning to create out of past data.

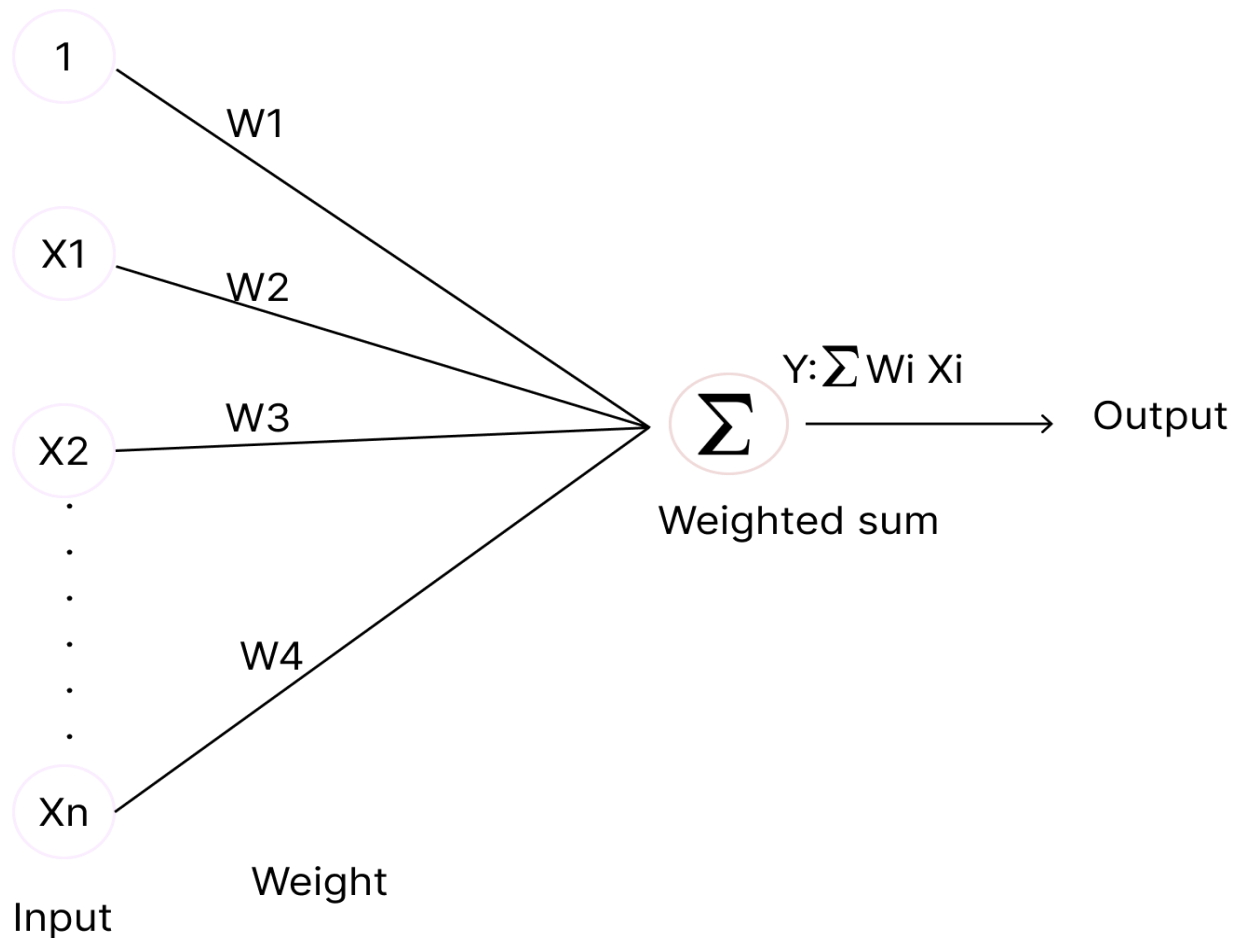


Figure 4. *Neuron introducing nonlinearity to the weighted sum of input features to estimate output.* Pag. 3. (Shrestha, Y. R., Krishna, V., & von Krogh, G., 2021)

This simplified nonlinear graphic reflects how a suitable output emerges after transforming the inputs it has been nourished by and connecting those inputs with its weight or also known as its *hidden layers* (Janiesh, C. Zchech, P. Heinrich, K., 2021) and then, condensing this information and optimizing it to obtain an estimated output.

As it is shown, the data does not evolve or learn on its own; it is rather nourished and taught to recognize and follow specified rules that limit its spectrum and creates coherence on its terms; this process is always followed up by a human who then decides whether or not the output is coherent. Let's take the example of a data set that is training its algorithms to recognize human faces; once it starts recognizing animals as humans or the other way around, it is the fault of the amount of data it has been learning and the way to correct this issue would be by augmenting the weights on what is right and what is not.

This iteration can go on for several essays until the machine learns to distinguish and divide the two facial expressions, textures, and dimensions, among other variants that differentiate a monkey from a human. This fact shows something that will be explained through the text: AI needs quality data, and at the same time, large amounts of it for AI to perform in expected ways and to reduce the error percentage. In that sense, the lack of data can perturb the process of the algorithms.

Nowadays, data is found in large quantities on the internet, and new information is being generated in an unstoppable way by everyone with access to the internet. To this extent, technologies are profiting by finding out where it comes from, and from there, processing, collecting, analyzing, finding trends, recognizing behaviors, and generating insights that leverage the data in an organized and relevant way that will then serve to decision making processes (França. R., Borges. A., Monteiro.R., Yuzo.I., 2021).

2.1.2. Machine learning. Machine learning is a subfield of AI, directly dependent on humans since it needs a set of inputs and it usually “requires more structured data to learn” (IBM Cloud Education, 2020). It focuses on using data that permits models to ameliorate their capability to identify patterns and explore attended outputs.

It can be classified into three main types: Supervised learning, Unsupervised Learning, and Reinforcement Learning.

- Supervised Learning: needs ‘clean’ data; this means data that is labeled, identified, and categorized by examples.
- Unsupervised Learning: this type of Machine Learning refers to the learning system that recognizes patterns without any label or categorization previewed. “In unsupervised learning, the system simply interacts with the world. It just gets to see what’s out there and learns from that,” says IBM’s researcher Murray Campbell (IBM, 2022).
- Reinforcement Learning: In this specific learning process, engineers set up a barrier of specifications to obtain what they are looking for. What this means is that they set a space of actions that are permitted, the ones that are not, to then be reinforced

in the process of “trial and error to maximize a reward” (Janiesh, C. Zchech, P. Heinrich, K, 2021)

In summary, Machine learning is a part of AI that perform automation processes by constructing independent analytical models that empower machines to adjust to new environments based on past data and processed insights (França. R., Borges. A., Monteiro.R., Yuzo.I., 2021).

2.1.3. Deep learning. Train a computer to work as similar as possible as a human brain is deep learning. In this technique, computers learn to spot patterns and identify objects, then propose predefined new content specifications. Therefore, machines are taught with a large amount of classified data that can come abstractly once the ‘basics’ are identified. The way it works in general terms is that data (images, video, text) are collected and classified to then be iterated (Schmidhubder, J. 2014).

What mainly changes between Machine learning and deep learning is how the machine learns. Deep understanding, on one hand, automatizes a more significant extent of data processing (França. R., Borges. A., Monteiro.R., Yuzo.I., 2021), leaving fewer tasks for human intermediacy, while Machine learning has more interaction with humans.

As *Figure 1* showed, deep learning is a subfield of machine learning. Its name *deep* induces its meaning. It refers to the several layers that it adds to its way of learning; by allowing this, it will enable to gradually withdraw more valuable information from original and raw inputs.

“The more distant future may belong to general-purpose learning algorithms that improve themselves in provably optimal ways, but these are not yet practical or commercially relevant” (Schmidhubder, J. 2014).

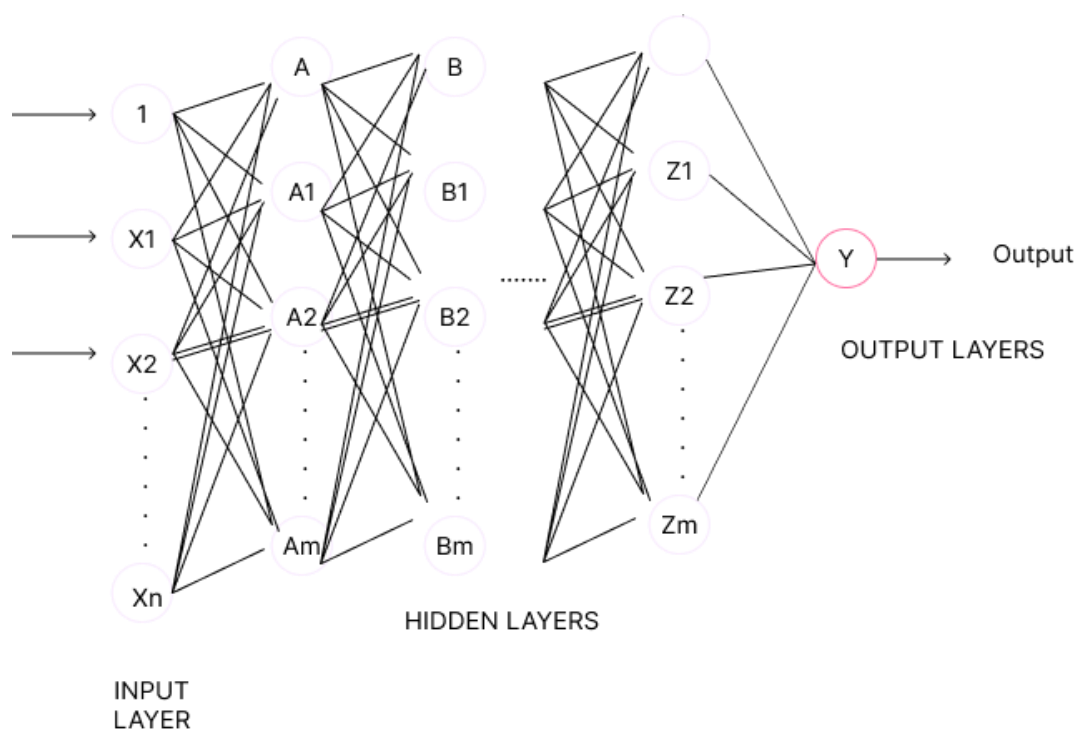


Figure 5. Deep multilayered neural network. (Shrestha, Y. R., et al., 2021).

This multilayer generative model, represented in *Figure 5*, includes complex features shown in the hidden layers. This advanced architectural structure of the learning process shows

how the interconnections between inputs, learnings, and outputs allow the machines to perform in such ways when implementing Deep Learning. These processes of learning are nonlinear and are also known as *activation functions* (Shrestha, Y. R., Krishna, V., & von Krogh, G., 2021). This is implicitly telling us how; even if the input is randomly selected, it can interact with the rest of the data to learn from its similarities; these non-linear processes are stimulated with iterations all along its learning process and, in the end, evaluated for them to be controlled.

In that sense, the relationship between data quantity and algorithm performance is direct and positive. If we were to represent it in a graph, it will look like this:

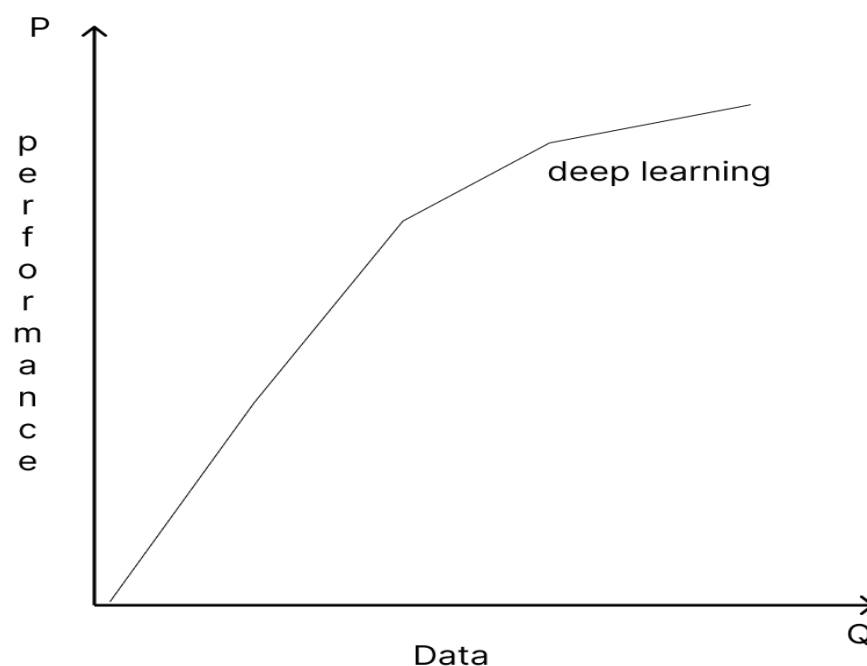


Figure 6. Deep learning: *Its behavior with data quantity and its performance. Inspired by Deep learning: Its behavior with data quantity and its performance. 2021. Inspired by Shrestha, Y. R., et al. Page 4.*

We can interpret that as the number of data increases, so performs the Deep Learning model. Confirming that while having and creating more Neural Networks (NNs), the outputs

are more relevant and approach more to the objective expectations. Once again, the fact of having quality and quantity of data comes out to light.

2.2. Humans and AI

Particular attention within the research community is posed to the question regarding if will AI is going to replace humans. Indeed, this concerns ethical approaches to economical and technical ones throughout various industries. What is inevitable by now is that AI and technological revolutions, as explained before, have changed the way society works. On a certain level, it is and will continue to be disrupting the workers and their tasks.

Does the question transform to How humans within the organizations are embracing AI? It is now used mainly as a tool. In that sense, even if AI is willing to become a decision-maker, there is and possibly, will always be needed human control and supervision. This is because there is a need to understand customer behavior led by an emphatic understanding raised by human insight and *substantive rationality* (Kozinets & Gretzel, 2020) that AI is missing.

The relationship between AI and customer-based relationships can be contradictory. Since AI is set to be optimized and precise, it can create personalized content for a specific niche that will respond positively. On the other side, for example, when introducing AI to the bot, customer relationships can get affected since the way they get treated, for instance, in conversations, is perceived as less emphatic. Even if this technology is advancing, it is easy to tell if behind the screen there is a person or if there is a machine. Customers perceive that AI bots are less empathic.

In that sense, the synergy between AI and Humans should have a hierarchy of power; this can be sustained by Sarasvathy, (2001), in the Effectuation Theory explains that regardless

of the sophistication of a mechanical tool, the end, the responsibility lies in the human behind the operations rather than in the technical device. For that reason, AI amplifies the spectrum of possibilities and helps address the question of what can be possible to do—never rejecting the fundamental role humans bring to these processes and allowing them to answer what is desirable? For this question mainly human approaches are preferred and suggested. (Townsend & Hunt, 2019)

Instead of considering AI as a human replacement, it is more accurate to think of it as an “intelligent assistant for human workers” (Brooks, 1991). There is a real value in specialized topics where AI is having real power. Some of those are natural language understanding, vision or planification. However, Rodney Brooks argues that Human intelligence is way too complex to be decomposed and interconnected perfectly.

2.2.1. Technology analyzed: Sophia, the robot. Her creator, David Hanson, a robotic designer and CEO of Hanson Robotics, based his work on creating robots with a human appearance. Sophia was one of his creations, and it was released in 2016 under the type of humanoid. She has raised the media's interest worldwide for its impressive interviews and for even getting the world's citizenship.

Its technological architecture includes an AI-boosted “brain” that allows her to develop activities such as having simple conversations by speech recognition technology from a Google app: Alphabet Inc. And its speech provided by CereProc's text-to-speech engine. Sophia is “a complex work in progress” (Ricco, T. 2021); it is not a robot that acts precisely and with as high precision as a human; she is “far from being stable, consistent, and operationally reliable” (Ricco, T. 2021)

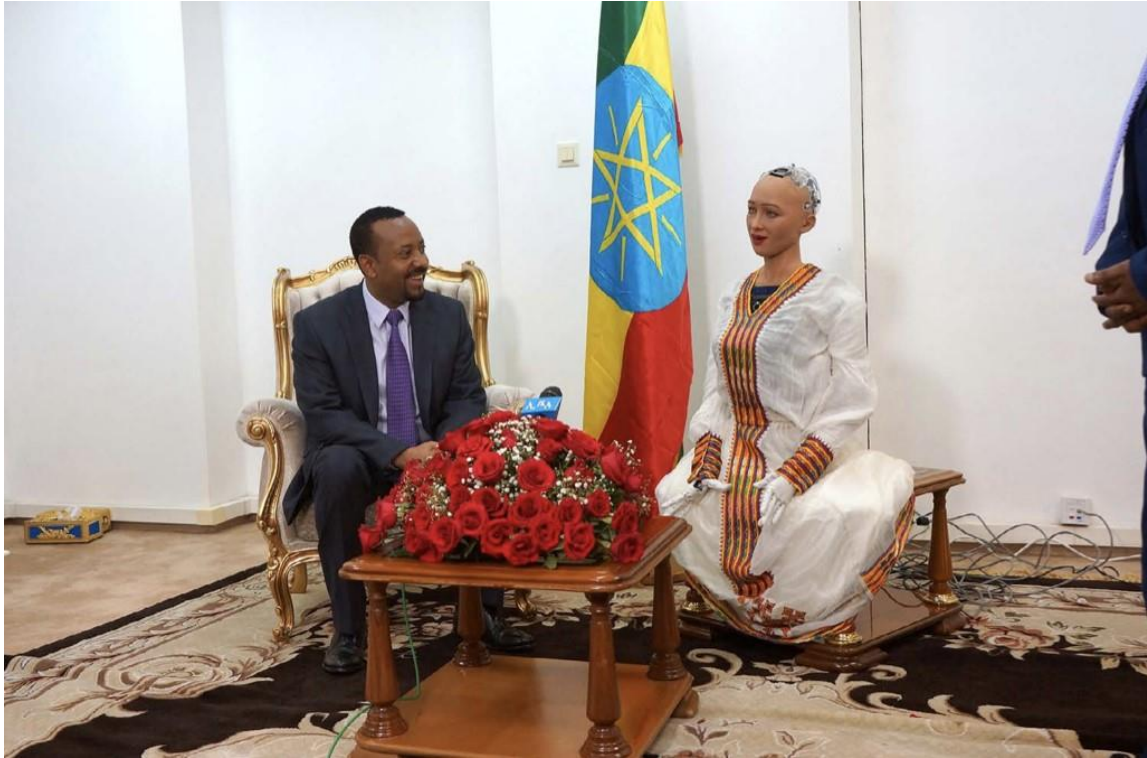


Figure 7: *Sophia with Ethiopian Prime Minister Abiy Ahmed during a press conference.* **Source:** Photo taken by Thomas Riccio and from Sophia Robot published by Cambridge University.

Her learning process was, in the beginning, filled with inputs of scripted conversations, and after some months, she started to create her own. Also, she can rely on web searches whenever there is a topic she is not familiar with. Therefore, if we ask her who won the elections in Colombia for the presidential election, She will be able to tell after a quick search.

Sophia has also been impressive because she implements activity that upgrades her visual appearance when speaking. “70% of human communication is visual” (Ricco, T. 2021), and she is nailing this feature by doing things such as nodding, winking an eye, and moving her arms or eyebrows, among other nonverbal communication.

Nonetheless, Sophia is the physical representation of the futuristic ideas that started as comic books and fairytales to a reality that will keep improving as time passes. But will Sophia

or any other robot/ technology replace human functions? It won't. Sophia is far from autonomous and has been considered even just a chatbot with a face (Ricco, T. 2021). To answer the last question, it is important to have context. Sophia was created as an experiment to learn about robotic capabilities when boosted by Artificial Intelligence. On the other hand, technology has and will continue to take human responsibilities; the challenge relies on how well we take advantage of this reality.

2.2.2. AI Bias. Some models developed by Google, Open AI, Facebook, and other big technology companies and researchers have started studying AI and creating models of the enormous world of the internet, the perfect place for AI to perform since it has large amounts of data labeled. Nonetheless, sometimes the information we find online is not always trustworthy and safe.

The data training sets that AI uses within its model define its outcomes. AI only produces content related to what it has been trained with, and the auto-generation of inputs is impossible when implementing a model. The generation of AI that learns from internet models has come with incredible improvements but has also shown unsafe behaviors.

AI is learning based on what humans have trained the machines with. The interviewed artist Kali Yuga said: "It really is just sort of an infinitely complex mirror held up to our society and what we deemed worthy enough to, you know, put on the internet in the first place and how do we think about what we do put up" (Vox, 2022., Min: 11:55).

For instance, how our data is being treated has just started to be a conversational topic but is still a good source for companies that possess them. Another example of bias in AI is related to discrimination; not long ago, Google's AI identified black people as "gorillas" (Dougherty, C. 2015).

The bias is manifested in data, and it comes in a multimodal way (Ntoutsis, E., et al., 2020); some of them are the Representativeness of data if there is not enough data about, for example, a majority group and there happens to be already in the data set social discrimination might lead to bias in the data outputs as well. Another example is the data modalities; most of the data found on the internet might have offensive associations related to gender, race, sexual orientation, and so on; when not identified, these associations will lead to bias in AI. An example of this is, for instance, Boulamwini and Gebry (2018), who discovered that the facial recognition used by smartphones, like iPhone by Apple, would perform better with a white man than with black woman.

Ever since examples of bias in AI have kept happening, but the central reflection has been that AI must be regulated and supervised. EU regulations have started taking place, especially antidiscrimination laws. Nonetheless, “the application of these rules to AI-based decisions is largely unclear” (Ntoutsis, E., et al, 2020)

2.3. AI and new ventures

Big data and AI are certainly challenging how new ventures develop internally. It is transforming their business model and, parallelly, impacting the ecosystem that evolves this entrepreneurship. Therefore, how can AI disrupt entrepreneurial processes? Well, according to Obschonka and Audretsch (2019), one of the disruptions can be reflected in the external enabler, referring to the impact of the empowerment new ventures get by enabling new economic activities that enhance AI and disrupt an industry filled with incumbent firms that have not to join the technological era.

The world and its vertiginous events involve new ventures in a context that is never stable, on the contrary, it is permanently disrupted and insecure. Plus, customer trends are also changing in a fast-paced way. Entrepreneurship uncertainty is one of the essential factors when onboarding a new venture. Given this context, enhanced decision-making is simultaneously transformative but also problematic. (Townsend & Hunt, 2019) On one hand, the ability to leverage the benefits of AI into an entrepreneur's decision-making process increases the capacity of individuals and organizations to make headway in reducing modal uncertainty. On the other hand, the lack of robust data sets limits AI implications.

Furthermore, AI is impacting its way of creativity. Literature has found that one of the most relevant way-of-being of an entrepreneur is its creative way of thinking that leads to *Out of Box* solutions. Creativity and decision-making go hand in hand in new venturing processes. AI researchers have made significant advances in the past several decades to enhance the creative capabilities of AI systems to resolve modal uncertainty (Boden, 1998). New tools are emerging based on sophisticated algorithms that are providing powerful tools for answering future scenarios and finding disruptive solutions that fit creatively the problem. There are now tools that can write papers on their own and create logos and other marketing material that use AI to automatize these processes.

In addition, at the end one topic that seems highly relevant when talking about AI and new ventures, and it is the decision-making process. Indeed, it is a topic mainly involved when an entrepreneur decides to use AI in their operations. AI brings a broad knowledge of customers' preferences. And is helping decision-makers in different positions within an organization. For operational teams, it can optimize processes by recommending logical paths that save money, time, and resources. For executive teams, it brings a new view on organizational ventures. Marketing and branding it is introducing way more optimized creative

processes. Ultimately, AI can be implemented in every process that requires repetition and gets data.

However, as explained before, Entrepreneurial environments are rarely highly structured, and the relevant information is partially known by entrepreneurs trying to enter a market. Therefore, they end up using, most of the time, incomplete data for opportunity identification. This lack of advantage sets them in a lower place than its competitors. The “lack of information or awareness that an opportunity exists within the environment” (Shepherd, McMullen, & Jennings, 2007) is still a big problem that AI addresses.

But the power that AI can enhance goes beyond human capabilities since it can extract information from a large amount of data. Decision-makers can now gain new insight based on the predictions and recommendations that the intelligent layer of DL can provide. A research trend in Deep Learning-Augmented Decision-Making (DLADM) started around 2015 to identify possible case scenarios where DL might be of use within the organization and its processes (Shrestha, Y. R., Krishna, V., & von Krogh, G., 2021)

David M. Townsend and Richard Hunt (2019) analyzed the power of AI tools. They found three main implications for AI in entrepreneurship:

- Generative algorithms and augmented search as the main points of AI tools to overcome the complexities of human relations are increasing.
- Automating decision-making and entrepreneurial judgment references the necessity of human judgment since this capability is inherent to experiential learning rather than a programmed and controlled one.
- Uncertainty in which new ventures converge is not the only difficulty. Entrepreneurs often face ambiguity in determining their customers' most relevant value creation.

2.3.1. AI adoption by Startups. Researchers have found that adopting AI usually has a wrong perception among customers (Davenport, T., Grewal, D., & Bressgott, T., 2020). Humans like contact with one another and prefer it over robot interaction. To mitigate such an event, combining AI and human inputs through an iteration process is necessary to avoid rejection in the marketing campaigns done by AI.

Adapting AI can be challenging for several reasons. The first is the lack of knowledge about the software that implements AI. The second is having an unorganized and unstructured data set that complicates the implementation of AI. Indeed, not having a database that can be easily transferred to a new model can slow the process down. Finally, the technological capability to store large quantities of data can limit AI adoption.

When being a new entrance into the high-tech market, for instance, there is a need to preview and set a goal to enter the market and evolve while being profitable. In this early stage, things tend to be more challenging because there is a lack of trust since there are few or no clients and no proven long-term successes. Even adapting to the volatile and fierce competition, most of the ventures fail to make it for the long term.

We cannot talk about this without naming Geoffrey A. Moore (1999), the writer of the famous book called *Crossing The Chasm*, who analyzed how does the adoption life cycle Works.

Followed a graphic proposed by Moore (1999):

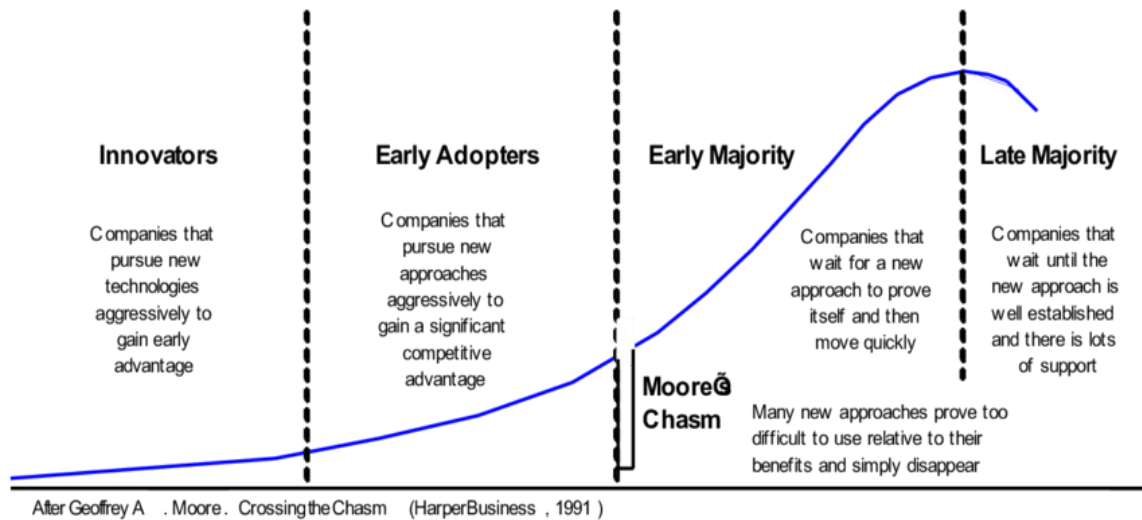


Figure 8. *Design uploaded to Researchgate.net* by Paul Harmon (2016). Inspired by Moore (1999). Crossing the Chasm.

When introducing new technology such as AI, there might be a risk aversion that is more prominent in the Early Majority and Late Majority; companies in these stages wait for recommendations from either company at the same level and pragmatic successes, not expected ones. In that sense, it is difficult to get to them since start-ups are not well established and might not always have practical user wins.

In that same wave, the innovators and early adopters are the ones that might implement AI in their business model since they are recognized as visionaries, and they are always looking for innovation and the latest technology to implement it. According to Moore (1999), they are technology enthusiasts.

How can they enter the market where the pragmatist is? Visionaries should be aware that implementing AI will be a great help to their activities and might, in some instances, represent a competitive advantage when their clients perceive the use of AI. On the other side, visionaries implementing AI in their technology have Moore's detailed step-by-step guide to cross the chasm, as he calls it.

But what means to cross the chasm? Briefly, in *Figure 8*, we can perceive that there is a more significant gap between the Early Adopters and the Early Majority. To break it down, Moore (1999) dedicates an entire chapter per action to create a guide that you will find summarized and simplified here:

- I. *Target the point of attack*: Select a specific niche that serves as the entering point.
- II. *Assemble an invasion force*: This means that all the efforts in the product development must be done for that specific piece of market answering all their necessities.
- III. *Define the Battle*: Here, it is time to define the communication and the positioning; now that the added value is clear is time to take advantage of it.
- IV. *Launch the invasion*: distribution and pricing: It is the time to start the pricing strategy and the distribution always personalized. (Moore, G. A., & McKenna, R.,1999).

The implications of new ventures represent a considerable improvement in the reality of the world we are living in. In 2019, the International Finance Corporation made a paper about the Role of Artificial Intelligence in Supporting Development in Emerging Markets, emphasizing that:

“While emerging markets are already using basic AI technologies to solve critical development challenges, much more can be done, and private sector solutions will be critical to scaling new business models, developing new ways of delivering services, and increasing local markets’ competitiveness. These solutions require innovative approaches to expand opportunities and mitigate risks associated with this new technology.”

They prove that AI came to stay and is here to bring a positive shift. Indeed, AI is starting to shape how products and services are being run, how the data is gathered and treated, and how we interact with companies. (Strusani, D., & Hounghonon, G. V., 2019) New ventures have the challenge of implementing AI and adapting to it to become more competitive shortly, are they all ready to take the leap? That is the question we try to convey.

2.3.1.1. Software Analyzed: Kili technology. AI-assisted features are great assistants that help boost productivity up. Nonetheless, when the data is not well labeled, classified, or identified, the results will never reach the expectations of clients or production teams. To solve those issues since 2018, Kili Technology has existed, it effectively turns raw data into high-quality, trained data (Kili, 2022).

This platform is filling companies' gap when they want to start implementing AI. Their slogan: “quality labeling at scale” and “AI has a lot to learn, data has a lot to teach” (Figure 9) shows firsthand how the training processes that Kili is leading are inducing to improve user efficiency and data reliability. Another of their functions is spotting labels that have errors before they are used.



Figure 9. *Kili technology*, (2022). Kili's slogan. URL: <https://kili-technology.com>

By helping companies scale their data, they are facilitating collaboration cross-teams to use and perform the data as efficiently as ever. Kili argues that almost “85% of projects never reach deployment.” (Kili,2022). Among their clients are IBM, Airbus, and Capgemini, and they have all shown positive and expected outcomes when using their data well labeled.

The challenge of implementing data can feel overwhelming for companies and especially for new ventures that are competing with big companies with a more significant amount of data

and more resources to compete. In that sense, using AI and having Kili's guidance can help improve the teams' productivity and create initial data roots that are strong and reliable enough to keep adding more data without having to start from scratch every time.

In *figure 10*, Kili technology creates a graph that represents the workflow of the implementation of their technology highlighting their added value through the process. They connect and prepare the data and then, Kili train the data by labeling and annotating, and creating a circled iteration with the diagnose for data to learn. Then, Kili centralizes the data that has been trained and continuously monitor its performance so that the outputs when using that data are performant and expected.

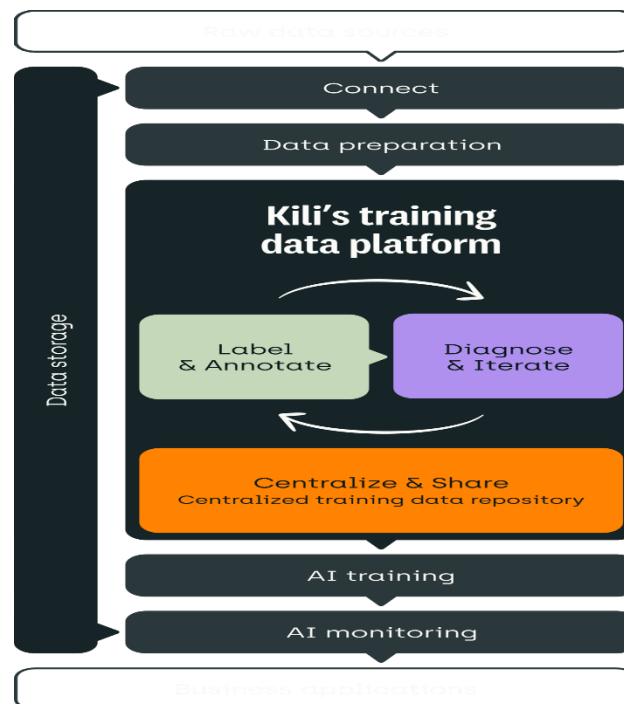


Figure 10. *Kili Technology* (2022), a Training data platform for enterprise AI. Url: <https://kili-technology.com>

2.4. Marketing and AI

Marketing is a strategic art. It merges strategy and creativity. On one side, the system is settled by the data analysis refined in the latest years with relevant tools such as Google

Analytics. On the other side, creativity is what can link the data and transform it into insight that can be monetized through content. This practice is already taking place and has given marketing much power and customer knowledge. Now, the introduction of AI systems in different areas of study is transforming the processes and revolutionizing how business activities are being built.

Even in marketing, AI already has a relevant role and will undoubtedly be adopted more and more by startups and companies. There are existing tools; in the following pages, you will find several software examples per section analyzed. Empirical studies have discovered that around 80% of existing marketing data within companies are unstructured, and only a few organizations have the technical skills and requirements to use that type of data. The adoption of DLADM is a significant investment since it leverages this unused data to bring new insights and becomes a companion for decision-making in Marketing processes. (K. He, X. Zhang, S. Ren and J. Sun, 2016).

The first one has Concurred, an AI-powered content marketing tool that helps with content production that better aligns with the niche and objectives settled for the company; it analyses and directs the different campaigns performance and raises new insights for the content brief or for the media planning. The second one is the Chatbots; this AI tool directly helps the customer service team and marketing since it focuses on answering customer questions, is multilingual, and with a 24h disposition, raising customer relationship moments. Finally, *Sentient Ascend* is A/B testing software that uses AI to find the optimal copy, layout, and design to boost marketing content (Miikkulainen, R. et al., 2018).

Furthermore, the Data and algorithms leveraged with AI create a Network effect that grows exponentially, more significant than pure data usage. This use in marketing can bring a sustainable competitive advantage. Concretely, four relationship moments can be improved by

AI: Acquisition, retention, growth, and advocacy. The challenge here is how to convert these moments into AI relationship moments.

Table 1
AI through the marketing stages

Marketing stages	Challenge	AI impacts
Acquisition	Increasing the first impression perception from its customers.	As the increasing number of software's are showing how can
Retention	Keep clients satisfied along their buying process and even before	Having tools that allow to automate the process of follow up in a highly targeted and personalized way.
Growth	Generating traffic and leads	Creating high-quality content. Online paid campaigns by software implementations like Hubspot.

Identification of influencers

Advocacy Having loyal clients that will by metrics that can be
 advocate their experience automatically recognized by
 with the brand service as AI, such as: number of
 world promoters and followers, hashtag
 increase the visibility of the identification, etc.
 brand by increasing the trust.

Buyer persona's journey, its challenges and impacts for AI.

Source: Nambisan, S., Wright, M., & Feldman, M. (2019). The digital transformation of innovation and entrepreneurship: Progress, challenges and key themes. . Research Policy.

For new ventures, AI is a promising tool. It recognizes patterns in a large amount of consumer data and allows marketers to take strategic decisions based on this. The question researchers keep asking is up until which point AI will avoid having the real human touch that cannot be taught to a machine. Nonetheless, AI has proved to bring a lot of value both in revenue and customer knowledge. But as marketers can we rely just on AI for our decision-making processes? Not really. It can lead to generalizing the customer's understanding.

According to Herbert Simon, AI lacks *Substantive rationality* since it ignores the complexity of human beings, their motivations, fears, cultures, backgrounds, traditions, and values, about other multidimensional concepts that cannot be expressed by data or be measured mathematically (Kozinets & Gretzel, 2020). Contrary to AI which works a hundred percent with an exclusive logical, mathematical, and algorithmic approach. It is programmed to always lead to a correct answer and once it gets more data it chooses another correct answer by repeating this process multiple times it starts learning on its own. In fact, it is settled to optimize the algorithmic decision-making yet blurs the *substantive rationality*.

That is why there will always be the need for a real human next to AI and why it should always be considered as a tool rather than an autonomous decision-maker. Lindebaum (2020), concludes it in a better way by expressing that “AI increases marketing efficiency, but it removes valuable opportunities for marketer-customer contact and relationship-building”. In other words, by using AI and avoiding human reasoning, we are risking losing the real relationship with customers that happens one-to-one in human interactions. This disconnection represents a risk for AI in marketing.

The other fragile point identified by DIRK is the vulnerability of AI, expressed as the lack of independence from a large amount of data. Indeed, if it doesn't get a robust database, it won't perform in the best way. In that sense, the real challenge for entrepreneurs and marketers is to find high-quality data on which they can rely on. To do so, getting it from Meta and google is a substantial approach for a large amount of data.

In the short term, we see that companies are having trouble, but how will AI specifically perturb the future of marketing? This is one of the questions we hope to address. For now, we know that it will impact marketers and its tools.

2.4.1. The software analyzed: HubSpot. Hubspot, is a CRM and CMS software that connects Marketing, Sales, and Operational teams to collaborate. The Marketing product allows the creation of inbound campaigns (blogging, social media, advertisement, among others.) in a scalable way. This product is very competitive in the market because of several reasons, first, it presents a freemium model that can also become premium if paying a sum per month depending on the packages the company wants to include. Secondly, it brings a holistic treatment of the company's database (clients, prospects) to maximize the actions that can be done by the team.

Indeed, they are also using AI to boost their actions. Hubspot own words describing AI are: “AI is not a genius. It’s more like... a super reliable intern. It’s fast, consistent, and never complains. Ai isn’t magic. It’s manageable, practical, and valuable.” (Hubspot, 2022). In the following table you will find the main features they are implementing with AI’s help:

Table 2.

Hubspot AI

Feature	Description	AI impact
Business Card Lector	By using the mobile app, you get easy access to your camera that works like a scanner to identify all the relevant information in a Business card and convert it to a contact in an instant way.	Word identification: Recognition of the information in the business card (name, email, etc.) and adding them directly to the dataset.
Data duplication	Avoiding having data contact twice is something that can be hard when having large amount of data. This is something that can easily happen. For this issue, they implemented a tool that finds the duplicated contacts and merge their information.	Data identification: Merge duplicated information by a data identification that also identifies nicknames, abbreviations, among other details.

Contact import	When importing a new contact, its classification is powered by AI.	<p>Data mapping:</p> <p>By mapping the data when importing a contact, AI associates automatically where to categorize this new contact.</p>
Call recording transcription	<p>Transcribing conversations leaving space to sales processes and reducing task that can be automated, increasing productivity.</p>	<p>Automatization:</p> <p>By automatically identifying both oral and written words and context, AI helps the sales team in recording their conversations.</p>
Email data	<p>Automated data capturing by having a leads or prospect email. This feature allows access to personal data. It also includes segmentation.</p>	<p>Data reveal:</p> <p>By having access to larger data-sets it can identify by just a mail, all the personal information of a contact facilitating</p>

the sales
scoping process.

CRM Insights

It included recommended actions by Recommended identifying the company's context, helping actions: with the marketing research and benchmark to Data identification of make the decision making process faster. key data to raise up insights to the marketing, sales and support teams. The key data includes: key companies, industries, locations, revenue, among others.

Chat bot

Live chat bot. It can also recognize the person Data gathering: behind the messages and gather their Update data contact information, then share it with the respective information and team. theme in the conversation,

automatically linking
it to a responsible.

Ejemplification of Hubspot CRM AI implementation.
Source: Based on Hubspot, Artificial Intellience, 2022.

2.5. Strategic marketing

In the volatile and always-changing world, we live in today, marketing needs to create strategies that allow companies to align their product or services to what the customers are looking for in an optimal agreement to both economically and socially sides.

Therefore, the word strategy remains critical when talking about Marketing. Strategic marketing refers to long-term planning that allocates marketing resources to drive customer satisfaction and increase revenue in a scaled way. To do so, marketing implement modeling of different subjects such as positioning, branding, advertising effectiveness, the selling strategy, retargeting, customer-relationship management, and pricing.

Digital media has changed the buying process drastically. Now we have access to the digital footprints of our clients, and we can analyze many marketing KPIs to observe and analyze the performance of our campaigns. Some of these data are, for instance, the Click Through Rate, Engagement, and Time spent, among others. “Such digital traces provide managers with considerable opportunities to draw insights using DL and, in turn, target appropriate customer groups with product recommendation” (Shrestha, Y. R., Krishna, V., & von Krogh, G., 2021)

Being able to understand customer behavior and increasing its satisfaction is, in fact, the goal of marketing. The way customers perceive a brand has been directly affected by how brands approach them, online and offline. But can Deep Learning algorithms identify and understand human intentions, reasons, and feelings when discussing customer relationships?

Customer perception (CP) is expressed in a different type of data that can indeed be analyzed using Artificial intelligence, and it can represent a significant business advantage that can then be traduced to improve the product or a specific process in the buyer journey (Ramaswamy, S.

DeClerck, N. 2018).

2.5.1. Segmentation Targeting and Positioning (STP) model. The first step when releasing a marketing campaign is implementing the STP model. It refers to the customer identification of needs, characteristics, socio-demographics, etc. Of a group of individuals. Here we will see resumed what each letter of the acronym stands for:

Table 3.

STP model. Simplification

Segmentation	Targeting	Positioning
Identify and divide groups based on shared characteristics through the society	Selecting a target market by evaluating the potential gains per segment.	Create a strategy to enter the selected marketed target.

Segmentation, targeting and positioning model explained.

Source: based on Lynn, 2012: Segmenting and Targeting Your Market: Strategies and Limitations.

Regardless of the size of the company; segmentation, targeting and positioning are key step models that help address the audience in the right form, time, and tone. It personalizes the approach and recognizes that across the customers, there are different needs, profiles, and profit potential. The uses of segmentation in the short-term traduces in resources allocation, channel assignment, communication scheduling, pricing, among others. And in the long term, it will represent strategy and positioning development, product development, new market identification, and finding emerging needs.

In the end, all those three steps rely on data. Data that is analyzed, processed, and, in a certain way, optimized. To obtain this data, marketers conduct Market Research where they define a specific objective and start building their segmentation database, defining market segments and describing them are detailed as possible, then analyze them and finally implement a decision-making process.

To get this data, several methods are used such as for example interviews, focus groups or surveys. Nevertheless, this small (usually random) sample of people is not enough to draw conclusions that are completely reliable, the reason for this is, in fact, that even if it can give insights into where the direction might lead you, the data is not enough most of the times, for it to be generalized. By using a database that contains available data based on behavioral intentions such as social media, we get a clear, actualized, and reliable picture of the reality of what is important for our potential clients at a way higher scale.

After having done the segmentation and the targeting and having had a more reliable data set to analyze, now we can go one step further and position our product or service depending on the information just registered. To do so, the techniques used are positioning maps that answer to the question of how to be competitive in relation to customers' perception of the market ecosystem. What the positioning map does is gather competitors that tackle the same target or different segments of the market.

What exactly is positioning? Well, the concept dates to the 1960s popularized by Alpert and Gatty, (1969) who described positioning as “the differentiation of brands according to consumer perceptions” (Gatty, R., et al., 1969) . The positioning provides the context that describes how is your product performing in a specific market compared to other companies’ products considered as direct or indirect competition. This brings a general idea that is part of the market research and that is necessary to create strategies that address the market in a competitive way, what is intended in a way is what is your product/service competitive advantage and how can it be exploited for it to represent increasing profitability (Saqib, N., 2020).

2.5.1.1. Software overview for segmentation: Acxiom. Acxiom is software that recognizes a marketing persona, by following the previously explained STP method in a larger scale of datasets. Their selling point is that they “use data and technology (...) into customer common sense. Powering brands to drive better experience, build trust and grow. (..) We call ethical customer intelligence, and that’s why our customers love us” (Acxiom webpage: <https://www.acxiom.com>).

Their added value resides in the identification and understanding of the buying personas that rely on trustable data and helps brands engage with their customers in a more accurate way. Among its customers, there are: City, Virgin, Fossil, Office Depot, among other big brands.

With tons of data reunited from more than 30 countries, Acxiom is the global data leader that is supporting brands to improve their customer experiences with a data-driven approach, while compromising with high standards when it comes to ethics. Its high added value resides in the predicament in their built audiences, allowing marketers to meet specific needs and create campaigns oriented to their needs. Also, it enhances predictive data from its customers, making

the decision-making process smoother. Finally, they have up-to-date data that reflects the behavior of their customers, their online consumption, and their placement, among other information. *Figure 11*, shows the interface of the software:

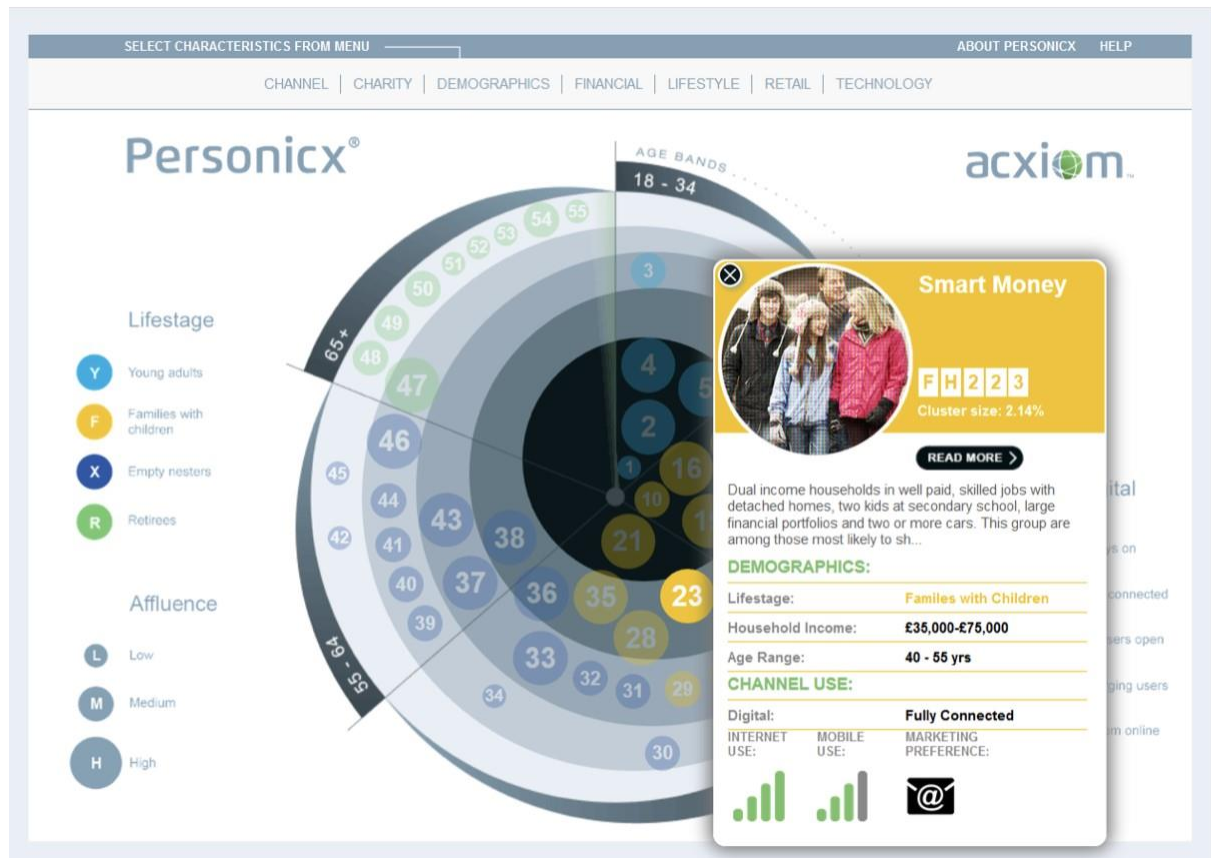


Figure 11. source: *Demo screenshot of Acxiom, 2022.*

As we can observe, we got a simple chart of a persona and we can have its segment, for example, here we know that this person is between 40 and 55 years old. We also have his needs well explained and we got which channel is the best for a company to contact her. Finally, in the background, we can find a table of the whole market already segmented by age and affluence. But these data measures can change depending on the marketing study.

Now, where does AI enter this story? Up until now, all the problem resolution processes have been addressed by a statistical, data science approach. Nevertheless, the intelligent assistant feature entered with an assistant feature well enhanced with the software that recognizes business opportunities by leveraging the potential of the different segments to become clients, how to address them and where and when to find them. This feature boosted by Artificial Intelligence is what is attracting its clients today, giving Acxiom its competitive advantage.

2.5.2. Future of Marketing. The personal driver all along the way of writing this paper rounded the question of how Artificial Intelligence will change the future of marketing? We don't know what the future holds but as humans have always done, we can estimate it. So that is what we will do.

Marketing strategies have already been subject to drastic changes due to the entrance of new technologies and processes. It will most certainly keep evolving by involving more AI-driven activities. Following we will analyze its medium-term horizon:

Table 4.

AI-Driven marketing software exploration.

Feature	Explanation	Software
Online retargeting	AI can be used to engage with customers after and before the buying action, in that sense, it can help retarget clients that have already purchased with a more	<u>Birchbox</u> : An American company in the cosmetics industry. Birchbox sends a box filled with makeup, its business model is based on a monthly subscription. By using

	trustable prediction of what customers will want and forecast the demand more precisely than ever, making companies shift their supply model.	Machine Learning, its users are getting recommendations and personalized products, filling up its clients' expectations.
Sales	Part of the sales processes can already be automated; all the scoping is more exact by using AI. The first contact with the potential clients can be automated by figuring out their job title, or any other details.	<u>Conversica</u> : This is an AI conversational software that engages with leads and prospects. It responds with a personalized focus.
Customer service	AI Bots that answer to inquires of clients based on trained data.	<u>Front</u> : Improves the customer experience in any channel (social media, mail, etc).
Design	AI boosted designs that create out of raw data a new version or proposition of designs addressing specific requirements.	Looka: It accelerates the creative process by combining the logo general ideas and AI to create a customized logo.

Marketing analytics	Using AI, data analysis can be more precise and efficient. Since it is no longer linear in its way of learning, now it makes complex correlations that usually will take much more time for a human to resolve.	Bloomreach: software specialized in creating personalized customer journeys, letting clean analyzed data guide the path to marketers to make the decision-process faster.
---------------------	---	---

Business areas related to marketing that are now being supported by AI softwares.

Source: Author's copilation of softwares.

In conclusion, AI marketing will keep evolving from automation to personalization. This will bring a new era for marketers, more connected and reliable than ever before. The future is indeed optimistic, technologies will continue to evolve being more independent and reliable, workflows will adapt to this new entrance software and the companies who are open to these changes will evolve rather than the ones that resist the inevitable change.

2.6. Creativity

When creating marketing campaigns, it is relevant to consider the target audience and how the campaign can create the highest engagement. To do so, it is necessary to investigate the market, check the trends, understand who the potential clients are and how can we retain their attention, add value to the content created and make it part of a strategy. All this process requires creativity. But what exactly is creativity in marketing? Well, it is the implementation of disruptive ideas that, when used in campaigns, will create engaging experiences for the clients and will improve brand performance.

It will be appropriate to go one step back and re-think the concept of creativity. Defining creativity dates from 1900; if we go back to its roots, the etymology reflects that the world

comes from the Latin *Creare*, which translates literally to create, used in the 1670s as an adjective used to refer to the act of making something, when added the +ity relates to the capability of being, in this case, a creator (Mark A. Runco & Garrett J. Jaeger, 2012).

The standard definition involves two parties, on one side originality and on the other, effectiveness. Originality is a novelty that is not related directly to its practical use, while efficiency brings up the usefulness of the creation. “Originality is vital but must be balanced with fit and appropriateness” (Runco, 1988, p. 4). It can be tangible or intangible (like ideas).

A study supported by the Social Science Foundation of the Ministry of Education of China in 2015 showed an important subject that will be further explored. “Creativity results in a positive attitude toward brand” (Wu, J., Wen, N., Dou, W., and Chen, J., 2015). This study resulted in practical implications suggesting the use of creativity in marketing campaigns not just to attract new customers but also to retain old ones, as well as opening the possibility to increase likeness towards the brand and brand extension.

AI was born out of creative minds. Creativity gave wings to a project that was visioned several decades ago. It seems that AI depends on imagination and not the other way around. AI has not developed, at least yet creativity. It is such a human-specific skill that teaching it to a machine might seem impossible. IBM Multimedia manager John Smith said it better in 2016: “It’s easy for AI to come up with something novel just randomly. But it’s tough to come up with something novel and unexpected and useful”. Up until today, AI has shown incredible advances, and it will, undoubtedly, continue to improve. It has helped writing songs and articles, imitated different painting styles, and even created videos (short movies, thrillers).

IBM (a company that produces and sells hardware, middleware, and software) conducted a study with 30 AI experts. They discovered that using deep learning techniques has improved tremendously. The way this technique works is what is interesting; in fact, they “feed” with thousands of data (images, numbers, text), and with a complex mathematical system, the

engineers get to adjust what parameters are relevant to accomplish their goal and, in that way, AI will create something new out of what he was trained with. The CEO of Somatic (Deep Learning Scale-up), Jason Toy, explains this phenomenon as “deep learning technology is what's called a ‘generative model,’ meaning that it learns how to mimic the data it's been trained on” (IBM Cloud Education, 2022)

How can AI gain the ability to distinguish beauty? What is right and what is not? In some scenarios, answering this question might involve perspective. Most of the time, what is considered beautiful and good are related to culture, and they might vary from individual to another, leaving a vast gap of subjectivity that can be dangerous if it is not carefully treated and supervised.

2.6.1. Software Analyzed: Dalle-E. OpenAI is a company leading the research in the field of Artificial Intelligence. Sponsored and founded by several millionaire entrepreneurs such as Elon Musk and Sam Altman. Nowadays, its investors include Microsoft, among other companies. It started as a non-profitable company that aimed to avoid monopolization of AI powers and make data available for everyone to make “AI that benefits all humanity”. This revolutionary concept is now translated into a page you have to apply for by telling your purposes, and several weeks after, OpenAI decides if it will give you access or deny it.

In this example, OpenAI gives access to security regulations that are highly controlled to avoid misleading uses of the technology implementations. Nonetheless are rather impressive. Let's take a look at the following table at some of the performances of OpenAI's access Valeria Guerra did by using her Open AI playground:

Table 5.

Apps using AI for Marketing

Feature	Detail	Prompt	OpenAI response
Ad from product description	Advertising product	a Write a compelling story about Dall-e 2 and finalize with a catching slogan to incentive artist to try it out	Dall-e 2 is the world's first AIpowered app that lets you create photos and videos in a completely new way. With Dall-e 2, you can turn any photo or video into a work of art.
Note generation	Creates notes out of a given topic	What are 5 key points I should know when studying AI implemented to marketing?	<ol style="list-style-type: none"> 1. AI can help you automate and optimize your marketing campaigns. 2. AI can help you target your audience more effectively. 3. AI can help you personalize your marketing messages. 4. AI can help you track and analyze your marketing results. 5. AI can help you improve your overall marketing strategy.

Idea generator	Creates ideas	Brainstorm some ideas combining AI and new ventures	<ol style="list-style-type: none"> 1. A startup that uses AI to help people with their everyday tasks, such as getting dressed in the morning or choosing what to eat for lunch. 2. A startup that helps people book appointments and schedule events using AI technology. 3. A startup that helps businesses automate their customer service using AI chatbots. 4. A startup that uses AI to create personalized learning experiences for students of all ages. 5. A startup that uses AI to match people with potential romantic partners based on their interests and preferences.
SQL request	Creates SQL	Create a SQL request to find all people who live in Bogota that earn more than 700 dollars per month	<pre>SELECT * FROM people WHERE location = 'Bogota' AND salary > 700</pre>

Essay generator	Create essays	short essays	Create an essay about what is a GPT-3 and how is it used.	GPT-3 is a computer system that is designed to read and write in more than 26 languages. It can also understand and respond to questions in natural language. GPT-3 is used by businesses and organizations to automate customer service, helpdesk, and other tasks.
-----------------	---------------	--------------	---	--

Examples of AI apps used in marketing.
Source: Playground Open AI, (2022).

Table 5 is not exclusive, meaning that there are more implementations that can be done such as Python bug fixers to generate codes; Dialogs bots are written that can be used for helping the customer support teams in answering their clients in an efficient way; or even convert a text description into color with the Mood to color feature. It shows a high degree of reliability, nonetheless, sometimes iteration is required.

OpenAI uses “large-scale pre-trained models (PTMs) such as (...) GPT. (...) It is now the consensus of the AI community to adopt PTMs as backbone for downstream tasks rather than learning models from scratch.” (Xu Han et al, 2021). This agreement consents people from all different backgrounds or locations to access to a database already rich enough to test new ideas. Back in 2015 there was a major development in the AI field that concerned the creation of Images based on automated image captioning, basically, Machine Learning algorithms labeled objects in images, being a big advancement in image recognition that then resulted in image creation.

An example of their wide categories of AI implementations is Dalle-E 2. It “creates images from text captions for a wide range of concepts expressible in natural language.” What

this new software is doing is generating text-to-image. (Ramesh, A., et al, 2021) further improvements have been made such as leveraging generative networks that automatically generated images out of text descriptions. This model started being trained with large datasets that matched images with the right text description. What was surprising about it was its understanding of the text, it can relate different words and find out the logic in multidimensional aspects, its volume, dimensions, perspectives, and so on. (Dall-E, 2022) Respecting a high fidelity and reaching out to the expectations of its creators and potential users. To sum up, it creates images from text captions for a wide range of concepts expressible in natural language.

The images produced by GPT-3 (an autoregressive language model created by Open AI) are generated from scratch, its capabilities represent an illustrated explanation of the learning process, and the model can combine different concepts and express them in different ways filling out the word-by-word description. Resulting in a “high-quality image generation” (DalleE, 2022).

Example of Dalle-E, when adding a prompt: Colombia painted by Monet.



Figure 12. source: *Image by OpenAI*, under the prompt of Colombia painted by Monet.

It can be more specified, for instance, we can propose for it to create a Border collie camping in the space while having pancakes:



Figure 13. Source: *Image by OpenAI*, under the prompt of Border Collie camping in the space while having pancakes.

The pictures, drawings, or designs from Dalle-E 2 have no copyrights. Nonetheless, Open AI owns every creation.

By experiencing the Dalle-E playground, the feeling of making every idea possible arises. It takes a couple of minutes to charge while it is connecting the dots, but it is surprisingly accurate and can accomplish tasks and envision realities that might haven't been put out there in such a fast way. Imagine now having Dalle-E for product development; having a scratch that can be a prototype will take a couple of minutes and can be quickly iterated. It is a tool that will have implications for designers, artists, and creatives soon. But how should we react to it? Is it a challenge for people's jobs? Will it replace certain functions?

Let's take, for instance, the example of a product designer that spends several hours or even days working in a team to design a car that can fly. Doing it with Dalle-E took less than 10 seconds. Find one of the results in the following image:



Figure 14. *source: Open AI. 2022.* Dalle-E 2. Prompt: A photo of a convertible sporty car that can fly in New York.

By adding the prompt: A photo of a sporty convertible car that can fly in New York, we got several realistic images of vehicles that fill every box of what was asked. It can have as many details as the designer wants it to, and they will have a result in a few seconds.

In that case, the role of AI should be enjoyed in the sense of having intelligent assistance that, with several iterations, can bring good ideas to the table that can work as inspiration for future work. That is the goal of Dalle-E, bringing this technology to everyone and incentivizing artists, designers, and so on to try it and, rather than fearing it, be part of the new artistic era.

2.7. AI implemented in creative marketing by new ventures

Now, Marketing will be specifically interested in this process that will accelerate the creation of new ideas, easily prototypal, among other activities. This new trend will directly influence the whole creative industry, and being aware of it now is fundamental to being competitive in the future. AI is not science fiction; it is not either a machine that reflects on its own. Instead, it is a technology that enables us to obtain an objective in less time, with fewer human resources, and with a more accurate and expected output.

As Startups are submerged in an emerging face, most of the time, they do not count on enough team members in their developing areas. In marketing we know already how it can start being implemented but how exactly is AI going to support marketing tasks? How can new ventures who are always submerged in complex and variable environments, implement AI in marketing?

For instance, let's do conscious exercise together. Imagine you are feeling interested in buying a new pair of shoes because it has been a long time since you have not changed the ones you have. Now let's say you first want to know which kind of shoes you would like to buy, so you tap Nike shoes in your browser. You spend a couple of minutes looking at some of them, and there are some shoes that raise your attention, so you stop your scrolling activity from looking at them closely. In this process, you get distracted, change your search, or leave the

page. The following search you will do will indeed have the publicity of shoes and maybe the ones you spend the most time looking at promoted by Nike. This is already done by AI in marketing.

In that sense, some companies in cross-industries have been implementing AI in marketing to increase leads more effectively and accurately. At the same time, A/B testing is easier than ever now trying different designs to be deployed through different personas is doable in a reliable analytical manner. Thanks to the big data set that companies now have, they have been implementing AI to automate the recurrent task, getting more informed decision-making. We now know our customers' preferences as we never did before thanks to the enormous database with exact information.

If we come back to our example, creativity is also another factor playing a significant role in the story. If what you are being exposed to in the retargeting event calls your attention due to its creative approach, you will be most likely attracted to click the post and end the cycle by buying.

The question is not whether AI will be the decision-maker when implementing a retargeting process. Instead, it is about identifying a process that becomes repetitive and can be automated at a certain point to think about implementing a tool that helps ameliorate that specific process.

This logic is pertinent to avoid being misguided when implementing AI. A recurrent trend across industries is showing that AI is being used just to call attention regardless of whether this AI is not the central feature of its product.

2.7.1. Software analyzed: Pelico Pelico is a start-up created in 2019 in Paris by a group of entrepreneurs who have had experience in the aerospace manufacturing world and realized

that the day-to-day operations were being run by last-minute firefighting solutions rather than strategic, premeditated decisions.

Supply chain and manufacturing have become more complex than ever due to volatile demand, fragmented supply chains, and the increasing complexity of products. Operational context changes faster than the teams' ability to plan. This leads to constant firefighting and supply chain disruptions that jeopardize timely deliveries and sales as well as causing nasty cost overruns.

Therefore, they created an app that acts as an intelligent assistant for operational tools giving a roadmap based on a holistic approach for functional teams rather than on mails with uncontextualized information and excels challenging to manage and one-person dependent. Pelico empowers teams to continuously monitor their bottlenecks (administrative or operational) and act quickly with AI-boosted recommendations and instant alternative scenarios simulation while simultaneously facilitating collaboration across teams, giving them a standard view and information.

Figure 15, visually represents the logo of the company and some of the benefits it brings today to its clients. As we can see, it absorbs complexity by leveraging data and bringing it in a simplified and understandable way for users empowering in that sense their clients to optimize their daily decisions; while aligning the teams (production control, quality, customer support) over a common view of their operations driving collaboration in an easier way.

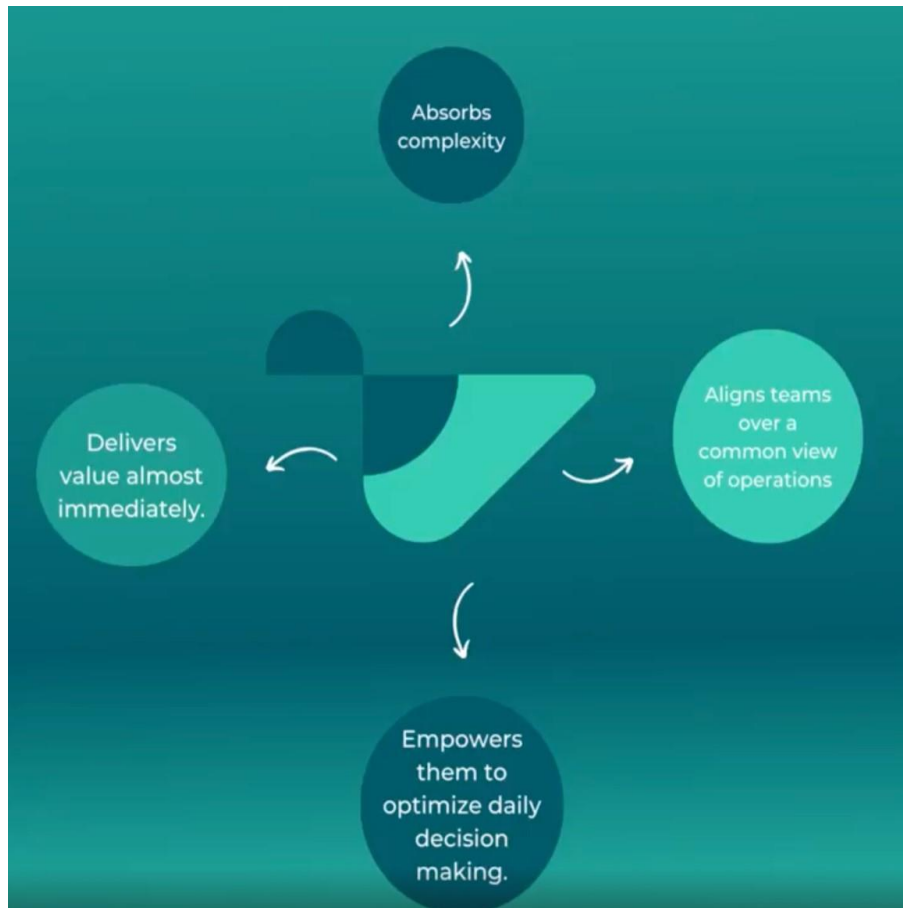


Figure 15. Pelico, (2022). added value Pelico is bringing. **source:** Pelico's linkedIn publication.

This start-up has already achieved Series A funding and has received great feedback from its current clients, who have grown exponentially following the network effect boosted by word of mouth. Entering this new era, Pelico is growing to have more than 60 open positions in the following months, investing in its technology, and increasing the sales and marketing teams as a priority.

Pelico works with companies with complex bills of materials in the aircraft solutions, but it can be expanded to any company that works with such complex manufacturing processes. That is why recently, a market study was done to identify which sectors can be future segments

of the solution. That is also how they got to enter the watch luxury market. Creating watches is as complex as creating airplanes.

On the other hand, Pelico's customers are not digital native, which makes the marketing efforts harder. Its business model is B2B, leading the marketing activities to be mostly outbound activities, with software such as Lemlist (2022), that "personalize cold emails, automate follow-ups and engage with leads across all channels" enabled to salesforce helping the sales team to avoid cold calling potential clients. This strategy, for example, was implemented less than three months ago and has had a good response among their receptors. Another software used by this company is Sales Navigator, which connects to LinkedIn to gather deep insights into potential clients, the company, and its environment. This software, targeted by professional demographics, focuses on the buying journey driving more conversions and driving Customer relationship management (CRM).

The principal social media Pelico is communicating on its LinkedIn, and here you will find its latest news and keep growing a community that is interested in industry 4.0, technology in manufacturing, and aerospace solutions. The efforts of marketing also transcend to the newsletter to its clients in Account-based marketing (ABM) campaign where it deploys case studies, and user wins here the creativity takes place since it is the moment to inform in an attractive way with AI boosted recommendations, such as captions to use, words that are more popular in within their clients and times to post based on their client's activity. Creativity is also being impulse by a team that is open to new ideas and that is trying in A/B testing what works best for its regular clients.

It won't stop just there yet, the marketing team is growing and that means that Pelico is welcoming designers, community managers, and managers that have worked in SAS industries and that are bringing their experience to the table to accelerate growth. The next stage is trying

out all the different software that has been proposed in this paper along the roadmap, that is a proposal.

3. Methodology

Contributing to resolving the initial research question, the type of methodology chosen is qualitative research. In that sense, 13 experts were confirmed in the last couple of months to realize a one-to-one interview. The objective is to guide the conversation and dig about the implications of Artificial Intelligence in marketing and its benefits or limitations for new ventures.

The way it will be organized is explained in detail in *table 6*. Please note that the Introduction and Framing of the problem are going to be the same for every expert discussion session. The introduction will include an oral agreement of the fact that their interview will be treated just for educational purposes and that they are being recorded. Additionally, there is a case study that is a mixture of two videos to showcase the implementation of AI in the creative industry and its implications to frame the conversation.

After this initial interaction, the conversation was divided into three main topics: Artificial intelligence, Marketing and New ventures. Each

speaker is classified into their own category depending on their profile and depending on this discrimination, the questions are different to dig further into their specific topic and get their perspective from their experience.

Table 6.*Schedule of the interviews.*

Agenda	Time		Speakers	Profiles	Proposed topics
	slot				
Introduction	5 minutes				Opening and Speakers introductions
Framing the problematic	10 minutes		Valeria Guerra Forero	Student in Marketing	Research problem and context of the graduation project
Case study	5 minutes		Videos	-	Dalle-E explained And AI its challenges and Bias
Expert discussion	+30 Minutes		Jeremy De Gaia Jeremy Diez Samuel Landau	Data scientist Tech Engineers in telecommunication and Mobility industry. PhD Artificial intelligence, AI specialist at Pelico	Artificial Intelligence, behind the algorithms: the goals.

		Anonymized person	AI engineer at Pelico	
		Abderrahim Mehdaoui	AI engineer at Pelico	
Expert discussion	+30 min	Cedric Gouvernet	AI leader engineer at Pelico	
		Arthur Prignet	AI and feather learning expert engineer at Owkin	
		Antonina Firsova	Marketing senior specialists	
		Ljupka Naumovska	Strategic and digital Marketing professor at RSB	
		Dripta LAHIRI	Marketing specialist at Owkin	
		Amy Vu	Digital marketer specialized on AI at Owkin	Future of Marketing and AI

Expert discussion	+30 min	Co-founder of Soluciones	New ventures and
		Daisy Reza	Digitales
			AI
			(Digital Solutions) and
			Marketing specialist
		Luis Mogollon	CEO of Revivelo Jeans

Organized timing of the interviews.

Source: Author's work

In the frame of qualitative research, the type of interviews that were implemented were semi structured, which means that the participants were guided in a pack of questions already set, but they get the space to expand through transversal topics, as well as enabling a fluid conversation with more questions that raises along the way. The goal is to allow participants to discuss the horizon of AI and its implementations in creativity and marketing in the context of a new venture. The qualitative analytic method most suitable for this study will be a *“Flexible foundational method: Thematic Analysis”* (Clarke, V., & Braun, V., 2013) this method has been implemented since 1970s by Gerald Holton, it can also be recognized as the *grounded theory* or *discourse analysis*.

The way the interviews will be processed is by the creation of main topics discovered among the interviewed speakers. This classified thematic converges intrinsic points among the diverse set of speakers, highlighting the main and common subjects that boosted the conversations and allow the researcher to draw a complete scenario with the assembly of parts.

3.2. Proposed topic:

Including different specialists in the main topics (AI & big data, Marketing, and New Ventures) will raise the perfect synergy to dig more into how new ventures use AI to enhance

creative marketing. Therefore, AI specialists, Big data engineers, marketers, and new venture founders have been offered interviews.

Opening and Problematic: Space to present both the researcher and the speaker. Following by an introduction of the problem and justification. After this initial part, the conversations will be led in the following sub-topics:

- **AI and Big data:**

The main objective of this set of interviews is to gather experts in both AI and Big Data to analyze the uses of AI, implementations, gains, limitations, and main challenges. What is intended is to go further the data and technical layer to dig into the practical implications of AI.

Questions proposed:

- I. What are the limitations that AI has and how does it anticipate them?
- II. Is AI the main decision-maker or rather a tool for your organization? Why?
- III. What are the significant gains when using AI?

- **Future of Marketing and AI:**

Since the trends are moving so fast, Marketing must preview how AI will affect its processes and which opportunities and risks are relevant. In that sense, these interviews have the main objective of analyzing how is AI being used now for marketers across sectors and what can we expect of these iterations across new technologies boosted by AI in marketing.

Questions proposed:

- I. How are creativity, judgment, and decision-making affected by AI?
- II. How can marketing prepare to adopt AI?
- III. What is the main challenge of AI in marketing?
- IV. What do you believe will be the significant gains?

- **New ventures and AI:**

Entrepreneurships are submerged by uncertainty and volatility. When in this first stage, new ventures most of the time do not count with a large number of employees and this is a major disadvantage that can be mitigated by using AI as an intelligent assistant. The goal of this interviews will be to discover the perspective of entrepreneurs in their endeavor and how they perceive the implementation of AI in their business actions.

Questions proposed:

- I. What is the main repercussion of positioning when adopting AI in technological environments?
- II. How is marketing influencing new ventures?
- III. What are the main challenges that pop up in your mind when?
- IV. What do you believe will be the major significant gains?

3.3. Visual Materials proposed

- Videos:

- Dall-E: [DALL·E 2 Explained](#) :

An explanation of the software created by Open AI and accessible to the public for a few days allows the creation of images or pictures that have never existed before, following the precise instructions of a prompt induced by the user.

- The AI that creates any picture you want: [The AI that makes any picture you wish to explained](#) (From minute 11 and until the end of the video)

An analysis made by VOX questions the ethical and moral sides of the uses of AI: its bias and the unresolved fact of copyrights, among others.

- Presentation:

Canva's presentation of 9 slides served as a visual assistant guiding the conversation per topic.

available here: https://www.canva.com/design/DAFDZ0oX-LU/-JEJzZqoZfIo3CKiT3A4kw/view?utm_content=DAFDZ0oX-LU&utm_campaign=designshare&utm_medium=link2&utm_source=sharebutton

3.4. Interview analysis:

As the investigation gathered Marketing specialists, AI experts, and new venture creators, several themes were identified across the industries and their expertise. Following, you will find the topics converged among several or all the speakers across profiles with abstracts from the speakers around the issue.

3.4.1. AI as a tool. A relevant subject in each one of the interviews was that AI should always remain a tool and not a final decision-maker and that humans should always have the option of taking over the control and power of the technology. Keeping AI regulated and supervised is fundamental for the safety of its outputs. The proportion of AI has got to be well balanced to avoid it from backfiring, argues Ph.D. Naumovska.

The main gain when implementing AI is that “you will get some insights that you were unable to think about. Some predictions using previous scenarios. For example, we make decisions based on our previous experiences, so just imagine that AI will base its experience on many years, let’s say even centuries of data (...), so it will give you insights, some predictions that you wouldn’t be able to think about” (Abderrahim, Min 15:20).

Another gain when using AI is raised by Antonina Firsova, Marketing specialist Manager, who mentions that from her own experience, the process of designing something with a designer can go through several iterations before being published; now, she argues that using AI can take less time and it might even go to the graphic designer to be polished or it can directly be published. Therefore, productivity increases for marketing teams and can even boost creativity (min 35).

Additionally, the human resource will be allocated, Ph.D. Naumovska argues that even if AI takes on specific functions that are now done manually by humans, it will not mean the complete elimination of human iteration in the processes since according to her, a lot of new tasks will raise to this change demanding new skills and profiles in the future. She also presents a point that shows that “it will not be the strongest that wins, but the most flexible one” (min 18:26). Referring to that the main challenge then resides in the openness that one has to adopt these new technologies that, like it or not, are having an impact in today's reality.

AI is, in essence, a tool that serves human necessities. Jeremy Diez, an automated vehicle researcher, insists that AI should mainly focus on tasks that overcome human abilities and have a significant win for society. He examples this by arguing that there are many countries having more houses or apartments than actually people, and even then, there are still people living in the streets; in this case, he compliments that AI could be a great tool to reallocate the way this distribution is done since it can allocate and optimize this complex problem that human has not be able to solve. In this way, he maintains that the aim of AI should not be centered on companies' profitability or on tasks that humans can do with some effort, like the example of AI as a designer, but rather that it should aim to solve complex problems.

3.4.2. AI and decision making. When raising the problem on who should be responsible for AI's outputs, the speakers all agreed with what Samuel summed up: “The human must be

involved in the decision process” (Samuel, min 8:30). The decisions, especially the ones that imply human wellbeing should always have a human decide. Even when treating large data sets and expecting large outputs, this data should always be supervised and monitored to prevent and avoid bias.

AI shouldn't be making decisions that transcend its capabilities and might have an ethical or moral impact. “AI won't act as a decision-maker (...), but it will act more as an assistant tool” (Abderrahim, Min 23:48). AI was built to help us with decision making, to facilitate the way we drive our actions, Jeremy Diez researcher in automated vehicles “AI takes an amount of decisions that is unimaginable to humans” he argues that AI is made to improve a process for humans, so even if it is making many decisions there is a “most crucial” decision making that belongs to the human and is whether or not follow what AI has suggested.

“In some cases, AI has already taken over the decision-making process. We already live in a world where AI has the power to make decisions. For example, a detection algorithm runs in the card play algorithm that scans your number and selects whether you can or not get out of the garage” (Cedric, Min 16:22- 17:40). In this case, the decision-making process is fully automatized. At Pelico, the workflow of the plants is optimized now by AI; it helps address recommended actions that help boost productivity in their clients. Nonetheless, it still has human iteration to decide whether those are going forward or not. Pelico is now mainly using Machine learning which allows their clients working in factories to make decisions in a smarter way more smartly.

The impact of AI in the decision-making process is positive, describes Doctor Ljupka Naumovska (professor at Rennes School of Business), because it “decreases the level of uncertainty and unclarity” (min 9:50) when business is setting up marketing strategies and objectives, for instance. Once AI is implemented, it helps save time and money.

For marketing, AI is already adopted. The algorithms behind the promotion of campaigns are already working with AI. According to Antonina Firsova, the proper process to implement AI relies on finding the problems that can be automatized and then adapting an AI model that can come over it (min 25). Daisy Reza, co-founder, and Marketer, agrees that A/B testings when implementing any technology in their company are relevant to test how their employees and clients react to this new adaptation and if it is bringing notable changes or if it is not; she believes that this process is necessary to avoid imposing and to remain open to new initiatives (min 27).

Daisy Reza also agrees that marketing is also going in a positive direction, making customer relationships more robust in the future thanks to more personalized conversations that will continue to appear as AI evolves.

3.4.3. AI and its limitations and challenges. Indeed, we know that it is an extraordinary tool that can help us be more productive and efficient and get to an expected output that couldn't possibly be processed otherwise. Nonetheless, as with any other tool, there are limitations and challenges when using it that shape the perception of the device and its use.

The first one is the complexity challenge; this limitation draws a knowledge barrier that sets apart non-experts from getting access to these technologies. Ph.D. Samuel recalls: "All the tools we have created (...) maybe have thousands of millions of samples that we could not process with previous technologies. When I did my Ph.D., we couldn't dream of thousands of neurons if the ANNs because it would have been so slow with the technology we had at the time" (Samuel, Min 8:50 - 9:26). Leaving, in this way, AI as a tool that is being used by few companies that have access to big data sets.

The second one is its use; "The limitations are, as always, with any what technology is what we do with it. I mean with nuclear technology you can create good quality electricity, or

you can make bombs, so technology has no moral, it is only the way it is used (...)." (Samuel, Min 10:04 – 10:33).

Additionally, "It cannot imagine what it has not been trained for" (Cedric, Min 13:20-13:33). An example set by Cedric was how when Apple released its feature of face recognition, it only recognized white people (Americans and Europeans) and all the minorities were recognized as if they were the same person (Asians, black people). This Bias is due to its information training data. Once again, it is not the technology that is judging and having prejudices, it is the inferring process it makes out of the model. "AI is not racist it is just reflecting what it has been trained on" (Samuel, min 15).

Amy Vu, marketing specialist, and AI researcher amplify the message about making data more diverse. To do that, she believes that the companies that create the AI models should ensure that it gathers a very diverse group of developers to get a holistic point on the subject matter. Another way to solve bias was mentioned by Arthur Pignet (Federated Learning researcher), it relies on rebalancing the data before training the models. To do so, when identifying a bias of a minority not being represented, for instance, you will need to multiply its importance on the data to match the inequality (min 21- 23).

Arthur Pignet argues "For me, AI is not really able to create (...) basically what those algorithms are doing is interpolation in the sense that they have two data and they are searching the data points between them, but they are doing it in such good way that the result is totally what we want (..) the model will always do exactly you asked for (...) that means optimizing a specific loss" (min 12- 15).

Finally, another question was raised by two of the speakers (Jeremy Diez and Ljupka Naumovska) concerning the implications that the implementation of AI will have in an environmental way. Since storing and processing data consumes energy and this at the same

time has a negative impact for the environment. Nonetheless, “if used correctly (AI) it can help us to save some energy”.

3.4.4. AI implementation. The triggering questions on how marketing teams and new venture creators implement AI in their activities developed conversation among the speakers. For marketers, Ph.D. Naumovska insists on three main points to easier its implementation first by acknowledging that it is unavoidable, second by accepting the benefits, and third by facilitating the change by using case studies and finally by encouraging the non-marketing people to raise a conversation crosssectoral about its implementation to break the differences and adapt the language for Marketers to adapt to this new technology. What is interesting is that she proposes a method where, in order to implement Artificial Intelligence in marketing, the most relevant aspect relies on the identification of benefits and the encouragement of the change as an unavoidable process. Its main gains highlighted by the speakers were efficiency, productivity, and error decrease. All the speakers agreed that It is indeed a promising tool that will keep being implemented in exponential ways and that it will keep evolving as time goes by. We should prepare our teams and individuals to adapt to AI, take the lead in disrupting this technology and increase our curiosity to open up new possibilities with a focus on having a good impact.

Update processes that involve AI should come from reflectional thinking that analyzes what processes can be upgraded by AI, Dripta Lahiti, a marketing strategist propose that marketers need to start preparing to adopt AI in their processes(min 21); there can be tools that can make decisions for us in social media marketing to ameliorate the outputs.

3.4.5. Future of marketing and AI. All our participants agreed that marketers, designers, artists, and other professionals will not be diminished in the short or middle term. As with

any other revolution, at a certain point, fewer professionals are needed, but there will always be space for us in the creative industry.

Samuel, an AI expert says: “in marketing, I think we went already too far with it, and I tell this because I worked in the sector (...) I was the CTO at a retargeting company for insurance and it is crazy how much information you can have about someone just by knowing the pages he is surfing on. So, we were retargeting very precisely on many subjects just by looking at what you do (...)” (Samuel, Min 24 – 26).

Amy Vu, the marketer at Owking and AI researcher, added that the future of marketing is optimistic. So far, she is using AI to find the optimal times to post on social media and automatically schedule them based on actualized data, to define her audience, collect the audience profiles to recognize them and analyze their audiences. To sum up, she believes it is a very interesting and innovative endeavor that should be taken into consideration by marketers across industries to perform better their campaigns and using AI will allow them to achieve actionable insight with risk reduction. However, she emphasizes on being careful about the ‘overreliance’ on this technology since it should always be guided and supervised by human beings. “AI is an excellent assistant to digital marketers, in terms of automated or monotonous tasks” (min 25).

Abderrahim, a data scientist expert, raised a relevant topic regarding when an AI algorithm will deliver a reliable output and when it wouldn't. His approach to this problem was related to two main work experiences he had. The first one was in a banking project assistance. The objective of it was to allow its clients to receive automated recommendations on their different types of banking projects, this program had different constraints: first, the regulatory process, then it did not have many tasks to be recommended and in that sense, the lack of data didn't allow them to implement AI in the right way. This study concluded that it was easier to

have humans during the process rather than machines because it was not complex enough for it to be fully automated.

His second project was related to creating recommendations for personal training for the employees of his university. Since they had more than 100 employees and more than 900 different trainers, so in this case, the machine had enough data for it to analyze each one of the employees and recommend in a most appropriate way which will be the best trainer that will adjust to their needs.

We can infer from his experiences that there is a strong dependence on good quality data for the machine to bring a reliable output and that can be used later as a value bringer to a specific process and company. AI learns from the data it has been taught, it will never innovate. “That is what we called the cold entrance issue. That is when you don’t have enough data” (Abderrahim, min 7:49).

In marketing, its significant gains, according to Ph.D. Ljupka Naumovska remains on the landscape that gets open to the customer experience by AI implementations that lead to usercentric actions. The conversation company-user will become much more meaningful, creating an impactful role for the customer, and allowing them to participate in the creation of products and services as never before.

Antonina Firsova conveys that AI will be a significant subject for marketers. Given the inputs, AI will arrive at a point where it can create a marketing plan, according to her. She argues that AI will keep evolving, and planning can be doable in the next few years.

3.4.6. AI and new ventures. Antonina Firsova, a Marketing manager with vast experience in new ventures, says that most of the time entrepreneurship do not have enough resources to allocate to marketing and that, in those cases implementing AI can bring a lot of added value (min 20). Drip Lahir, marketing strategist at Owkin, adds that AI can reduce or diminish error (min 25); this for new ventures can also be translated as A/B testing more reliably.

Luis Mogollon, Colombian social entrepreneur of Revivelo Jeans, a startup that recycles used jeans and converts them into usable objects. He argues that social media is now the main channel for them to promote their products, tell their story and gain trust among their clients. In this way, he uses analytical tools and data boosts that allow him to fasten up his decisionmaking process relying on the suggestions. He believes that AI will have the availability to take on human tasks such as finance or even marketing and that it is relevant to start figuring out how to implement them in his business.

Daisy Reza, co-founder of Digital Solutions in Mexico, an ERP that helps medium and small companies to adapt an affordable program to solve the administrative inquiries they might have. She sustains, “I am pro AI and technology” (min 13), “for technology companies, this is the most” – (Daisy, min 22), meaning that remaining open to implementing AI should now be a priority for them to accelerate growth. Nonetheless, she believes that there might be a human challenge among their employees, but education has to remain prioritized with the objective of appropriating new tools in a pedagogical way, therefore, their employees have adaptation weeks to bring support to their teams in the technological team's (min 31:30).

4. Analysis & results

AI has evolved and keeps disrupting the limits of what we initially thought possible in the technological field. The future impacts of this technology in our lives, works, society and environment are not measurable yet as it is a developing tool. Nonetheless, one thing is sure: it will change the way we are used to living. This innovation has merged among different sectors, being utilized by several professionals that now find help from the implication of AI, the way it is processing, correlating, analyzing, learning from data, and driving expected outputs to solve complex problems with multiple variants and large amounts of data structured or unstructured.

Artificial intelligence is helping out companies, transforming and optimizing operations. Entrepreneurial action will change as well with the emergence of AI and its accessibility. Therefore, according to (Townsend, D., & Hunt, R., 2019). the application of AI-boosted tools in entrepreneurship offers new ways of solving uncertainty and identifying new entrepreneurial opportunities.

Marketing is one area that enjoys the improvements that AI has had in the last decade. It will keep involved in its processes; that way, being actualized and proactive about this tool is relevant. “To achieve successful marketing strategy, it is necessary to follow up on new social trends and to keep interaction with the customer” (Thiraviyam, T., 2018). Marketing teams should then prepare for the inevitable: AI implementation throughout their efforts. The creative industry as a whole will be especially touched by AI and its innovations; in that sense, being aware of its uses and taking advantage of them would have a positive impact in their activities.

Challenges, especially discriminatory ones, were analyzed, including technical solutions and human resource allocation it was concluded among the speakers that even if it will definitely has an impact in human resources and its allocations since AI will take on some task that are now done by humans, there will be emergence of new roles that will . Additionally, several speakers raised copyrights and environmental issues; these issues were left open to future research.

5. Conclusions & Practical recommendations

When talking about AI, a whole world of complex possibilities has already shown its potential in current society. It has directly impacted almost every sector and industry and is adopted to transform data and optimize processes. AI has a positive relationship with CP, which is one reason why we see it more and more mentioned across companies (Ramaswamy, S.

DeClerck, N. 2018). It has revolutionized the way routine actions take place and has shown a tremendous added value for its capabilities, improving productivity, accuracy, and more proactive operations. ANNs are a simplified version of the complex connection that human neurons perform (El Achi, H., & Khoury, J. D. (2020.); processing problems with a large amount of data in multifactor situations and bringing out outputs that are as precise and efficient as ever before; creating actionable insights and leveraging the data in an organized and relevant way that serves in the decision-making processes (França. R., Borges. A., Monteiro.R., Yuzo.I., 2021).

What has just been described looks exactly like the right formula for new ventures since not only are these solutions bringing high value in a fast-paced process, but it is also filling up the gap existing between the lack of employees and the necessity of delivering fast. Hubspot (2022) described AI as having a performant intern that needs always to be supervised, but that can come with extraordinary ideas and transform processes. That is how AI should be treated, as an intelligent assistant; in that sense, this paper analyzed several software using AI that is, at the same time, incentivizing new ventures to be part of the technological revolution and take the lead on its implementation.

AI has transcended all areas within a company and across industries. This paper was primarily focused on marketing implementations. New ventures should implement AI to boost their activities by leveraging their data through software such as Google Analytics and Hubspot. But it does not stop there; the creative industry is now facing a considerable impact by applications such as Dalle-e 2; it should not be taken as a threat but rather as a tool that is now available to help in the ideation, creation, and delivery process.

Marketing is an art that involves analytical data and creativity expressed as designs, and campaigns, among others. The objective of Marketing is to drive potential leads to become clients. Nevertheless, in that process, we encounter competitors, an environment that is

constantly changing, and usually, when in a start-up, not many marketing colleagues. In that sense, using AI tools is now a prioritized recommendation for marketers since it helps in decision-making (K. He, X. Zhang, S. Ren and J. Sun, 2016) bringing competitive advantage and automating repetitive processes while getting insightful recommendations.

AI has been created to serve humans and society. It should always be used to improve processes and bring data-based, reliable, and expected outcomes that drive positive human changes. Marketing will transform in a way we cannot preview now, but as marketers and startups, we must be ready to take the leap and embrace the change. “It will change how people interact with information, technology, brands and services.” (Thiraviyam, T. 2018).

Penetration of AI in organizational processes results in a fear of them taking over human task and replacing decision-making (Jarrahi, M. H.,2018). Nevertheless, the speakers insisted unanimously on the iterations and relevance that humans should have when using AI based on generative models. Bias, inherent to the training data set, might appear when using AI, therefore being aware of this, as well as how to identify, treat and eliminate it, is extremely relevant to avoid discrimination or any other problem. In that sense, the role of humans in the decision-making process is unquestionable (Jarrahi, M. H.,2018).

Challenges inherent to AI should be taken into careful consideration. In that sense, to avoid bias that AI might encounter in the data set it has been trained on, keeping the data as diverse as possible will prevent discriminatory outputs (Ntoutsis E., et al., 2020). Delimiting bias is necessary when working with AI that implements generative models. Some of the solutions rely on multiplying the importance of minoritized data to equalize it from the majoritarian data. Keeping the training data monitored and supervised can also help identify bias quicker and avoid major consequences.

There was a question left open that bloomed out of the interviews regarding the impact of implementing Artificial Intelligence in the environment since it represents a tremendous

amount of energy waste and might have environmentally adverse effects. This topic is especially encouraged for future researchers.

6. Limitations & Future Directions

The main limitation remains that Artificial Intelligence is a technology that keeps evolving. Therefore, this paper's analysis might be useless in a few years when there are new softwares, applications, implementations, and discoveries. On the other hand, the limited amount of data available for AI implementation in marketing for new ventures represented a gap that this paper tried to fill up. Finally, the coordination with new venture representatives (Founders, CEOs) for the methodology process was postponed several times, leading to recurrent changes in the speaker selection.

Future directions might analyze:

- I. The challenge that represents a bias in AI boosted marketing. How to identify, avoid and eradicate it.
- II. How is positioning and customer perception affected by a company implementing AI.
- III. AI: regulation, limitations, and copyrights.
- IV. Human resources repercussions of AI implementation in the recruitment process.
- V. AI and Sustainability: What will be the implications of Big data and AI in terms of sustainability and how to diminish them?

7. Bibliography

- Acxiom. (2022). *Better customer experiences through the ethical use of data and technology*.
<https://www.acxiom.com>
- Alpert, L. and Gatty, R. (1969), “Product positioning by behavioral life-styles”, *Journal of Marketing*, 33 (2), 65-69.
- Boden, M. (1998). creativity and Artificial Intelligence. *Artificial Intelligence*, (103), 347 - 356.
- Brooks, R. (1991). Intelligence without representation. *Artificial Intelligence*. (47), 139-159.
- Clarke, V., & Braun, V. (2013). *Successful qualitative research: A practical guide for beginners*. Sage.
- Davenport, T., Grewal, D., & Bressgott, T. (2020). How artificial intelligence will change the future of marketing. *Journal of the Academy of Marketing Science*, 24-42.
- De-Bruyn, A., Beh, Y., & Brock, J. (2020). Artificial intelligence and marketing: Pitfalls and opportunities. *Journal of Interactive Marketing*, (51), 91 - 105.
- Dougherty, C. (July 1, 2015). Google Photos Mistakenly Labels Black People ‘Gorillas’. *The New York Times*.
<https://archive.nytimes.com/bits.blogs.nytimes.com/2015/07/01/google-photos-mistakenly-labels-black-people-gorillas/>
- El Achi, H., & Khoury, J. D. (2020). Artificial intelligence and digital microscopy applications in diagnostic hematopathology. *Cancers*, 12(4), 797.
- França, R. P., Monteiro, A. C. B., Arthur, R., & Iano, Y. (2021). An overview of deep learning in big data, image, and signal processing in the modern digital age. *Trends in Deep Learning Methodologies*, 63-87.
- Freddie Wilkison. (2020). Industrial Revolution and technology. *National Geographic*, 2.
- Goodfellow, I., Bengio, Y., & Courville, A. (2016). *Deep learning*. The MIT Press.
- Hubspot. (2022). *Grow better with HubSpot*. <https://www.hubspot.com>
- IBM Cloud Education. (2020). What is Machine Learning?.

- https://www.ibm.com/cloud/learn/machinelearning?utm_medium=OSocial&utm_source=YouTube&utm_content=WAIWW&utm_id=YTDescription-101-Machine-Learning-vs-Deep-Learning-LH-What-Is-Machine-Learning
- IBM Cloud Education. (2022). Watson is AI for smarter business. <https://www.ibm.com/watson/advantage-reports/future-of-artificialintelligence/ai-innovation-equation.html>
- Janiesch, C., Zschech, P. & Heinrich, K. (2021). Machine learning and deep learning. *Electron Markets* 31, 685–695 <https://doi.org/10.1007/s12525-021-00475-2>
- Jarrahi, M. H. (2018). Artificial intelligence and the future of work: Human-AI symbiosis in organizational decision making. *Business Horizons*. 61(4), 577-586. <https://doi.org/10.1016/j.bushor.2018.03.007>
- K. He, X. Zhang, S. Ren and J. Sun (2016) Deep residual learning for image recognition, *IEEE Conference on Computer Vision and Pattern Recognition*, 770-778
- Kozinets, R., & Gretzel, U. (2021). Kozinets, R. V., & Gretzel, U. (2021). Commentary: Artificial Intelligence: The Marketer's Dilemma. *Journal of Marketing*, 85 (1), 156-159.
- Lindebaum, D. (2020). Insights from "The Machine Stops" to better understand Rational assumptions in algorithmic decision making and its implication for organizations. *Academy of Management*, 45 (1), 247 - 263. DOI:10.5465/amr.2018.0181
- Lynn, M. (2012). Segmenting and targeting your market: Strategies and limitations. The Cornell School of Hotel Administration on Hospitality: Cutting edge thinking and practice, 351-369.
- Mark A. Runco & Garrett J. Jaeger (2012) The Standard Definition of Creativity, *Creativity Research Journal*, 24 (1), 92-96, DOI: [10.1080/10400419.2012.650092](https://doi.org/10.1080/10400419.2012.650092)
- Miikkulainen, R., Iscoe, N., Shagrin, A., Rapp, R., Nazari, S., McGrath, P., ... & Lamba, G. (2018, April). Sentient ascend: AI-based massively multivariate conversion rate optimization. In *Thirty-second AAAI conference on artificial intelligence*. 32 (1), 1-8. <https://doi.org/10.1609/aaai.v32i1.11387>
- Moore, G. A., & McKenna, R. (1999). *Crossing the chasm*. HarperCollins.
- Nair, K., & Gupta, R. (n.d.). technology in modern digital marketink environment. *Journal of Interactive Marketing*, 51, 91-105. [10.1108/WJEMSD-08-2020-0099](https://doi.org/10.1108/WJEMSD-08-2020-0099)

- Nambisan, S., Wright, M., & Feldman, M. (2019). The digital transformation of innovation and entrepreneurship: Progress, challenges and key themes. *Research Policy*, 48 (8), <https://doi.org/10.1016/j.respol.2019.03.018>
- Ntoutsis, E., Fafalios, P., Gadiraju, U., Iosifidis, V., Nejdil, W., Vidal, M. E., ... & Staab, S. (2020). Bias in data-driven artificial intelligence systems—An introductory survey. *Wiley Interdisciplinary Reviews. Data Mining and Knowledge Discovery*, 10(3), 1-3, e1356. [10.1002/widm.1356](https://doi.org/10.1002/widm.1356)
- Strusani, D., & Hounghonon, G. V. (2019). The role of artificial intelligence in supporting development in emerging markets. *Fresh Ideas about Business in EM compass*. (69), 1-8.
- Obschonka, M., & Audretsch, D. (2019). Artificial intelligence and big data in entrepreneurship: a new era has begun. *Small Business Economics*, 55 (1), 529-239.
- Open AI. (2022). Dall-e 2. <https://openai.com/dall-e-2/>
- Open AI. (2022). DALL-E 2: Extending Creativity. <https://openai.com/blog/dall-e-2-extending-creativity/>
- Pelico. (2022). *Take back control on your factory operations*. <https://www.pelico.ai/>
- Ramaswamy, S., & DeClerck, N. (2018). Customer perception analysis using deep learning and NLP. *Procedia Computer Science*, 140, 170–178. <https://doi.org/10.1016/j.procs.2018.10.326>.
- Ramesh, A., Pavlov, M, Goh, G., & Gray, S. (January 5, 2021). *Dall-E: Creating Images from Text*. <https://openai.com/blog/dall-e/>
- Riccio, T. (2021). Sophia Robot: An Emergent Ethnography. *The Drama Review*, 65(3), 42-77. [doi:10.1017/S1054204321000319](https://doi.org/10.1017/S1054204321000319)
- Runco, M. A. (1988). Creativity research: Originality, utility, and integration. *Creativity Research Journal*, 1(1), 1–7.
- Russell, S. J., & Norvig, P. (2013). *Artificial intelligence: A modern approach*. Pearson Education.
- Saqib, N. (2020). Positioning- a literature review. *PSU Research Review*. 5 (2), 143- 145.
- Sarasvathy, S. (2000). Report on the seminar on research perspectives in entrepreneurship. *Journal of Business Venturing*. 15, 1- 57.
- Schmidhuber, J. (2015). Deep learning in neural networks: An overview. *Neural Networks*, 61, 85–117. <https://doi.org/10.1016/j.neunet.2014.09.003>.

- Shepherd, D., McMullen, J., & Jennings, D. (2007, November). The formation of opportunity beliefs: overcoming ignorance and reducing doubt. *Strategic Entrepreneurship Journal*, 1(2), 75-79. 21. 10.1002/sej.3
- Shrestha, Y. R., Krishna, V., & von Krogh, G. (2021). Augmenting organizational decision making with deep learning algorithms: Principles, promises, and challenges. *Journal of Business Research*, 123, 588–603. <https://doi.org/10.1016/j.jbusres.2020.09.068>.
- Townsend, D., & Hunt, R. (2019). Entrepreneurial action, creativity and judgment in the age of artificial intelligence. *Journal of Business Venturing Insights*, 11, e00126. <https://doi.org/10.1016/j.jbvi.2019>.
- Vox. (2022, June 1). The AI that creates any picture you want. Explained. [video]. Youtube. <https://www.youtube.com/watch?v=SVcsDDABEkM>
- Wu, J., Wen, N., Dou, W. and Chen, J. (2015), "Exploring the effectiveness of consumer creativity in online marketing communications", *European Journal of Marketing*. 49 (1/2), 262-276. <https://doi.org/10.1108/EJM-03-2013-0148>
- Xu Han,Zhengyan Zhang,Ning Ding,Yuxian Gu,Xiao Liu,Yuqi Huo,Jiezhong Qiu,Yuan Yao,Ao Zhang,Liang Zhang,Wentao Han,Minlie Huang,Qin Jin,Yanyan Lan,Yang Liu,Zhiyuan Liu,Zhiwu Lu,Xipeng Qiu,Ruihua Song,Jie Tang,Ji-Rong Wen,Jinhui Yuan,Wayne Xin Zhao et al. (2021) Pre-trained models: Past, present and future. *AI Open*. 2, 225-250. <https://doi.org/10.48550/arXiv.2106.07139>