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THE USE AND INTEGRATION OF GENERATIVE AI IN THE CREATIVE INDUSTRY

Guidelines for the integration of generative AI tools in the corporate environment of the creative industry

MÓNICA ARCHER ENTRUDO PEREIRA DA SILVA

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NOVA Information Management School
Instituto Superior de Estatística e Gestão de Informação
Universidade Nova de Lisboa

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By

Mónica Archer Entrudo Pereira da Silva

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Supervisor: Professor Vítor Duarte dos Santos

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STATEMENT OF INTEGRITY

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism or any form of undue use of information or falsification of results along the process leading to its elaboration. I further declare that I have fully acknowledge the Rules of Conduct and Code of Honor from the NOVA Information Management School.

Mónica Archer

Lisbon, July 2024

ABSTRACT

For decades, technological advancements have revolutionized the working landscape. From industrial-age machines to computers and the internet, human's productivity has improved and became more efficient. The era of generative Artificial Intelligence (GAI) promises similar transformative potential by enabling machines to mimic human cognitive tasks through expansive neural networks. The advantages of new technologies and tools are clear, however their integration and adoption specifically in the creative industry are still evolving. This research aims to investigate the integration and use of GAI tools in the creative process of professionals in this industry. Through a design science research, an initial literature review was conducted to gather and understand the current state-of-art regarding AI, GAI and Creativity. This review was followed by the development of an online survey tackling the main barriers and opportunities of the use of GAI tools in the creative industry, its effectiveness, and current usage within creative teams in Portugal. The artifact of the research is a set of actionable guidelines based on the key findings of the literature review and online survey that will allow creative industry companies to have directions when integrating a GAI tool in their creative workflows. As so, this research aims to bridge the gap between AI potential and practical application in creative contexts, ultimately offering insights into leveraging AI for competitive advantage.

KEYWORDS

Artificial Intelligence; Creative Industry; Technology; Innovation; AI Driven Innovation; Creativity; Productivity; Generative AI; Creative Process; AI Limitations; Portugal

Sustainable Development Goals (SGD):

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LIST OF ABBREVIATIONS AND ACRONYMS

AI	Artificial Intelligence
ANN	Artificial Neural Networks
AR	Augmented Reality
DSR	Design Science Research
GAI	Generative Artificial Intelligence
IT	Information Technology
R&D	Research and Development
VR	Virtual Reality

1. INTRODUCTION

1.1. BACKGROUND AND PROBLEM IDENTIFICATION

For decades, technology and revolutionary breakthroughs have changed the working landscape. From the industrial-age machines to computers and the internet, workers have been enabled to accomplish much more much faster. Technology has facilitated the performance of individual daily tasks that allowed employees to reallocate their time to other more important tasks (Chui M. et al, 2023).

The potential of generative Artificial Intelligence (GAI) lies within the previously mentioned power that technology has given to humans through the years (Haase, J. 2023). To grasp its full potential, it's needed to understand the journey of AI. Artificial intelligence is the machine's capability of mimicking human cognitive tasks, acting as an intelligent agent that can perceive, learn and interact within an environmental input (Boden, 2016; Jarrahi, 2018). More specifically, generative AI is constructed upon foundation models with expansive neural networks (Chui M. et al, 2023). These neural networks are based on the way neurons connect and interact with the human brain (Hawkins, 2021), meaning that it can continuously learn, recognizing the patterns and applying the learnings in new data.

Since the launch of ChatGPT in November 2022, the world has awakened for generative AI however, it has been around for a long time (McKinsey & Company, April 2023; Russell and Norvig, 2016). The use of AI is already a crucial component of business growth in several industries (Markiewicz and Zheng, 2018). When deep diving into the corporate world, AI is actively used as a tool to support big data collection and analysis, using business intelligence, process automation, chatbots and other data mining processes to interact with consumers and analyzing their behavior (Chung et al., 2018; Chan and Ip, 2011). Despite being mainly used in the execution perspective, AI also offers tactical and strategic potential (Martínez-Lopez and Casillas, 2013). For example, according to a study, within the context of developing a marketing strategy in a hybrid intelligent system, the suggestions generated by AI were aligned with managers' judgment, highlighting the potential for accurate outputs (Li, 2000). However, despite the valuable insights AI could produce, it's still "the beginning" of this revolutionary field, meaning there are still a lot of opportunities and risks to take into consideration when integrating AI solutions in the business (Dale, R. 2021). For example, since the models are trained on the internet, they can produce biased, inaccurate, or plagiarized results confidently (Else, H. 2023; Venema, L. 2023). To mitigate this risk, a solution companies can explore is using a more personalized data model in order to control the data set in which the model is trained and keep a human in the loop to check the output result before it is used (McKinsey & Company, April 2023).

As mentioned before, due to its capability to learn and self-program, AI can produce unexpected results, sometimes seen as creative (Kirkpatrick, K. 2023). This capability can potentially be very helpful in the creative industry however the plagiarism concern still needs further legislation development in order to be more widely used (Frosio, G. 2023; McKinsey & Company, April 2023). Despite the challenges, researchers have delved deeper into the possible capability of AI's creativity. As defined by Boden M., creativity involves the combination, exploration or transformation of ideas (Boden, 2009). These ideas should be novel and valuable either to the individual ("p-creative") or to history, i.e. ideas never seen before ("h-creative") (Boden 2004). Since AI can replicate the human mind, it should be possible to model creativity (Boden 2009). Some AI tools like ChatGPT and DALL-E are already being used for content creation (Frosio, G. 2023; Chui 2022). When the input given by humans is detailed

and precise, AI's output can be suited for the business context. However, when creativity is needed, it is harder for AI to suggest groundbreaking ideas with the input given since it lacks the understanding of cultural and environmental contexts (Boden 2009). As mentioned before, the data on the internet can be biased and AI is still not capable of adjusting and filtering the bias.

Despite the challenges, companies are continuing to invest in AI. According to McKinsey's state of AI in 2022 survey, the adoption of AI models in companies worldwide has more than doubled since 2017 (McKinsey & Company, April 2023). When considering these investments alongside with generative AI developments in the creative area, a question is raised about the potential impact of these new models and tools in the creative process and decision-making of companies. In the rapidly evolving business landscape, leveraging AI tools can potentially become a competitive advantage for companies and brands.

The purpose of this research is to review some AI tools that are being used within the creative industry and evaluate how they are impacting the creative process of professionals, alongside with the companies' adoption of these tools in Portugal. These interrogations lead to the formulation of the following research questions:

RQ1: How can creative professionals leverage GAI tools?

RQ2: How should companies integrate these tools in the creative process?

1.2. OBJECTIVES

The goal of the research is the development of a set of recommendations that will guide companies from the creative industry on how to introduce and integrate Generative AI tools within the creative workflow.

In order to achieve this goal, the following intermediate objectives were defined:

- Find what are the main challenges and barriers when using AI tools for creativity purposes;
- Study which AI tools are available for creative professionals and how they can help the creative process;
- Evaluate the impact of the use and integration of generative AI tools in the daily life of creative professionals, through a survey that can be answered within all creativity contexts (from marketing to copywriting);
- Analyze the survey outcomes;
- Make a meaningful discussion of the results and extract guidelines.

1.3. IMPORTANCE AND RELEVANCE

Studying the integration of AI and its impact on creativity will lead to a better understanding of the industry and the creative process itself. This research will provide insights into how AI may affect creativity and empower companies.

According to Mckinsey&Company, approximately 75 percent of the value possibly delivered by generative AI falls into four areas: customer operations, software engineering, marketing and sale, and R&D (Mckinsey & company, June 2023). Despite having the potential to empower employees and improve their productivity, AI integration implies support through the transition and learning new skills

which should be encouraged and endorsed by the company (Ameen, 2022). This research aims to clarify the challenges faced by employees already using AI tools and to identify the obstacles and barriers to start using it.

Furthermore, a closer exploration of the creative industry's adoption of AI can elucidate how generative AI can improve employees' capabilities and be used to enhance human's creativity instead of replacing it (Vakratsas et al. 2020).

Since the methodology of this research will be focused on Portuguese creative professionals, it will shed light on the current state of generative AI adoption in the working environment in Portugal. These insights will be relevant for companies to acknowledge where they stand, have a benchmark, and evaluate the risks and opportunities of integrating AI tools.

Finally, the study of the creative process through AI can offer new methods for studying creativity in psychology (Gobet 2019). This might happen because AI, especially generative AI, simulates the human mind but with a higher capability to access and process data, simulating complex worlds that challenge human creativity in ways never imagined before (Gobet 2019). The unexpected connections and relations between concepts and ideas can trigger new relationships that are usually assigned to creativity. Despite not being the focus of this study, underlying insights regarding the use of generative AI tools can be further explored by researchers, correlating them with creativity in psychology.

2. LITERATURE REVIEW

In the following chapter, a literature review will be conducted, corresponding to the rigor cycle of Hevner's Design Science Research (DSR) approach. The different segments of the chapter will explore and intercorrelate concepts such as creativity, technology, creative process, and artificial intelligence. The first segment examines the foundational definitions of creativity and theories regarding the steps of the creative process. Further, the impact of new technologies on creativity is evaluated by analyzing which tools have been created to aid the creative process and in which ways these technologies have helped the creative industry to evolve. Finally, artificial intelligence is explained in the context of the creative industry and its potential correlation with creativity is further analyzed. Subsequently, the usage barriers, opportunities, and challenges of using generative AI in the creative industry are explored according to the current state-of-art.

2.1. CREATIVITY AND THE CREATIVE PROCESS

Creativity tends to be judged as "is" or "is not" creative. However, as mentioned in the introduction, scientific literature details creativity as something more complex. It can involve the combination, exploration or transformation of ideas that can be new and valuable to the individual or to history (Boden 2004). Defined more broadly as "creating something new and useful" (Seidel, S. 2020; Runco & Jaeger, 2012), creativity can be explored through various approaches.

The creative process has been historically defined by a four-stage framework that culminates in the generation of creative ideas or solutions (Lubart, 2001). In this model, the first stage involves preparation, through which individuals gather information and acquire knowledge that is relevant to the creative task or objective. The incubation phase follows, allowing the artist's subconscious to process information, leading to the emergence of novel insights and ideas that culminate in the "aha" moment, the illumination stage (Lubart, 2001). The final phase is the verification, in which the idea is evaluated, refined and adapted for feasibility and effectiveness, completing the creative process framework (Lubart, 2001).

The four-stage framework has been challenged by Lubart (2001) who suggests several recommendations for changes and adaptions of this model. He emphasizes that the creative process is non-linear, and its iterative nature should imply more flexibility and reiteration among stages. This acknowledgment allowed a deeper understanding of how individuals navigate through the creative process, which can be unpredictable and volatile. The creative process requires several subprocesses that can occur in varied sequences, leading to diverse solutions and ideas. These subprocesses can have different external and internal influences, which may affect the final solution. Factors such as emotional state, skill level, problem-solving capacity and even the forgetting process of each artist may play a role in reaching different outcomes (Lubart, 2001). Mary-Anne Mace and Tony Ward (2002), further contributed to Lubart's insight by emphasizing the context-specific nature of creativity, highlighting the dynamic interaction between the artist and the creative process, and the psychological barriers and challenges that come along the way of creating something new (Mace and Ward, 2002; Cropley, D. 2023).

2.2. TECHNOLOGICAL ADVANCEMENTS THAT FUEL CREATIVE EXCELLENCE

Within the dynamic context of modern times, the creative landscape continues to change. As mentioned before, the creative process is complex and varies from artist to artist, having several internal and external pressures that impact the result. Through time, advancements in technology have allowed the development of diverse tools that can help artists and professionals in this search for creativity. From script writing, designing, photography editing and videography to music production, the access to resources has been democratized, allowing individuals from different backgrounds to foster their inner creativity, cultivating innovation and inclusion within the creative industry (Arrington, 2023). Some examples of these tools within the photo editing landscape are Adobe Photoshop, Illustrator and Lightroom; in video editing there's Adobe Premiere Pro and OpenShot and other multilayered tools such as Canva, which are very useful for both professionals and amateurs in their creative pursuits. In some of these tools, there's already generative artificial intelligence integrated within its use which has significantly broadened the scope of creative exploration. Other GAI tools include DALL-E and ChatGPT which have helped to pave the way for artificial intelligence and serve as a catalyst for creativity, allowing individuals to focus on the creativity itself rather than the intricacies of the production process, as further explored. Additionally, other technologies focused on the consumer experience have also been developed, reshaping the user experience, and broadening the horizons for artistic expression. For example, virtual and augmented reality (VR and AR) offer interactive and immersive possibilities that redefine creative boundaries (Arrington, 2023; Abbasi et al. 2017).

2.3. THE SYNERGY BETWEEN ARTIFICIAL INTELLIGENCE AND CREATIVITY

The emergence of Artificial Intelligence (AI) traces back to the early 20th century, with the term "AI" emerging in 1956 at Dartmouth, which marked the pursue of the creation of a "fully intelligent machine" (Hawkins, 2021; Mitchell, 2019). The General Problem Solver (Newell et al., 1959) and ELIZA (Weizenbaum, 1966) have marked the first two decades of developments in AI, demonstrating its potential. Despite the early successes and progress, the challenge of replicating human intelligence persevered due to the lack of understanding of the human mind and the complexity of reproducing intelligence (Boden,2016).

The promising start of AI developments faced setbacks due to reduced investment on the industry and processing capacity limitations, leading to a stagnation of the technology. However, in the past decade, there has been a remarkable resurgence of AI marked by notable milestones such as AlphaGo in 2015 and ChatGPT in 2022 (Fui-Hoon Nah, F., et al. 2023).

Present-day AI is mainly powered by deep learning developments based on artificial neural networks (ANNs), which mimic the human brain's network (Boden, 2016; Hawkins, 2021, p.119). Despite the outstanding developments on ANNs, the quest for human-like intelligence remains challenging due the previously referred complexity of simulating the neural network of a human brain (Hawkins, 2021). Regardless of the significant achievements in creating intelligence-related skills in AI tools, such as learning and processing (Boden, 2016), it continues to be debated whether AI can possess knowledge or consciousness (Hautala, 2021; Hautala & Jauhiainen, 2022; Hawkins, 2021).

Currently, with the open availability of generative AI (GAI), it is possible to rethink how we work and create (Frogio, G. 2023). Unlike the previous emergence of new technologies that could only aggregate

the current knowledge, AI can learn and develop new insights and solutions, being highly disruptive to the industry (Haase, J. 2023). GAI tools can be used to facilitate decision-making processes since they can detect patterns in large data sets that wouldn't be possible to humans. The ability of learning through a wide data base and adapting to new situations, is resulting in the increased relevance of these tools in the corporate world. Through the automation of mundane tasks, employees can focus on other tasks that require a higher-level complexity and even creativity (Pistrui, J. 2018; Wingström, R. et al. 2022).

As previously highlighted, GAI tools have a growing potential in assisting various human tasks, becoming increasingly relevant to explore how they can support and enhance human creativity (Cope, D. 2005; Reddy, A. 2022). The ongoing debate in the creative industry revolves on whether AI can genuinely be creative or if it simply recognizes knowledge and information, and combines it in new ways (Kirkpatrick, K. 2023).

If the broader definition of creativity is considered – "creating something new and useful" (Seidel, S. 2020; Runco & Jaeger, 2012) – GAI has proven to be creative through the generation of music compositions (Cope, D. 2005), reproduction of artistic styles (Elgammal, Liu, Elhoseiny, & Mazzone, 2017), and the development of new visual outputs based on written prompts. These demonstrations were possible due to the training of the neural networks on millions or even billions of examples of a specific output. The network learns the patterns and distinctive attributes of the provided examples which enables the generation of new results and solutions, considering the input given. However, it's important to note that the complexity of the resulting patterns and correlations is directly influenced by the number of "layers" or "depth" within the model (Keith, K. 2023). As so, despite being conceptually creative, the relevance and significance of GAI's outputs remains uncertain (Haase, J. 2023).

As mentioned before, human's creative process is not linear and so the capacity of "being creative" does not necessarily mirror the complete creative process observed in humans. Effective idea production requires a deep understanding of the preceding problem, with criteria established to identify suitable ideas for the defined challenge (Laxer, M. 2022). Human's creative process is also influenced by situational, personal and emotional occasions which would be very complex to replicate with GAI (Cropley, D. 2023). However, there are constraints on the human's creation process due to rationality and creativity correlation, which follows Simon's theory of bounded rationality - a decision maker's ability to make rational choices is significantly limited by constraints in knowledge and computational capacity (Simon, 1956, 1997; Gobet and Lane, 2012; Gobet, 2016a). As Bilalić et al. (2008) demonstrated, even experts can be influenced by their own knowledge, leading them to favor conventional answers over novel and superior alternatives. This phenomenon, known as the Einstellung effect, illustrates the difficulty in finding alternative solutions when a familiar one initially comes to mind. As so, to further cultivate creativity and discover new conceptual spaces, it's important to break these cognitive mindsets either by converging specific concepts or by taking divergent approaches. GAI can be used as a tool to break the status quo since AI systems are less prone to cognitive biases and can offer valuable alternatives (Gobet, F. 2019).

The counterargument against GAI's creative potential revolves around two interconnected points: the perceived lack of connection to the real world, more specifically with emotions and imagination; and the alleged inability to achieve "actual" creativity parallel to Big-C endeavors. To explore these

arguments, it's important to take a closer look into human creativity. The creative output often involves recombining existing knowledge rather than genuinely creating something new (Frosio, G. 2023; Corazza, G. 2016). As so, most human creativity is focused on enhancing and improving everyday tasks, rather than achieving new monumental creative concepts (Reddy, A. 2022; Benedek, M. 2020). Additionally, human creativity, especially in the light of artistic expression, is driven by the capacity to dream, visualize, and imagine potential futures. However, the development of new ideas in art is mainly rooted in a cumulative tradition of knowledge within the chosen domain (Baer, J. 2015; Bruno, C. 2022). Given that GAI can also retrieve and recombine existing knowledge from a much larger knowledge database and present it in seemingly novel ways, it has the potential to broaden the scope of idea recombination (Gruner, D. 2019).

2.3.1. A Deeper Dive into Generative AI's Creative Tools

When focusing on GAI tools, there are diverse categories that benefited from the development of GAI capabilities. From content creation and enhancement to information analysis, various tools have been built that help people across their workflows, allowing a more effective and efficient work. Some of these tools will be explored in this chapter, focusing on information, music, image and written content generation.

Information generation

Chat GPT is a generative language model that generates outstanding human-like-responses to text-based inputs (Frosio, G. 2023). It was developed by Open Ai and made public in November 2022, time when the world awakened for artificial intelligence and its capabilities. Chat-GPT is trained on massive data sets from the internet, being exposed to the bias and different levels of accuracy and truthfulness of the information available. This leads to valuable insights when fiction and new combinations are required but not so reliable text when aiming for reliable supported insights (Haase, J. 2023).

Another competitor for Chat GPT, is Google's DeepMind AI tool, Gemini. Gemini is one of the latest multimodal AI tools that was launched in December 2023 and is known for its versatility. It can process various types of inputs, from audio to video data and adapt the output based to the data received (Imran, M. 2024). Since it is a Google's creation, it also allows the integration with other Google's apps through extensions, which provides a personalized output, if wanted.

Music generation

With the development of sound design and its growing relevance in various domains such as television, film, video games and music production, several AI powered tools emerged to assist music creation. From Jukebox (by OpenAI) and Flow Machines (by Sony) to AIVA (Artifical Intelligence Virtual Artisit), WAVTOOL and Boomy, AI powered tools have entered the music industry to help artists explore new sounds; facilitate the music composition process; facilitate text-to-music creation and explore new styles and techniques that would require a high expertise in previous years. Embracing these tools, just like in other categories, allows artists to expand their horizons and unlock new rhythms and compositions.

Each tool serves a different purpose. For example, while JukeBox helps generating new original music in specific styles from a text prompt, WAVTOOL is more focused on facilitating the editing and production process of music, offering various audio processing features.

Image Generation

Generative Artificial Intelligence has paved the way to image generation through text-prompt inputs. Tools like DALL-E, Adobe Firefly, DeepArt, Artbreeder and Midjourney allow creatives to transform images into specific styles and generate images based on input text captions.

When looking into image generation based on written prompts, a reference tool is DALL-E 2. In an experiment conducted by Gary Marcus in 2022, this tool was tested through fourteen captions inputs that intentionally challenged the system, aiming to evaluate its common sense, comprehension of complex texts and reasoning. Each prompt had an output of ten images. Out of the 14 prompts, at least one image fully satisfied the requests in 5 cases, and in none all ten images met the criteria requested. By analysing each test, the experiment highlights DALL-E's impressive visual quality, capability to generate diverse artistic styles, and the reliability of certain language abilities. However, the system still struggles with incomplete results, compositional reasoning, anaphora, and negation, and occasionally in common sense reasoning (Marcus, G. et al. 2022).

Caption: A tomato has been put on top of a pumpkin on a kitchen stool. There is a fork sticking into the pumpkin. The scene is viewed from above.

Images:

Figure 1 - DALL-E Example nr 7 of "A very preliminary analysis of DALL-E 2" by Marcus G. et al 2022

Content generation

Another layer introduced by AI tools was the capability to generate human-like writing, providing alternatives to copywriting and information generation faster. Tools like ScriptBook, Copy.AI, Simplified and Jasper AI have changed the game in the copywriting and storytelling landscape. These tools allow creatives to generate new content based on a written input. Through either scraping the web or analyzing similar inputs, the tools can look for similar content, find the patterns and suggest new content that keeps the style and tone of the original input.

2.3.2. Generative AI Roadblocks: Identifying and Understanding Use Barriers

The use barriers of generative AI (GAI) tools are closely related with the limitations of the models. To achieve a successful integration of these models in the daily life of professionals, both users and

corporations need to be confident that the results are accurate and reliable. In this section, a further examination of specific constraints of GAI will be done, highlighting the improvements needed to allow the future integration of these tools in the corporate world at a larger scale.

Firstly, the effectiveness of the models is highly dependent on the quality of the training data (Dwivedi et al., 2023; Su & Yang, 2023). Errors in facts, imbalances in information sources, or biases deep-rooted in the training data can affect the output of the model. As so, the authenticity and reliability of generative AI outputs are linked with the accuracy of the data used during the training process.

Secondly, with the exponential growth of generative AI, verifying the authenticity of generated content is becoming increasingly challenging. The rise of DeepFake AI, capable of synthesizing photos that appear to capture real-world events or people raises concerns about the potential for large-scale manipulations of images and videos. The spread of misinformation or fake news on social media platforms poses new challenges for identifying genuine content from AI-generated fabrications (Gragnaniello et al., 2022), which can be a relevant barrier for the usage of GAI within the corporate world.

Finally, the rise of GAI tools designed to create music, art and literature has raised concerns about ownership, authorship, and copyright infringement. Discussions regarding the revision of the Intellectual Property (IP) system to adapt to these advancements have been encouraged to establish guidelines regarding the correct use of these tools.

2.3.3. GAI Challenges and Opportunities within the Creative Process

In several fields, AI has presented both challenges and opportunities. From business, healthcare and education to arts, there are several approaches to the use and integration of AI tools (Siau, 2018; W. Wang & Siau, 2019; Yin et al., 2022). When deep diving into the creative field, GAI tools are positioned to work as an augmentation rather than a replacement of human creativity. Just like recording technologies helped musicians to improve their final outputs, GAI tools can also serve as catalysts to expand the horizons of creative works (Keith, K. 2023).

By broadening the accessibility of revolutionary tools for both individuals and organizations, creative outputs will be expected to have a higher quality but lower costs. This shift will happen due to both the easier accessibility of tools that can enhance the creative output, and their democratized use (Keith, K. 2023).

In problem-solving scenarios, including various stages of the creative process, generative AI becomes a facilitator for brainstorming or refinement of solutions which should be leveraged by the creative industry (Cooper, 2023). However, due to the unpredictable nature of creative processes in which the initial goals and inputs are not precisely known beforehand, it is challenging to rely solely on AI tools for a final creative output (Gioti, 2020, p.30). For example, the concept of an "AI author" is still not achievable due to the current inability of AI to create autonomously without human input (Daniele & Song, 2019). While GAI's extensive knowledge base contributes to developing new ideas, the crucial aspects of problem definition, initiation, and evaluation of the creative process remains distinctly human attributes. Additionally, AI's replication of human skills is limited, lacking the ability to integrate multilayered attributes such as culture, meaning, diverse environments and social interactions to the extent humans can (Hertzmann, 2018, p.19).

Nonetheless, research suggests that AI can serve as a valuable tool to aid the creative process by challenging the “status quo” and by breaking previously conceived concepts of the creators (Kantosalo & Toivonen, 2016; Karimi et al., 2020; Maher, 2012). Being that said, to be used to its full potential, considering the current development of the existing tools further explored, the approach to GAI tools should be human-centered (Fui-Hoon Nah, F. et al., 2023). Human-centered AI (HCAI) acknowledges the awareness that AI is part of an integral part of a larger system involving human stakeholders (Riedl, 2019). The development of intelligent systems should follow the “human-in-the-loop” approach to help mitigate ethical and regulatory challenges whilst guiding a value and need-driven human-AI collaboration (Shneiderman, 2020a; Xu et al., 2023).

3. METHODOLOGY

The purpose of this research is to develop guidelines regarding the use and integration of generative AI within a creative workflow in the corporate environment. This outcome will constitute the artifact of the research.

The methodology conducted for this research follows a Design Science Research (DSR) since it is particularly well-suited for Information Systems (IS) research related with IT artifacts (Peffers et al. 2007). Additionally, DSR is also advisable for researchers that want to build a rigorous and relevant output that simultaneously adds new knowledge to the current state of art (Venable J., 2016).

3.1. DESIGN SCIENCE RESEARCH (DSR)

DSR was built on the premise that knowledge can be created through the design and development of artifacts. By designing and evaluating artifacts, researchers can learn in depth about the problem intended to solve, the strengths and weaknesses of the design and its implications in the real-world. This model is conducted in a cyclical manner, which allows researchers to move back and forth between the different phases of the process to refine the design. This iterative process incentives researchers to improve their understanding of the problem and continuously develop better solutions (Peffers et al. 2007).

Due to the flexibility for reiteration, DSR research focuses of the relevance and impact of the research in the chosen field. The evaluated artifacts should have the potential to make a real-world difference (Peffers et al. 2007).

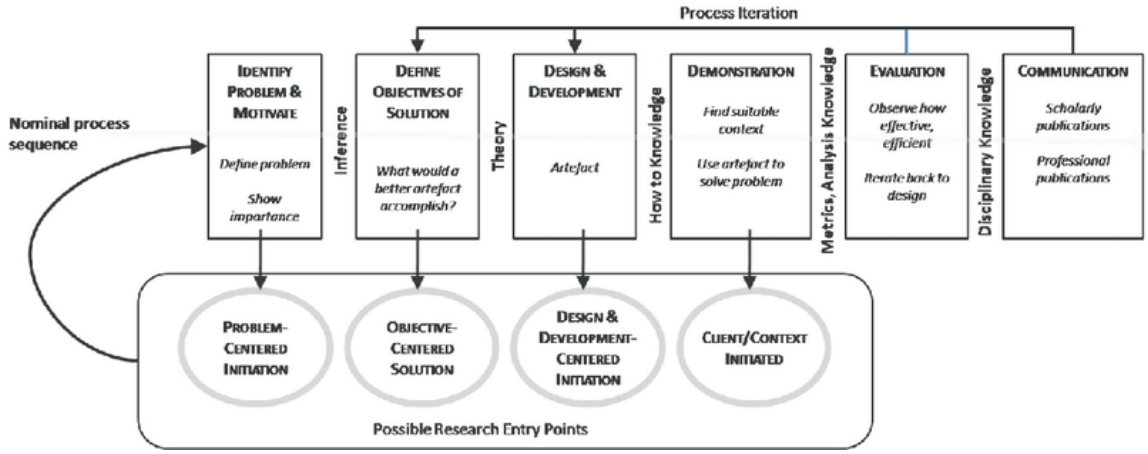

Figure 2 - DSR Model by Peffers et al. 2007

Design Science Research (DSR) follows six steps:

1. **Problem identification and motivation:** The first phase of DSR aims to identify the problem that the research will help to solve. This problem should derive from a research gap that will be filled and be relevant enough to be important to solve. This relevance will constitute the motivation and reasons to solve it.

2. **Definition of the objectives of a solution:** after setting the problem to be solved, it's important to define the objectives and criteria upon which the solution will be evaluated. These objectives should be SMART (small, measurable, achievable, relevant and time-bound) and based on the information gathered during the first phase, which can be complemented with other existing work already publicly available.
3. **Design and development:** the design of the artifact is developed according to the problem identified and objectives settled before. The decisions regarding the design of the artifact should be justified, explaining why they help solving the research's problem.
4. **Demonstration:** after designing the artifact, researchers should gather evidence to support their claims, and put it in a suitable context to demonstrate that the artifact addresses the needs of the target users.
5. **Evaluation:** the artifact should be evaluated to assess the artifact's relevance in the field examined. This assessment could be done through expert's feedback and through the analysis of the results of the demonstration phase. Upon the evaluation, the artifact should be redesigned if needed by iterating back to the third phase of the process. If not possible, recommendations for further improvement should be identified.
6. **Communication:** to finish the DSR process, researchers communicate the results to the relevant stakeholders which may involve publishing an article. This way, the research will contribute to the existing knowledge in the studied field and will allow future researchers to further explore the problem chosen and reiterate the process by refining the objectives and design approach, for example.

3.2. RESEARCH IMPLEMENTATION

As mentioned in the section 1.2 of this document, the purpose of this research is to build guidelines for the integration of generative AI tools within the creative industry. These guidelines will help to fill the gap of information regarding the use and integration of generative AI tools by creative professionals in Portugal and how it impacts their productivity. To collect insights regarding the capabilities and limitations of these tools, intermediate objectives were defined in the section 1.2 to guide the DSR development.

Regarding the design and development, demonstration, and evaluation of this research, the following Hevner's DSR approach was considered (Figure 1).

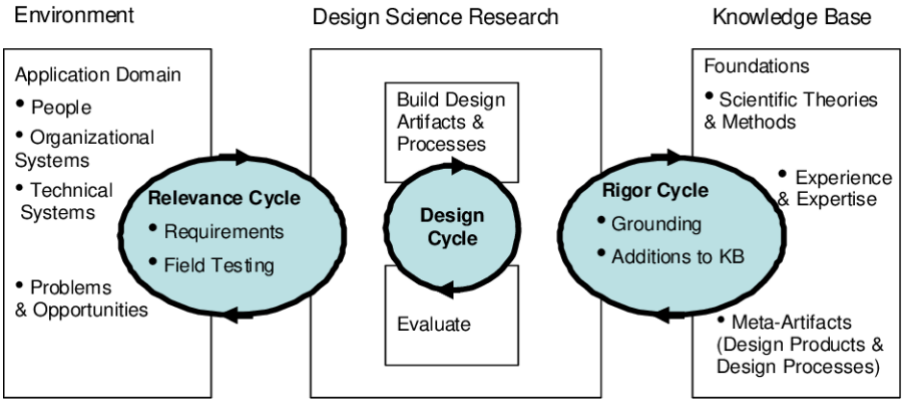

Figure 3 - Hevner's Approach to DSR

According to this approach, DSR is performed according to three cycles – Relevance cycle; Rigor Cycle and Design Cycle. The design and development phase are developed within the rigor and design cycle, while the evaluation in the relevance cycle.

The Rigor cycle explores the existing knowledge on the studied field, which defines the state-of-art in the chosen domain (Hevner, A. 2007). In this research, the current state-of-art regarding creativity, AI, GAI and their correlations will be explored. As Hevner highlights, the research contributions to the knowledge base are as important as useful contributions since one is key for the academic audience and the other is key to the practitioner's audience (Hevner, A. 2007). As so, it is important to research and reference the existing knowledge base to guarantee the innovation of the project (Hevner, A. 2007). A global perspective will be considered in the literature review to ensure a comprehensive understanding of AI's potential. Following the literature review, the research will shift the focus to Portugal.

Through the relevance cycle, information regarding the current use of generative AI tools within creative professionals' work in Portugal will be gathered. To gather this information, an online survey will be conducted, targeting professionals operating in industries that involve creativity, from marketing to design, music, writing, media and others. This survey will seek to uncover several key aspects:

- The availability of AI tools within organizations
- The promotion and encouragement of AI tools
- Frequency and impact on productivity of the use AI tools
- Main concerns and doubts regarding generative AI

In the design cycle, the core work for the output of the DSR is done. During this cycle, information from both relevance and rigor cycle are taken into consideration to build the design artifact (Hevner, A. 2007). In this case, the DSR artifact are the guidelines regarding the use and integration of generative AI tools in the creative workflow. In order to develop these guidelines, the collected data from the online survey was analysed and compared with the insights obtained in the initial literature review. By doing so, it was possible to understand the status of generative AI tools adoption and integration in the daily routines of creative professionals in Portugal. The survey also assessed whether these professionals perceive AI as a valuable tool to enhance productivity. The guidelines built from these results were evaluated by two experts that analysed each phase and evaluated its feasibility for implementation in the real-world.

The full demonstration of the artifact built is out of the scope of this research. As so, a fictional use case will be explored to show how the proposed guidelines could impact the work environment.

Finally, the communication of the results of this research will be presented to a set of stakeholders that will evaluate the research and its output as a whole. Eventually, it will be possible to publish the results of the project and contribute to the existing knowledge in the studied field, allowing future researchers to further analyse the status of generative AI usage in the creative industry.

4. GAI AND THE CONTEXT OF CREATIVE PROFESSIONALS

4.1. CONTEXT ANALYSIS

This chapter constitutes the relevance cycle, in which the field testing occurs and the requirements for the evaluation of the artifact are settled. In this research, the field testing will be done following a quantitative approach through a survey targeting professionals operating in the creative industry in Portugal.

The objective of the survey is to gather information from creative professionals regarding the use of GAI tools in the corporate environment. This information will be used to build a set of suggestions for companies to implement when introducing GAI tools in the creative industry. To do so, the survey will unveil if companies in Portugal are allowing and encouraging creative professionals to use generative AI tools; understand which tools are being used and why; which are the barriers and opportunities regarding GAI usage in the corporate environment and the employees' main concerns regarding the GAI growth.

4.1.1. Survey Design

As discussed in the previous chapter, there are both risks and opportunities in the use of GAI tools and each company can have a different internal policy when tackling GAI implementation. Through the survey, it was possible to understand the employees' view and further develop guidelines for high executives based on the voice of employees.

As mentioned in "The Survey Handbook" by Arlene Fink, it's key to plan and properly structure the survey in order to obtain the results intended. As so, the first phase of the survey design was to define the objective, identify the audience and structure the questions.

Objective: As mentioned in chapter 3.2, the following aspects were considered key

- The availability of AI tools within organizations
- The promotion and encouragement of AI tools
- Frequency and impact on productivity of the use of AI tools
- Main concerns and doubts regarding generative AI

Through these topics, it was possible to also address the research question – "How can creative professionals leverage GAI tools?" and "How should companies integrate these tools in the creative process?".

Audience: since the survey was targeted to creative professionals, an initial closed question was added to filter respondents – "Do you consider that your profession is related with the creative industry?" Answer: yes/no. If the respondent answered "No", then the survey would be finished, filtering out respondents that do not work in the creative industry.

Question design: the structure and sequence of the questions is key to have a good survey and so this was the most important part of the survey design. The goal was to develop clear, concise and unbiased questions that allowed to get the results needed to analyse the research objective (Fink, A. 2003; Brace, I. 2018).

Type of questions: the survey was designed to have multiple-choice (choose from list of options), dichotomous (yes/no), rating scale (1 to 5, being 1- I don't worry and 5 – I worry a lot), the Likert Scale (1 to 5, being 1 – Strongly Disagree and 5 – Strongly Agree) and Probing Questions (follow up questions to understand the previous answer). All the questions that had a scale, were evenly distributed between 1 and 5, allowing to have both positive and negative extremes and a neutral answer.

Structure: several questions had a funneling sequence, meaning that the respondent would only see the question if a certain answer was chosen before. This technique enabled to further understand certain topics and avoided an overload of unrelated questions to respondents that were already out of scope for that specific topic.

Additionally, both Rating and Likert Scales were built in a way that would avoid the same side scale answer throughout the questions, allowing to keep the respondents attention and engagement through the survey (Brace, I. 2018) – example: positive and negative sub questions (in a Likert scale, answer if "I don't trust GAI results", followed by "I know GAI tools").

The second phase of the survey design was to choose the data collection method and pre-test the final survey structure. The chosen data collection method was the online survey through the Qualtrics platform. The survey was structured online with all the previously mentioned conditions. A pre-test was done to validate the functionality and time consumption of the survey. Since no errors were detected, the survey was put online and shared through an open link.

4.1.2. Survey Execution

The survey was written in Portuguese since it was targeted to Portuguese employees and had the following questions:

Q1	Consideras que a tua profissão está relacionada com a indústria criativa?
Q2	Seleciona o teu intervalo de idade
Q3	Seleciona a(s) área(s) na qual o teu trabalho se enquadra:
Q4	Trabalhas...
Q5	Utilizas ferramentas de Inteligencia Artifical Generativa na tua vida pessoal?
Q6	Utilizas ferramentas de Inteligencia Artifical Generativa no trabalho?
Q7	Em que área utilizas mais?
Q8	Que ferramentas utilizas mais?
Q9	Em que partes do processo utilizas mais este tipo de ferramentas?
Q10	Para ti as ferramentas de GAI são mais úteis para...

(Caso resposta "Sim" na Q6)

Avalia as seguintes frases entre 1 e 5 sendo 1 - Discordo Totalmente e 5 - Concordo Totalmente

Q11_1	A minha empresa encoraja o uso de GAI
Q11_2	A minha empresa permite o uso de GAI
Q11_3	Gosto de usar ferramentas GAI
Q11_4	Tenho acesso, mas não costumo usar ferramentas de AI
Q11_5	Uso diariamente ferramentas AI
Q11_6	Tenho preocupações em usar GAI
Q11_7	Demoro mais tempo a acabar tarefas quando uso GAI
Q11_8	Trabalho com mais qualidade quando uso GAI

Q11_9	Precisava de um acesso mais premium/avançado para ter melhores resultados

(Caso "não" na Q6)

Q16 Avalia as seguintes frases entre 1 e 5, sendo 1 - Discordo Totalmente e 5 - Concordo Totalmente

Q16_1	A minha empresa proíbe o uso de ferramentas GAI
Q16_2	Dão-me acesso premium a ferramentas GAI
Q16_3	Não confio nos resultados de GAI
Q16_4	Conheço ferramentas de GAI
Q16_5	Acredito que seria vantajoso para o meu trabalho utilizar ferramentas de GAI
Q16_6	Se usasse GAI, seria mais produtivo
Q16_7	As ferramentas ao meu dispor ainda não estão desenvolvidas o suficiente
Q17	Gostarias de utilizar ferramentas de GAI no trabalho?
Q18	Em que área? - Selected Choice

(Caso "Não" na Q17)

Q20	Porquê?

(Para todos)	
Q12	**Indica até que ponto cada um dos temas te preocupa entre 1 e 5, sendo 1 - Não preocupa e 5 - Preocupa muito**
Q12_1	Fiabilidade dos dados
Q12_2	Infração de Copyrights
Q12_3	AI ser tendencioso
Q12_4	Substituição do emprego por AI
Q12_5	Questões Éticas
Q13	**Das seguintes barreiras associadas à utilização de AI quais aquelas que experiencias/vives mais no teu dia a dia. Escala de 1 a 5 em que 1 nunca experiencio, 5 experiencio sempre -**
Q13_1	Acessibilidade a ferramentas uteis
Q13_2	Esforço para aperfeiçoar o output
Q13_3	Output não ajustado ao pedido
Q13_4	Falta de formação para uso de GAI
Q13_5	Falta de confiança no output gerado

4.1.3. Survey Analysis

The design of the survey, as mentioned before, was structured to have several types of questions to have a good range of analytical techniques to study the results. To have a clean database, the missing data was excluded from the analysis.

Per question type, the answers were analysed through the following analytical techniques:

Multiple choice – Frequency distribution
Dichotomous – Proportion analysis
Rating Scales – Mean, Standard Deviation, Mode, Frequency distribution
Likert Scale – Frequency Distribution

The survey was answered by 214 people, out of which 183 work in the creative industry and 31 didn't. As so, the maximum number of answers analysed was 183 per question. Not all questions have the same number of answers not only due to the sequence conditions set but also because the questions were not mandatory to answer, a constraint of this research.

The first questions of the survey aimed to understand the profile of the respondents, allowing a better analysis of the results and answers. Almost half of the respondents were between 20 and 25 years old (49%), followed by 26-30 (23%) and 31-35 (12%). Regarding the creative industry area, half of the respondents were from Graphic Design (28%) and Marketing (22%). The third most relevant creative area was Digital media & Multimedia production (19%, with 55 respondents), as seen in the graphs below.

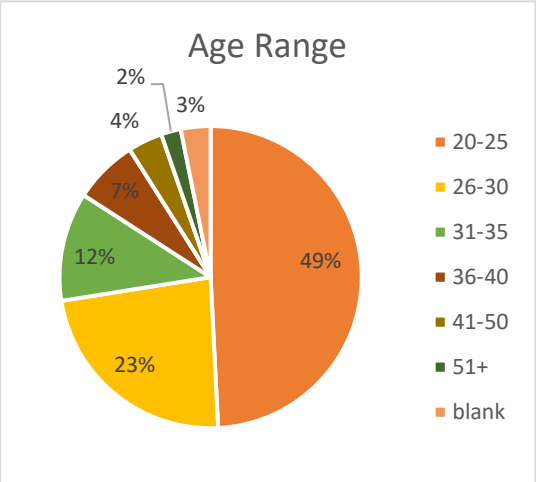

Figure 5 - Circular Graph - Age Range Online Survey

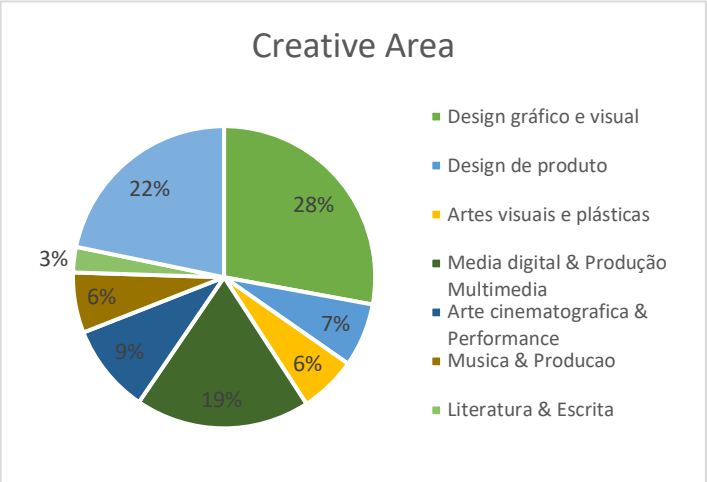

Figure 4 - Circular Graph - Creative Industry Area Onloine Survey

To further understand the respondent's behaviour towards GAI, three more questions were asked to complete the participant's profile. The first was to understand if the participants work for a company, as freelancers or both, and more than 15% of the participants work both for a company and as freelancers. The second and third questions were related with the usage of GAI for personal and work reasons. There seems to exist a correlation between the use of GAI in personal life and work (and reverse) since the split in both personal life and work is around 70/30 (yes/no).

Table 1 - Use of GAI – Frequency Distribution

Usage of GAI	Yes	No
Personal life	67%	33%
Work	68%	32%

The second part of the survey aimed to identify the tools used by creative professionals that already use GAI in their work, the type of output they desired, the stage of the creative process in which these tools were employed, and their specific objectives with the usage. By analysing question 7 and 8, we could see that most participants use GAI to get text or information (66%), followed by to get images (29%). As so, correlated with these answers, the most used tools are Chat GPT (58%), DALL-E (13%) and Midjourney (12%). Question 9 and 10 tackled the creative process understanding, through which we can conclude that almost half of the participants use GAI in the preparation phase of the creative process – 48%, gather all the information and inspiration needed to get to the desired output - followed by a split between Illumination (24% - getting to innovative and disruptive ideas) and Verification (23% - evaluation and adjustment of the idea to get the desired output) phases. It's also

interesting to see that the phases with most correlation were Preparation & Verification, being the two phases chosen together more often, followed by Preparation & Illumination. As so, GAI tools have a clear role in the preparation phase of the creative process.

Within the creative process, there are also different purposes for which a creative professional can use GAI tools, throughout the several phases of the process. The table shows that when asked for what GAI tools were most useful for, professionals were almost evenly split between the various options. This highlights the versatility of these tools, demonstrating its ability to adapt to various user needs.

Table 2 - Answers to Q10 - "For you, GAI tools are more useful for..."

Improve an idea	**29%**
Inspiration/Disruption	23%
Get alternatives	22%
Complement work	24%
Other	2%

The third part of the survey tackled the promotion and encouragement of the use of GAI tools within organizations and the main concerns and barriers regarding its usage. All the questions on this part were scales, which were analysed by summing the positive results (answers 4 and 5) and comparing to the negative results (1 and 2). Through this comparison, it's possible to better understand the general positioning of the respondents for each topic. As detailed further in each question, the median, mode and standard deviation were also calculated to get more information about the distribution of the answers.

When considering people that already use GAI in their work environment, it was possible to see that most companies allow GAI tools (85%), however not all encourage it (50%). Creative professionals that already use GAI tools, like using them (68%, with a mean of 3.9) and when they have access, they use the existing tools. A big majority (88%) believes they are faster when using GAI tools and they don't necessarily have concerns (49% does not have concerns in using GAI tools). Regarding the quality of the output, the answers were almost split, slightly favouring GAI for a better output, however not as evident. Finally, 43% of the participants consider that a more premium access to some tools would positively impact their work results, even though 30% disagree.

Table 3 - Q11 results - "Evaluate the following phrases from 1 to 5, being 1- Totally Disagree and 5- Totally Agree"

	POSITIVE	NEGATIVE	AVG	MODE	STD DEV
My company encourages the usage of GAI	50%	21%	3,5	3	1,28
My company allows the usage of GAI	85%	7%	4,4	5	0,99
I like using GAI tools	68%	12%	3,9	4	1,06
I have access, but I don't usually use GAI tools	9%	82%	1,7	1	1,04
I use GAI tools on a daily basis	39%	36%	3,0	3	1,38
I have concerns in using GAI tools	29%	49%	2,7	1	1,38
I take more time finishing tasks when I use GAI tools	3%	88%	1,5	1	0,78
I work with a higher quality when I use GAI tools	36%	25%	3,2	3	1,16
I needed a premium/more advanced access to have better results	43%	30%	3,2	3	1,41

Now, considering people that do not use GAI tools in their daily jobs, we can see there are mixed opinions. Even though a significant majority (77%) reported that their companies do not prohibit GAI tools, the results regarding the results trustworthiness are mixed, 39% expressing distrust but with a mean of 3.1, which would be a neutral attitude. These participants do not see an advantage in starting to use GAI in their work (49%) and do not believe it would impact their productivity (55%) but not necessarily because they believe that the tools are not developed enough (33% split on the

development state of GAI tools). Overall, the table below shows a general skepticism about the reliability and benefits of GAI tools among creative professionals that do not use them in their daily work.

	POSITIVE	NEGATIVE	AVG	MODE	STD DEV
My company prohibits the usage of GAI	8%	77%	1,8	1	1,10
I have premium access to GAI tools	16%	73%	1,9	1	1,42
I don't trust GAI results	39%	30%	3,1	3	1,24
I know GAI tools	58%	17%	3,6	4	1,16
I believe using GAI tools would be na advantage in my work	24%	49%	2,6	2	1,09
If I used GAI, I would be more productive.	20%	55%	2,4	2	1,15
The existing GAI tools are not enough developed yet	33%	33%	3,0	3	1,15

Figure 6 - Q16 results - "Evaluate the following phrases from 1 to 5, being 1- Totally Disagree and 5- Totally Agree"

All the participants were questioned about the main concerns seen in the literature review. They were asked to evaluate each concern from “Does not worry me” to “Worries me a lot”. It’s visible that the most coherent concern within participants was copyrights infraction, with 64% of positive answers and a mode of 5. Job substitution and data feasibility followed, with 57% and 54% positive answers, respectively. Despite having different scores, all concerns had a cumulative concern close to or higher than 50%, showing that independently of the relevance to the whole group of participants, all topics are real concerns for the employees.

	POSITIVE	NEGATIVE	AVG	MODE	STD DEV
Data feasibility	54%	17%	3,6	4	1,11
Copyrights infraction	64%	20%	3,7	5	1,28
AI bias	47%	32%	3,3	5	1,31
Job substitution	57%	32%	3,4	5	1,54
Ethical questions	48%	31%	3,3	5	1,46

Figure 7 - Q12 results - "Indicate whether the following topics worry you from 1 to 5, being 1 - Does not worry and 5 - Worries a lot"

Finally, to end the survey, all participants were questioned about several barriers also presented and discussed in the previous literature review. Respondents were asked to rate each barrier from “Never Experienced” to “Always experience”. The most consensual barrier was the effort needed to improve the output given by GAI tools. Regarding the accessibility to useful tools and lack of confidence in the output generated, there was a high number of neutral answers (mode 3), and the positive and negative answers were almost evenly split, demonstrating that these can be barriers but are not as common or clear as the others. The answers highlighted that employees do not expect to have further training to use GAI tools, as 46% of respondents do not experience this as a barrier to the use of GAI. The output not corresponding to the input requested, despite both positive and negative answers, there’s a slight tendency to not being perceived as a barrier. Since all the topics evaluated had slightly relevant positive answers, all can be considered barriers with different levels of relevance to the employees.

	POSITIVE	NEGATIVE	AVG	MODE	STD DEV
Accessability to useful tools	38%	32%	3,0	3	1,19
Effort to improve the output	43%	21%	3,2	3	1,03
Not corresponding output to the given input	28%	35%	2,9	3	1,11
Lack of formation to use GAI	34%	46%	2,8	2	1,31
Lack of confidence in the generated output	34%	36%	2,9	3	1,22

Figure 8 - Q13 results - "From the following barriers to the usage of GAI, which ones do you live in your daily life. Rate from 1 to 5, being 1 - Never Experience and 5 - Always Experience"

5. GUIDELINES FOR INTEGRATING GAI TOOLS IN THE CREATIVE INDUSTRY

The final phase of the DSR is the design cycle, in which the artifact is built and evaluated. As mentioned before, this research will culminate in a set of guidelines for corporations in the creative industry to take into consideration when tackling the integration of GAI tools in the creative process.

These guidelines are based in both the literature review and the results of the online survey which helped to understand the current use of GAI tools in the creative industry in Portugal.

5.1. KEY FINDINGS

After analysing both the answers from the survey and the literature review, it's possible to answer the research questions "How can creative professionals leverage GAI tools?" and "How should companies integrate these tools in the creative process?", and the objectives settled for the relevance cycle:

- The availability of AI tools within organizations
- The promotion and encouragement of AI tools
- Frequency and impact on productivity of the use of AI tools
- Main concerns and doubts regarding generative AI

It was clear that companies already allow the use of GAI tools to complement the creative process, however not all encourage it. This encouragement can shift the perception of availability since employees need to know and understand which tools are available in order to use them in their daily work.

Despite potentially having several benefits, as seen in the literature review, the opinions are split regarding the impact of GAI. People that already use these tools state that both their outputs have more quality when using GAI in the process and that are more time efficient. On the other hand, participants that do not use GAI tools, do not see its advantage nor productivity benefits. As so, the value that GAI can add to creative professionals' work is not yet clear, especially for people that are more sceptical about it.

The creative professionals that use GAI, use it in several phases of the creative process, however, do not use it daily. The frequency of use of these tools would need a more detailed discussion to understand which the most efficient phases and goals are to use GAI to maximize its potential.

Finally, the biggest concerns are correlated with copyright infringement, job substitution and data trustworthiness. As seen in the literature review, these are common concerns that will need to be tackled by both companies and governments to maximize the potential of GAI tools. The barriers to overcome are mainly correlated with the effort needed to improve the output, which should be culminated with the further development of these tools, and the accessibility to the right tools, which can be fixed by each company.

5.2. GUIDELINES PROPOSAL

The guidelines were split into five actionable segments that should be followed sequentially. As seen in the picture below, the following guidelines are designed to ensure a smooth integration of GAI tools. From assessing the current digital infrastructure to addressing employees' concerns, all steps are essential to promote the use of GAI tools and enhance both innovation and productivity of the creative team.

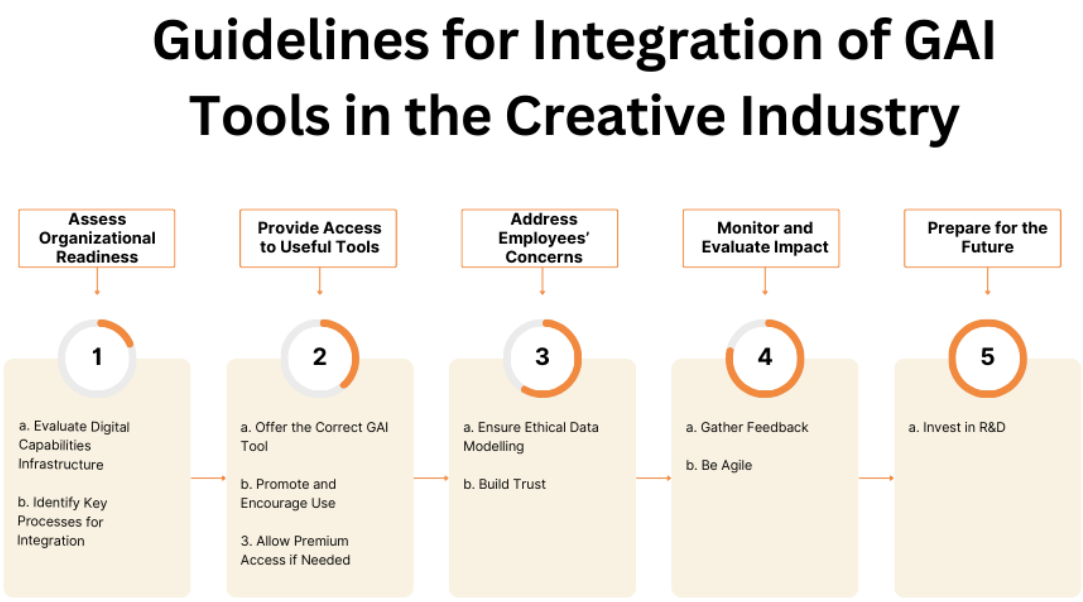

Figure 9 - Guidelines - 5 Steps Process

5.2.1. Assess Organizational Readiness

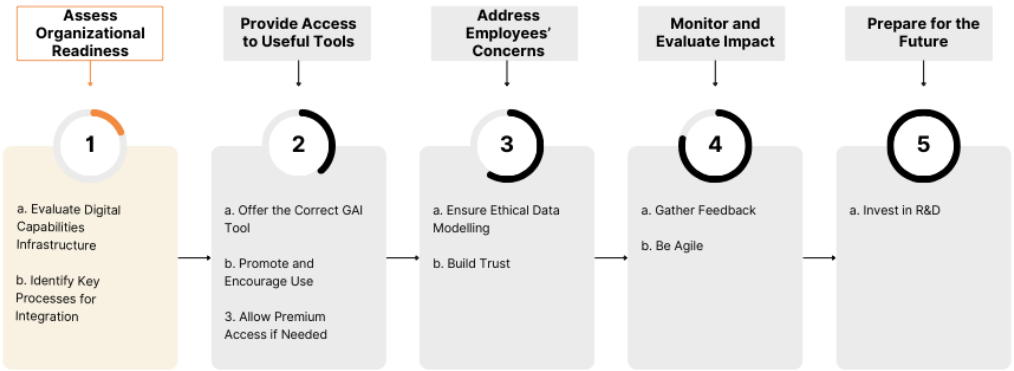

Figure 10 - Guidelines Step 1

a) Evaluate Digital Capabilities Infrastructure

To effectively integrate Generative AI tools in the creative process, it's crucial to make sure the organization has a technological infrastructure that can support these tools. For an efficient and

productive integration, the infrastructure should support seamless integration with existing workflows (Abbasi et al, 2017).

The evaluation of digital capabilities should involve assessing the existing hardware, software and data management systems, together with ensuring the compability of GAI with the existing digital ecosystems (Maher, 2012). This assessment should be lead by the IT/Data&Technology department, together with the creative department in order to make sure the key information for decision-making is gathered.

b) Identify Key Processes for Integration

As seen before, GAI tools can be used for diverse purposes. It's important to understand the current creative process to evaluate which are the main needs that a GAI tool could potentially address. This should be a company-wise evaluation since there can be similar needs between departments. Furthermore, within the creative team, it's important to clarify what is expected from a GAI tool and how would they use it. By systematizing the creative process and creating an organized workflow where the team knows when to use a new GAI tool can help its future integration.

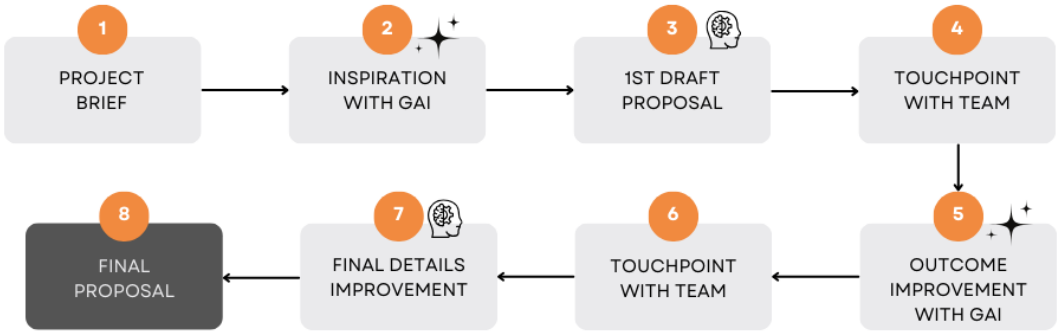

Figure 11 - Creative Process Workflow - New Project Proposal Example

5.2.2. Provide Access to Useful Tools

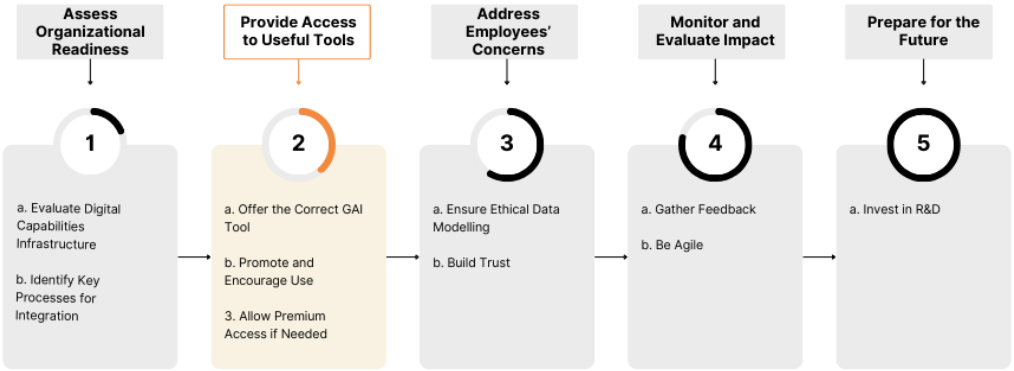

Figure 12 - Guidelines - Step 2

a) Offer the Correct GAI Tool

Once the main needs of the creative team are identified, it becomes possible to determine which is the best GAI tool(s) to integrate. As mentioned in the previous chapters, there are different tools for different outputs. The image below illustrates some examples of GAI tools designed for distinct purposes. The chosen tool should be aligned with the creative team's needs and follow the first phase of these guidelines – capability to have seamless integration with existing tools and digital infrastructure.

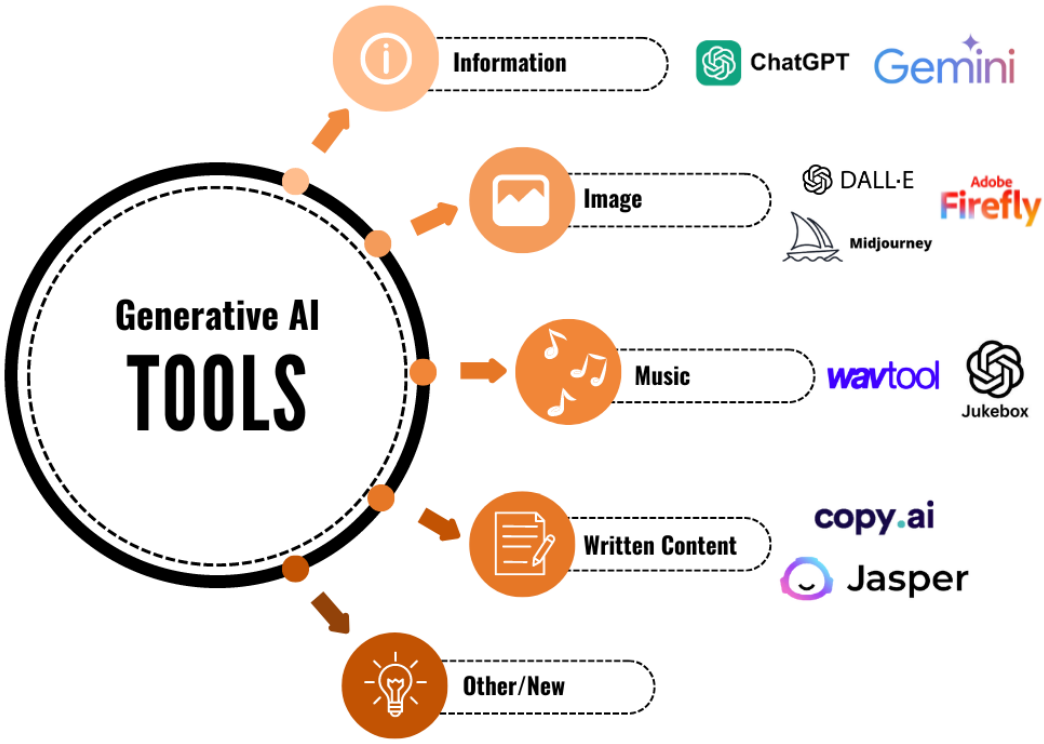

Figure 13 - Generative AI Tools

b) Promote and Encourage Usage

Once the GAI tool is defined and ready to be integrated, it's key to foster a culture and organizational environment that encourages innovation and embraces new creative methods and workflows. As mentioned by Amabile and Kramer (2011), promoting an environment in which employees feel empowered to experiment and challenge themselves can lead to more creative results. This empowerment should be the consequence of a clear set of guidelines regarding the use of the GAI tool, that can be clarified through Q&A sessions, for example.

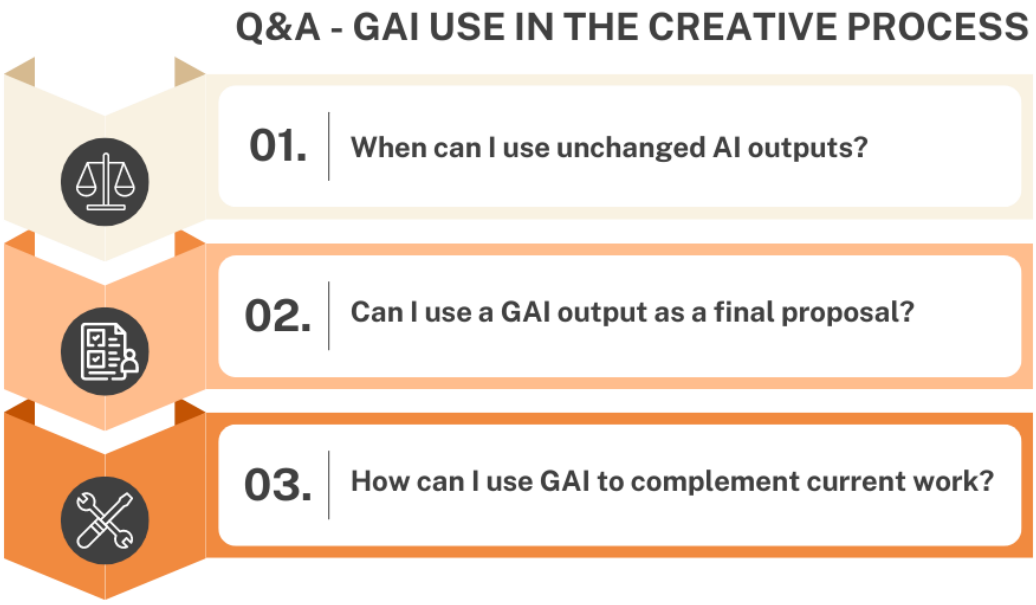

Figure 14 - Figure 14 - Q&A Session - Questions Example

c) Allow Premium Access if Needed

Since within a creative team each person can have a different role and responsibility, the access level of the tool can also vary. Key team members, such as project managers and senior designers, might need advanced features to fully leverage the tool's potential. By identifying these star users, the company can improve the team's overall performance by selecting the team members that have most impact in the creative process. This targeted approach not only optimizes resource allocation but also fosters a sense of empowerment and motivation among employees.

5.2.3. Address Employees' Concerns

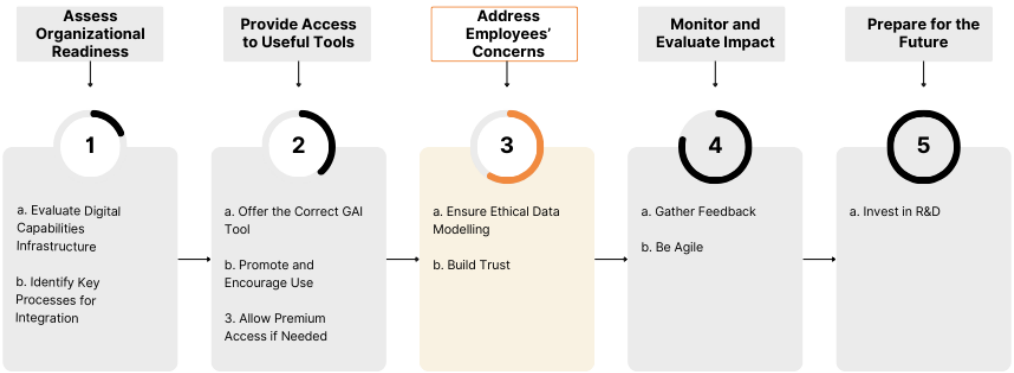

Figure 15 - Guidelines - Step 3

a) Ensure Ethical Data Modelling

To successfully integrate a GAI tool, it's key to address employees' concerns to encourage and maximize the tool's usage. One of the major concerns is the source of the data generated by GAI. Being integrated within the art industry, creatives worry about the potential copyright infringement and the misuse of intellectual property that using GAI content can imply. To tackle this concern, companies should be transparent regarding the source of data used to train the AI model and build clear "how to use" guidelines mentioned in section 5.2.2.

Some solutions that ensure ethical data modelling imply using datasets that are licensed for use, or internally generated and owned by the company. Alternatively, being GAI a growing and developing field, policies and global frameworks will eventually be discussed and published, allowing companies to better position themselves in the future.

b) Build Trust

Building trust is a fundamental step in integrating GAI tools into the creative workflow. Since GAI tools can still be a novelty for some employees, it's key to cultivate trust in the selected tool by involving employees in the implementation process and demonstrating the benefits of GAI tools. One effective strategy is to maintain a human-in-the-loop approach, which ensures both that AI-generated outputs are controlled by a person and that the final creative outputs meet the company's quality standards.

Research also highlights the importance of transparency and engagement when encouraging trust in AI systems. According to a study by Rai et al. (2021), trust in AI can be significantly improved by promoting a clear communication about AI's capabilities and limitations.

5.2.4. Monitor and Evaluate Impact

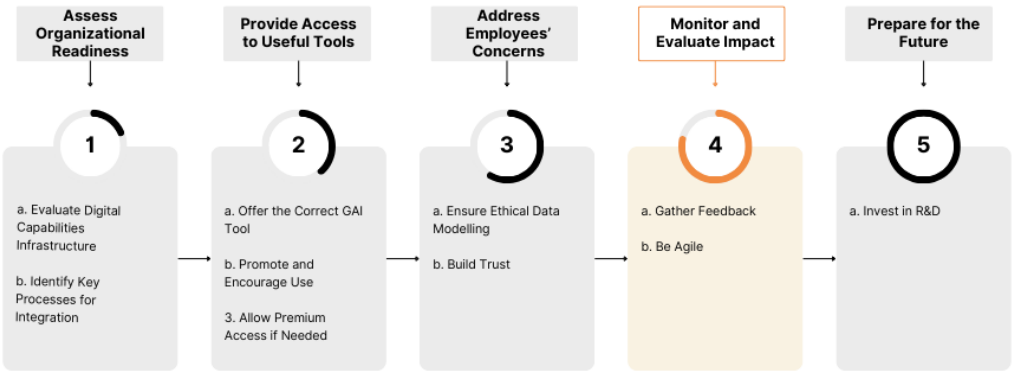

Figure 16 - Guidelines - Step 4

a) Gather Performance Feedback

After integrating the GAI tool in the creative process, the continuous monitoring of user experience is essential to understand the success of the integration. Through surveys, direct feedback or other already established feedback system, it's key to understand if users are having a positive experience and if they consider the tool useful, that enhances their productivity. Below,

there's an example of a survey that can be internally conducted per trimester to gather feedback about the tool's usage and performance.

Anonymous Feedback Form Example:

(XXX = Selected GAI Tool)

	QUESTION
1.	DO YOU LIKE USING XXX?
1.1	IF YES, FOR WHICH TASK DO YOU USE IT THE MOST?
2.	HOW OFTEN DO YOU USE XXX?
3.	DID YOU HAVE ANY TECHNICAL TROUBLE WHEN USING XXX?
4.	IS IT CLEAR WHEN YOU CAN/SHOULD USE XXX?
5.	DO YOU HAVE QUESTIONS REGARDING THE INTEGRATION AND USE OF XXX?
5.1	IF YES, WHICH QUESTIONS?
6.	DO YOU CONSIDER TO BE MORE PRODUCTIVE WHEN USING XXX IN THE CREATIVE PROCESS?
6.1	WHY?
7.	IS GETTING TO A FINAL PROPOSAL/FINAL OUTCOME HARDER WHEN USING XXX?
7.1	WHY?

Figure 17 - Example of Internal Survey

b) Be Agile

With the gathered feedback, the company should have the capability to adapt and improve where needed. To do so, it's fundamental to have an agile hierarchy or organizational structure that allows fast decision-making. This flexibility could eventually be achieved through the creation of a specific team that oversees the integration of the GAI tool in the creative process. By deploying the responsibility and defining the leader, it will be easier to keep track and control the performance of the project.

5.2.5. Prepare for the Future

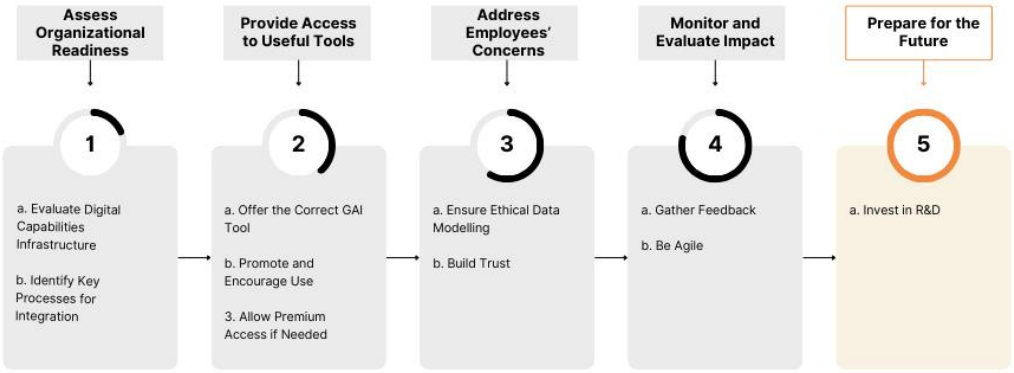

Figure 18 - Guidelines - Step 5

a) Invest in R&D

Generative AI is a fast changing and growing field that will certainly have much more improvements and new tools in the near future. For a creativity-based company, being updated and equipped with the latest tools will allow them to be upfront and disruptive, generating added value to the market. The continuous investment in Research & Development will allow to discover new features and new tools in a timely manner, giving more time to react and adapt to the market.

6. EXEMPLARY USE CASE

In line with the principles of DSR, this subchapter will illustrate the application of the framework previously presented using a fictional case study. Due to the hypothetical nature of this case, the content and detail of each phase will only showcase a few examples and is not intended to represent a complete assessment.

This fictional case serves as an initial iteration to test the framework's applicability. Future work can involve testing the framework in a real-world study. Additionally, the expert interviews in the next chapter should help confirm the framework's validity.

Fictional Example of an Integration of a GAI Tool in the Creative Industry:

A creative agency in Portugal is part of a Global Group that is starting to invest in GAI tools. The agency requested the deployment of the tools to the Portugal's team and now needs directions to integrate the tool in the daily life of the creatives.

To do so, the guidelines described in the previous chapter were followed.

Figure 19 - Step 1

First the agency conducted an assessment on the organizational readiness to integrate and support a new GAI tool. The IT department guided a thorough evaluation of the existing digital infrastructure and concluded that it would be possible to integrate tools developed by Google or Adobe.

Next, the agency gathered the creative team and promoted a discussion to understand which would be the creative process phase that would benefit the most from having a GAI tool integrated. The team concluded that the inspiration phase was critical and was the one that required more disruption. This phase would include brainstorming, concept development, and initial project drafts. The team concluded that the integration of GAI tools could significantly boost efficiency and creativity during this phase by generating innovative ideas and visual concepts quickly.

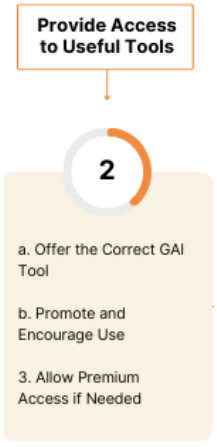

Figure 20 - Step 2

Based on the identified needs, the agency chose the tools that had the best fit to both the employees' needs and the adaptability to the technological infrastructure. As so, the agency requested access to Gemini for generating creative content and text, and to Adobe Firefly for generating initial visual concepts and images. These tools were chosen to help the creative team improve idea generation and visual brainstorming.

Now that the tools were chosen, it's very important to promote and encourage their use. After granting access to all employees, the agency decided to schedule four online sessions to clarify when the tools should be used and answer the main questions regarding each tool. Additionally, a training guide was shared in order explain the main advantages of each tool and how could the creatives take advantage and integrate GAI in their creative process.

After the clarifying sessions, the agency gathered with key designers and team leaders to understand if the access to a premium level of the tools would be beneficial. The conclusion was to grant this access to star users, such as the leaders of each project, to boost productivity. This decision would be revised after analysing the feedback every quarter.

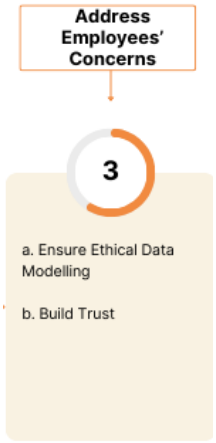

Figure 21 - Step 3

In the training sessions and workshops, a few employees expressed their concerns regarding the integration and use of GAI tools in the creative process due to the bias and lack of control of the generated output. The agency outlined the importance of the sessions and the "how to use" guides shared that educate how to properly use GAI-generated content in an ethical and controlled way. Simultaneously, the agency decides to challenge the Global team to create a corporate-wide database that is used to train internal GAI tools, which would ensure an ethical use and avoid copyright infringement.

When integrating the GAI tools in the creative process, the agency also promotes a "human-in-the-loop" approach in which team leaders review and refine the GAI generated outputs. This approach allows employees to trust the process and explore the new tools with less apprehensions.

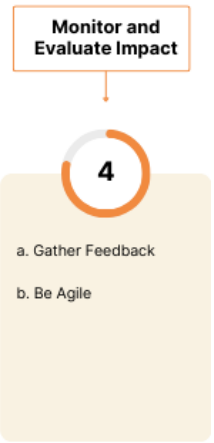

Figure 22 - Step 4

After the first months of integration, the agency considers relevant to implement the monitoring and evaluation phase. To gather feedback, an anonymous survey was built tackling satisfaction level, usage frequency, performance rating and purpose of use. By promoting the evaluation of the tools, the agency was able to better evaluate impact on the productivity and efficiency of the creative teams. The information collected through the surveys was used to monitor the performance of the tools to report to the Global team and to analyse if any changes should be done.

In this case, after analysing the feedback, the agency concluded that more employees from the creative team needed premium access to be more efficient and less reliant on specific features of the tools of the team leaders. Since this required more investment, the agency contacted the Global team and scheduled a meeting with the AI department that was overseeing the integration process across Europe. The agility and fast response were key to maximize both the potential of the GAI tools and the productivity of the creative team.

Figure 23 - Step 5

Finally, the agency recognizes the potential of GAI and allocates a team to be part of the Global forum about AI. The Global team already has a department and investment allocated to this topic however Portugal is not involved. To be ahead of the market and leverage new opportunities, the agency decided that it was critical to be aware and part of the full process related to GAI tools and advancements in the Global team.

7. EVALUATION AND DISCUSSION

As the DSR approach implies, the artifact should be evaluated in order to assess its relevance in the examined field. In this case, the assessment was done through individual online interviews to two experts, one in Marketing and other in Design. The objective of selecting experts with different backgrounds aims to validate the suggested guidelines through various perspectives. Additionally, the qualitative information gathered through the interviews intends to complement this research and will culminate in a reviewed set of guidelines, constituting the final artifact of the research.

As mentioned before, one of the experts currently works in the Marketing department in the Headquarters of a multinational food & beverages company; is licensed in Management and has a master's degree in marketing management. The expertise in Marketing and Digital Innovation enabled a sharp review of the feasibility of the guidelines within a global team environment. The full interview is detailed in Appendix B.

The second expert is licensed in Communication Design and has a master's degree in design & advertising, having extended experience in both Graphic and Digital Design, and UX/UI Design. The guidelines evaluation through the lenses of a designer was also key to assess the feasibility of the implementation of the guidelines since the designers and creative teams are the main targets and key stakeholders of the change. The full interview is detailed in Appendix C.

Each interview intended to review the guidelines and understand the evaluation for each phase. Generally, both experts agreed and saw the feasibility of the guidelines. Its structure and clear step-by-step approach were considered useful and insightful for companies that want to start tackling the GAI field. Additionally, even though the use case is not part of the artifact itself, it was considered very useful to better understand the deployment of the guidelines.

The first phase of the guidelines was considered very relevant to remind every company about the starting point of every integration – self-evaluation. Expert 2 highlighted that companies that do not have a relevant technological maturity, might not be suitable to jump into the integration of GAI tools. The assessment of the current digital infrastructure, its integration in the workflows and the resources available should all be considered criteria when thinking about further integrating GAI tools in the creative workflow. Also, including the creative team members in the process was considered essential since they are the key stakeholders of the whole implementation. Expert 1 suggested to clarify that each company should map the current creative workflow (not create a new one) directly with the team and identify the owners of each part of the process. As an employee in a multinational company, the Expert shared that having a clear ownership guidance is key to a smooth workflow. This assessment should include identifying the main bottlenecks of the creative process to better understand where resources are being wasted and which tools can be used to optimize time and become more efficient.

Regarding phase 2, all three main segments were considered relevant and crucial for the use of the guidelines. The GAI tools information was considered especially useful for companies that are not aware of all the solutions in the market. The designer expert also recommended to assess the types of projects conducted company-wide to have tools' synergy between teams. If one department constantly needs a tool that can also be useful for other department, the tool should be the same, avoiding complexity.

Additionally, promoting the use of the tools was highlighted as an important step since deploying a new tool requires investment that is only capitalized if employees know when and how to use it. Even though it is clear in the use case, it was suggested to also include in the original guidelines the suggestion of building "how-to-use" guidelines and conduct online trainings since building a prompt that effectively delivers the intended output is still challenging with the available tools.

Phase 3 was highlighted by both professionals as key. Addressing employees' main concerns came naturally into discussion and so both agreed that this phase was a "must-have" in the guidelines. Expert 2 even suggested to move this phase to the second step of the guidelines instead of the third since these topics and concerns should be clarified before the employees start using the tools. All companies should clarify the main concerns, especially regarding copyright infringement and GAI tools limitations in order to empower employees with the right information to make the best decisions possible. This set of guidelines should also guide users on how to deal with client's or projects confidential information since by putting the information in the GAI tool, it will no longer be private and will be used to train the model (if the tool was not internally developed).

Phase 4, as in any project, is needed to control the integration process status and performance. Both experts agreed with the proposed steps, however Expert 2 suggested to add a layer of more qualitative and quantitative KPIs related with efficiency and productivity. By analyzing if the timelines of the projects were reduced or by gathering feedback from clients regarding the quality and differentiation of the proposals will allow to better understand if the tools are allowing to generate more value and helping to maximize the human resources available.

Finally, phase 5 was also considered fundamental since companies that will follow the guidelines are probably interested in exploring GAI, and so should keep updated to leverage the full potential of these tools. When deep diving into the topic, Expert 1 suggested that it could be beneficial to clarify in the guidelines that companies should continue seeking and researching third parties that are developing GAI tools, and not necessarily develop one in-house, due to the complexity of this task. The purpose of the guidelines is to integrate already developed GAI tools into current digital infrastructure and creative workflow, and not build one from scratch. Expert 2 also highlighted that after acknowledging the new tools and features, it's essential to repeat the guidelines from start to access if integrating the new feature or tool will bring added value to the creative workflow or if it will only bring more complexity.

Both professionals considered the guidelines highly relevant for the market and with potential to help companies navigate in this dynamic industry. Having a structured process for integrating new tools is key for its successful integration and consequent maximized usage. As mentioned before, having new tools that are not used or efficiently used is a waste of investment and so companies should follow a step-by-step approach as suggested in the guidelines to make sure the whole company is following the changes and news.

8. REVISED GUIDELINES

Based on the feedback from the interviews, a revised set of the guidelines was built to integrate the suggestions and improvements discussed. The iteration of the artifact is part of the DSR approach, and so the guidelines below will constitute the final artifact.

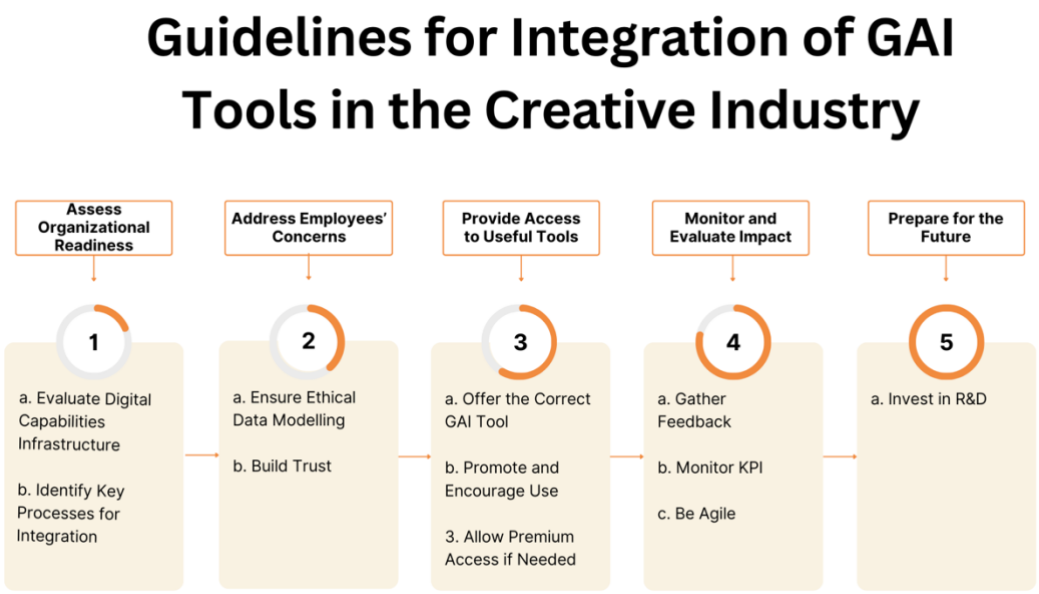

Figure 24 - Revised Guidelines

8.1.1. Assess Organizational Readiness

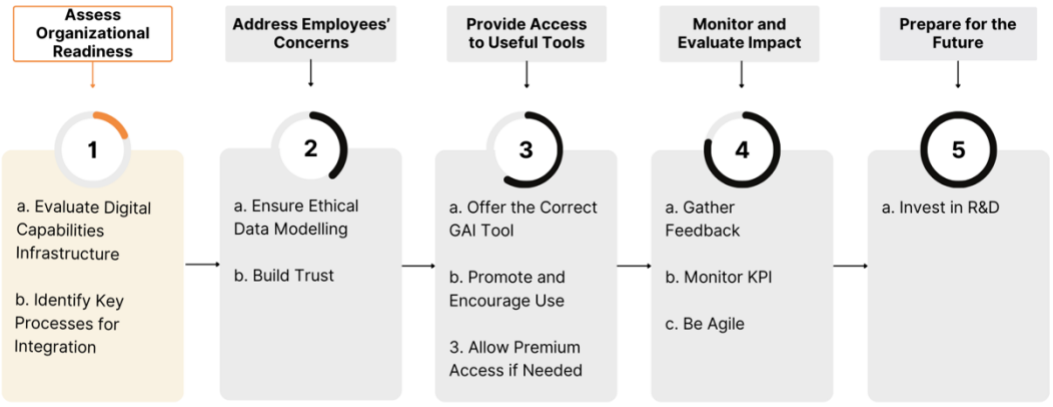

Figure 25 - Revised Step 1

a) Evaluate Digital Capabilities Infrastructure

To effectively integrate Generative AI tools in the creative process, it's crucial to make sure the organization has a technological infrastructure that can support these tools. For an efficient and productive integration, the infrastructure should support seamless integration with existing workflows (Abbasi et al, 2017). The evaluation of digital capabilities should involve assessing the

existing hardware, software and data management systems, together with ensuring the compability of GAI with the existing digital ecosystems (Maher, 2012). This assessment should be lead by the IT/Data&Technology department, together with the creative department in order to make sure the key information for decision-making is gathered. Additionally, the evaluation should include the validation of the resources available and the level of complexity that introducing a GAI tool will generate. The integration of these type of tools should only happen if the company has the technological maturity required to integrate the tool through a smooth proccess that is easy to understand and use.

b) Identify Key Processes for Integration

As seen before, GAI tools can be used for diverse purposes. It's important to understand and map the current creative process to evaluate which are the main needs that a GAI tool could potentially address. This should be a company-wise evaluation since there can be similar needs between departments. The analysis of the current bottlenecks will help identify in which part of the workflow more resources are being wasted and which tool could help improve the time spent in the identified bottleneck. As so, together with the creative team, a thorough analysis of the daily tasks of the team is crucial to identify the main needs that a GAI tool should tackle. This systematization of the creative process will allow a more organized and clear integration of the tools within the workflow of each team and project.

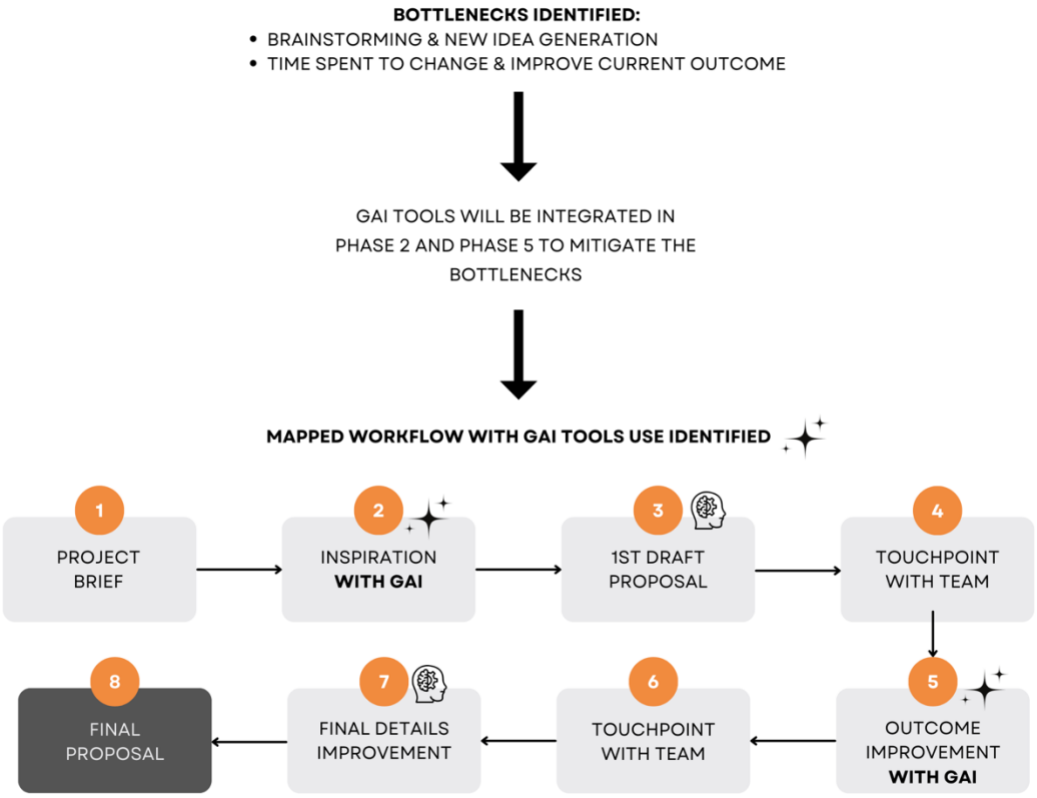

Figure 26 - Bottlenecks Example and Mapped Workflow with GAI Tools

8.1.2. Address Employees' Concerns

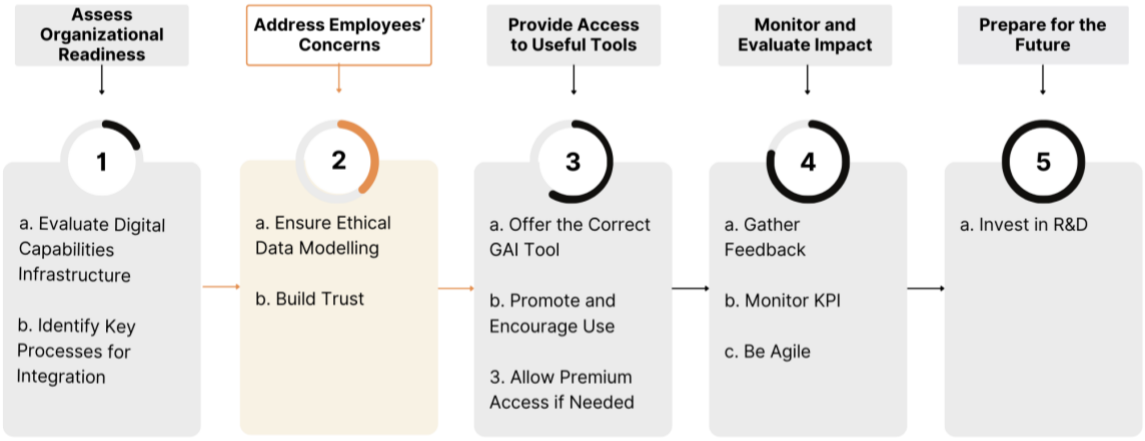

Figure 27 - Revised Step 2

a) Ensure Ethical Data Modelling

To successfully integrate a GAI tool, it's key to address employees' concerns to encourage and maximize the tool's usage. One of the major concerns is the source of the data generated by GAI. Being integrated within the art industry, creatives worry about the potential copyright infringement and the misuse of intellectual property that using GAI content can imply. To tackle this concern, companies should be transparent regarding the source of data used to train the AI model and build clear ethical use of GAI guidelines. These guidelines should also clarify how clients and projects' confidential data should be managed since using a GAI tool with a private information input will allow the model to learn and train the data with that information, making it no longer confidential.

Some solutions that ensure ethical data modelling imply using datasets that are licensed for use, or internally generated and owned by the company. Alternatively, being GAI a growing and developing field, policies and global frameworks will eventually be discussed and published, allowing companies to better position themselves in the future.

b) Build Trust

Building trust is a fundamental step in integrating GAI tools into the creative workflow and should be stimulated before the full access to the tool. Since GAI tools can still be a novelty for some employees, it's key to cultivate trust in GAI by involving them in the implementation process and demonstrating the benefits of diverse tools. Research also highlights the importance of transparency and engagement when encouraging trust in AI systems. According to a study by Rai et al. (2021), trust in AI can be significantly improved by promoting a clear communication about AI's capabilities and limitations. By scheduling clarifying sessions informing about the future integration of tools and the capabilities and limitations of the selected GAI tools will allow users to better set their expectations and understand from start how the tools should be used. Another effective strategy is to maintain a human-in-the-loop, which ensures both that AI-generated outputs are controlled by a person and that the final creative outputs meet the company's quality standards.

8.1.3. Provide Access to Useful Tools

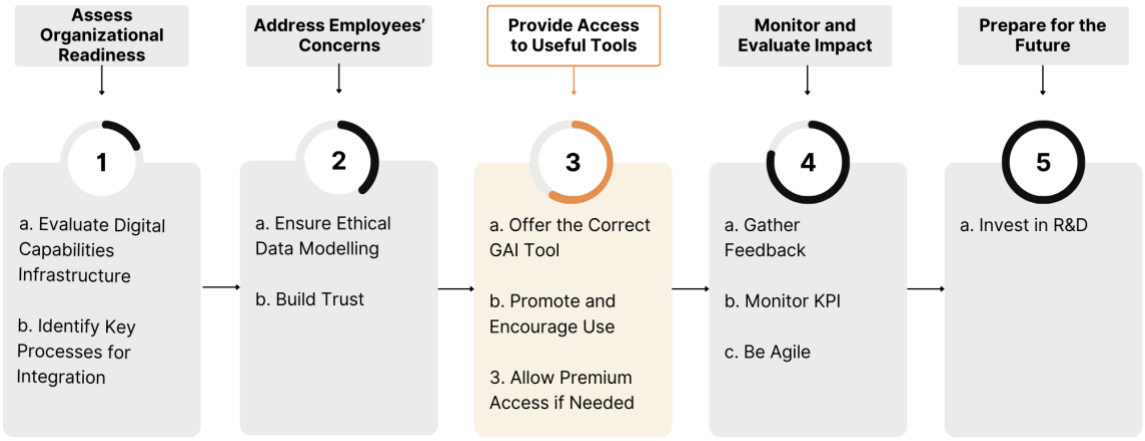

Figure 28 - Revised Step 3

a) Offer the Correct GAI Tool

Once the main needs of the creative team are identified, it becomes possible to determine which is the best GAI tool(s) to integrate. As mentioned in the previous chapters, there are different tools for different outputs. The image below illustrates some examples of GAI tools designed for distinct purposes. The chosen tool should address the identified bottlenecks and follow the first phase of these guidelines – capability to have seamless integration with existing tools and digital infrastructure.

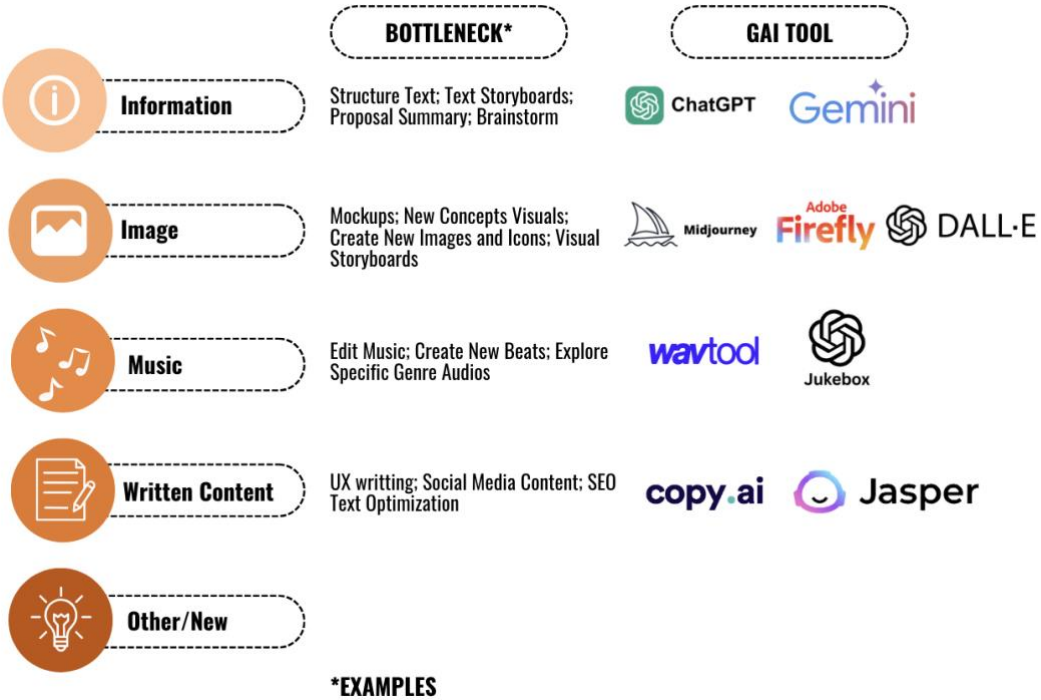

Figure 29 - GAI Tools - Example

b) Promote and Encourage Usage

Once the GAI tool(s) is defined and ready to be integrated, it's key to foster a culture and organizational environment that encourages innovation and embraces new creative methods and workflows. As mentioned by Amabile and Kramer (2011), promoting an environment in which employees feel empowered to experiment and challenge themselves can lead to more creative results. This empowerment should be the consequence of a clear set of "how-to-use" guidelines regarding the use of the GAI tool, that can be clarified through Q&A sessions, for example. These sessions will allow employees to clarify doubts and overcome usage barriers, encouraging an open conversation of the correct use of the tools. Additionally, it's important to correlate the workflow map developed in the first phase with the chosen GAI tools so that employees know when to use each tool within the internal creative process workflow.

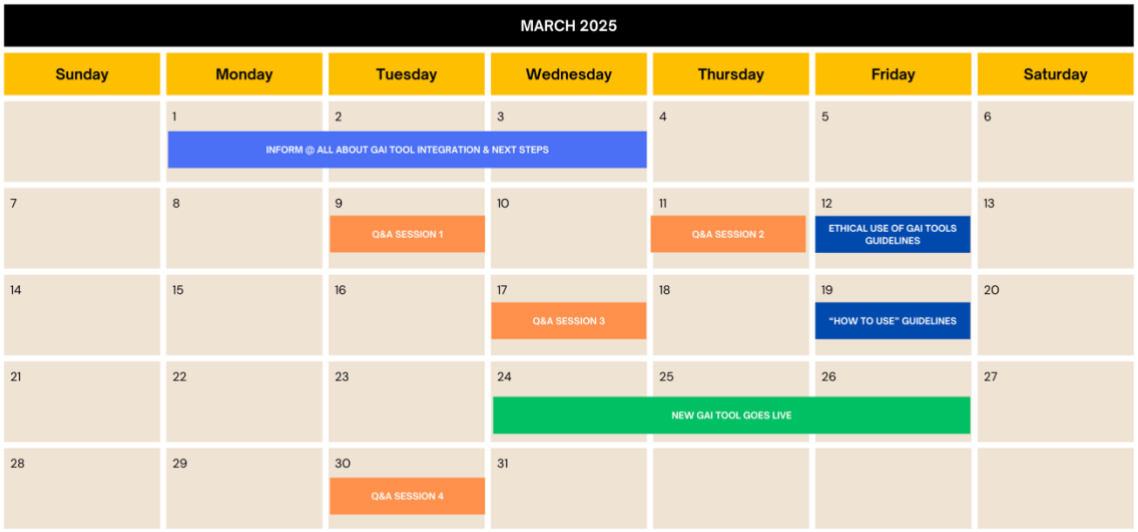

Figure 30 - Calendar Example for GAI Tool Integration

c) Allow Premium Access if Needed

Since within a creative team each person can have a different role and responsibility, the access level of the tool can also vary. Key team members, such as project managers and senior designers, might need advanced features to fully leverage the tool's potential. By identifying these star users, the company can improve the team's overall performance by selecting the team members that have most impact in the creative process. This targeted approach not only optimizes resource allocation but also fosters a sense of empowerment and motivation among employees. Additionally, if there's several GAI tools available, clarifying the priority tools will also help focusing investment on the right resources.

8.1.4. Monitor and Evaluate Impact

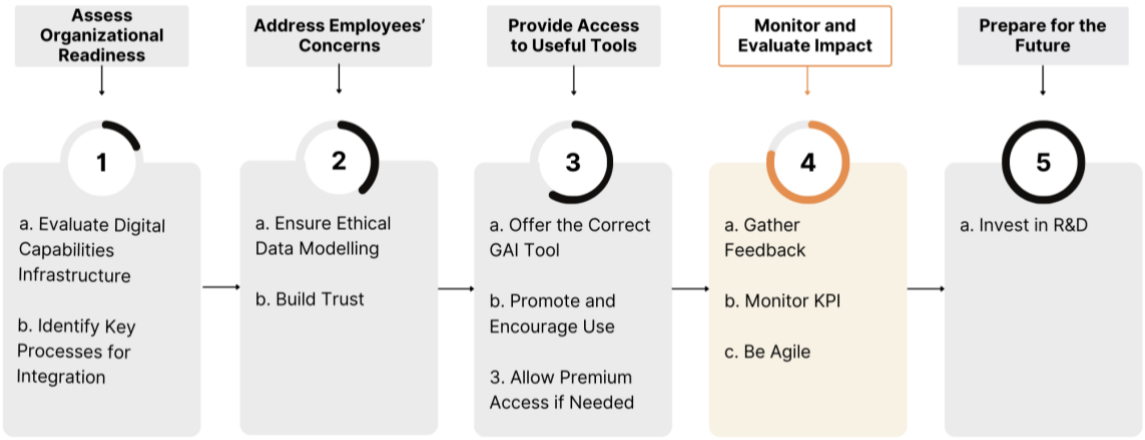

Figure 31 - Revised Step 4

a) Gather Performance Feedback

After integrating the GAI tool in the creative process, the continuous monitoring of user experience is essential to understand the success of the integration. Through surveys, direct feedback or other already established feedback system, it's key to understand if users are having a positive experience and if they consider the tool useful, that enhances their productivity. Below, there's an example of a survey that can be internally conducted per trimester to gather feedback about the tool's usage and performance.

Table 4 - Anonymous Feedback Form Example

	QUESTION
1.	DO YOU LIKE USING XXX?
1.1	IF YES, FOR WHICH TASK DO YOU USE IT THE MOST?
2.	HOW OFTEN DO YOU USE XXX?
3.	DID YOU HAVE ANY TECHNICAL TROUBLE WHEN USING XXX?
4.	IS IT CLEAR WHEN YOU CAN/SHOULD USE XXX?
5.	DO YOU HAVE QUESTIONS REGARDING THE INTEGRATION AND USE OF XXX?
5.1	IF YES, WHICH QUESTIONS?
6.	DO YOU CONSIDER TO BE MORE PRODUCTIVE WHEN USING XXX IN THE CREATIVE PROCESS?
6.1	WHY?
7.	IS GETTING TO A FINAL PROPOSAL/FINAL OUTCOME HARDER WHEN USING XXX?
7.1	WHY?

b) Monitor KPIs

To evaluate the success of the integration, a set of internal KPIs should be established. Since the goal of the integration of GAI tools is to improve the identified bottlenecks, KPIs such as time spent on the task and timeline of projects should be set, relating with the bottleneck. Other client-based KPIs can also be monitored to access if the quality of the work is also improving. Gathering the clients' feedback regarding the improvement of creativity in the proposals, the response-time per project, or the time needed for improvements can also be an indicator of the effectiveness of the chosen tools.

c) Be Agile

With the gathered feedback, the company should have the capability to adapt and improve where needed. To do so, it's fundamental to have an agile hierarchy or organizational structure that allows fast decision-making. This flexibility could eventually be achieved through the creation of a specific team that oversees the integration of the GAI tool in the creative process. By deploying the responsibility and defining the leader, it will be easier to keep track and control the performance of the project. The owner should also be the point of contact for doubts and problems during the integration process, promoting an open conversation about each tool.

8.1.5. Prepare for the Future

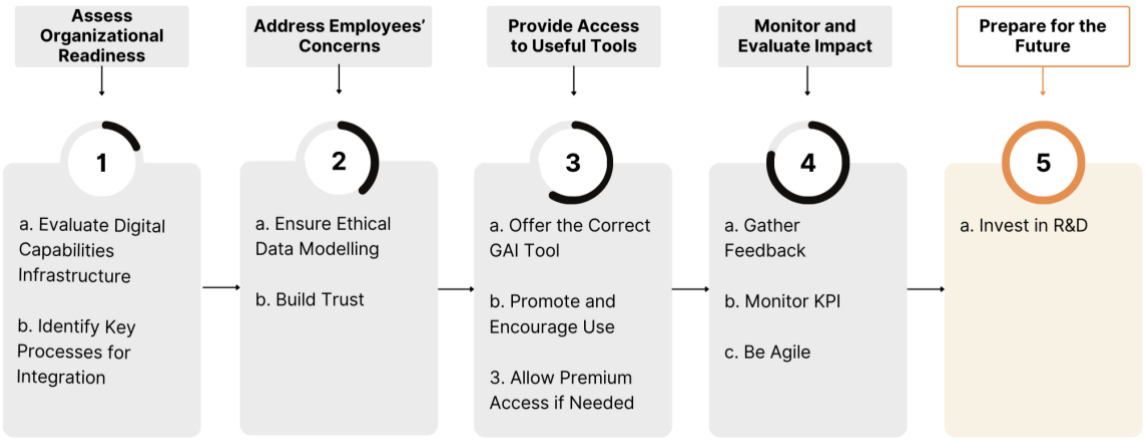

Figure 32 - Revised Step 5

a) Invest in R&D

Generative AI is a fast changing and growing field that will certainly have much more improvements and new tools in the near future. For a creativity-based company, being updated and equipped with the latest tools will allow them to be upfront and disruptive, generating added value to the market. To do so, companies should keep evaluating what is in the market and which new tools are being released. After this analysis, it's crucial to reassess the organizational readiness and tool purpose before jumping into its integration. Having too many tools can generate a complex workflow for employees and so it's key to make sure every introduced tool has a specific

goal and bottleneck to tackle. Being upfront also implies that this analysis is done on a timely manner and consistently which will allow to discover new features and new tools with time to successfully implement and integrate in the internal workflow, if needed.

By following the described guidelines above, companies should be equipped to start a smooth integration of a new GAI tool. Through the guidelines, some examples of potential deliverables or outputs are given such as the creative workflow map, the “Ethical Use of GAI” Guidelines, the scheduling of Q&A Sessions that focus on answering “WHAT”, the identification of the correct GAI Tool and finally the “How to use” Guidelines that focus on “HOW” and “WHEN”, which represent milestones that should be followed to ensure that employees have all the required information to use the new tools.

9. CONCLUSION AND FUTURE WORK

9.1. SUMMARY OF THE DEVELOPED RESEARCH

This project followed a Design Science Research (DSR) approach which implied three cycles – rigor, relevance and design cycle. In the rigor cycle, a literature review was conducted to understand the current state-of-art regarding Artificial Intelligence, Generative Artificial Intelligence tools and Creativity. Through this phase, it was possible to understand the main challenges and opportunities that the industry faces, and the capabilities of both AI and some specific tools detailed in the respective chapter. The literature review also allowed to gather the knowledge to build an insightful survey that represented the relevance cycle, in which field testing should be developed. This survey aimed to understand the current use of GAI tools in creative companies in Portugal.

Finally, the design cycle was completed by the development, evaluation and demonstration of the artifact – a set of guidelines for the integration of GAI tools in the creative industry. The guidelines were built based on the insights from the literature review and survey results; evaluated by two experts from different backgrounds that made suggestions that culminated in a revised set of guidelines; and a fictional demonstration use case was described to clarify the deployment and implementation of the guidelines in a possible real-world case.

Through the literature review, online survey and final artifact, the intermediate objectives were met, and the research questions were answered, as detailed in chapter 5.1.

9.2. LIMITATIONS AND FUTURE WORK

As mentioned during this research, AI and GAI is a fast-developing field that will continue to grow and innovate in the next few years and so the guidelines proposed will need to be adapted to the barriers and opportunities that the new tools will offer. Consequently, the literature review will need to be updated to further include new tools and models that will become available, with new features and functions.

Additionally, a deeper field testing can be developed by extending the time and number of questions of the survey in order to better understand some opportunities and concerns of the users. Having employees' insights is key for a successful integration of GAI tools in the creative workflow and so future researchers should continue focusing on collecting more users' insights.

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APPENDIX A – COMPLETE ONLINE SURVEY (PORTUGUESE)

Q1 **Consideras que a tua profissão está relacionada com a indústria criativa?**

Sim

Não - (if answer was no, the survey was finished, as explained before)

Q2 **Seleciona o teu intervalo de idade**

20-25

26-30

31-35

36-40

41-50

51+

Q3 **Seleciona a(s) área(s) na qual o teu trabalho se enquadra:**

Design gráfico e visual

Design de produto

Artes visuais e plásticas

Media digital & Produção Multimedia

Arte cinematografica & Performance

Musica & Producao

Literatura & Escrita

Marketing

Q4 **Trabalhas...**

Para uma empresa

Por conta própria

Ambos

Q5 **Utilizas ferramentas de Inteligencia Artifical Generativa na tua vida pessoal?**

Sim

Não

Q6 **Utilizas ferramentas de Inteligencia Artifical Generativa no trabalho?**

Sim

Não

(Caso resposta "Sim" na Q6)

Q7 **Em que área utilizas mais?**

texto/informação

imagem

vídeo

música

outro

(Caso resposta "Sim" na Q6)

Q8 **Que ferramentas utilizas mais?**

DALL-E

Chat GPT

Copy.AI

Jasper AI

JUKEBOX

WAVTOOL

DeepArt

MidJourney

Outro

(Caso resposta "Sim" na Q6)

Q9 **Em que partes do processo utilizas mais este tipo de ferramentas?**

Preparação - recolher toda a informação e inspiração necessária para chegar ao output desejado

Iluminação - chegar a ideias disruptivas e inovadoras

Verificação - avaliação e ajuste da ideia para adaptação ao output esperado

Outro

(Caso resposta "Sim" na Q6)

Q10 **Para ti as ferramentas de GAI são mais úteis para...**

melhorar uma ideia

inspiração/disrupção

gerar alternativas

complementar trabalho

outro

(Caso resposta "Sim" na Q6)

Q11 - Avalia as seguintes frases entre 1 e 5 sendo 1 - Discordo Totalmente e 5 - Concordo Totalmente

Q11_1 A minha empresa encoraja o uso de GAI

Q11_2 A minha empresa permite o uso de GAI

Q11_3 Gosto de usar ferramentas GAI

Q11_4 Tenho acesso, mas não costumo usar ferramentas de AI

Q11_5 Uso diariamente ferramentas AI

Q11_6 Tenho preocupações em usar GAI

Q11_7 Demoro mais tempo a acabar tarefas quando uso GAI

Q11_8 Trabalho com mais qualidade quando uso GAI

Q11_9 Precisava de um acesso mais premium/avançado para ter melhores resultados

(Caso "não" na Q6)

Q16 - Avalia as seguintes frases entre 1 e 5, sendo 1 - Discordo Totalmente e 5 - Concordo Totalmente

Q16_1 A minha empresa proíbe o uso de ferramentas GAI

Q16_2 Dão-me acesso premium a ferramentas GAI

Q16_3 Não confio nos resultados de GAI

Q16_4 Conheço ferramentas de GAI

Q16_5 Acredito que seria vantajoso para o meu trabalho utilizar ferramentas de GAI

Q16_6 Se usasse GAI, seria mais produtivo

Q16_7 As ferramentas ao meu dispor ainda não estão desenvolvidas o suficiente

(Caso "não" na Q6)

Q17 Gostarias de utilizar ferramentas de GAI no trabalho?

Sim

Não

(Caso “não” na Q6 e “sim” na Q17)

Q18 Em que área?

Texto/informação

Imagem

Vídeo

Música

(Caso “não” na Q6 e “não” na Q17)

Q20 Porquê? (open answer)

Q12 Indica até que ponto cada um dos temas te preocupa entre 1 e 5, sendo 1 - Não preocupa e 5 - Preocupa muito

Q12_1 Fiabilidade dos dados

Q12_2 Infração de Copyrights

Q12_3 AI ser tendencioso

Q12_4 Substituição do emprego por AI

Q12_5 Questões Éticas

Q13	**Das seguintes barreiras associadas à utilização de AI quais aquelas que experiencias/vives mais no teu dia a dia. Escala de 1 a 5 em que 1 nunca experiencio, 5 experiencio sempre -**
Q13_1	Acessibilidade a ferramentas uteis
Q13_2	Esforço para aperfeiçoar o output
Q13_3	Output não ajustado ao pedido
Q13_4	Falta de formação para uso de GAI
Q13_5	Falta de confiança no output gerado

APPENDIX B – EXPERT 1 INTERVIEW

Interview Notes

The Expert generally agreed with the proposed guidelines and believed in its market fit for future integration. The following notes describe the suggested changes discussed in the interview.

Phase 1: Assess Digital Readiness

Evaluate Digital Capabilities Infrastructure & Identify Key Processes for Integration

- It's really important to include the creative team. Employees' need to be aware and included in the process
- It's key to map the creative workflow and the owners of each step of the process
- The identification of the creative team's bottlenecks will be crucial to define the correct GAI Tool and should be reflected in this phase – understand where the team is using more resources and for which tasks in order to know which problem should be solved by the new tool
- To be an efficient integration, the tool needs to have a specific purpose and not just be randomly integrated into the workflow

Phase 2: Provide Access to Useful Tools

Offer the Correct GAI Tool & Promote and Encourage Usage & Allow Premium Access

- Clarify that each tool serves a certain purpose
- Correlate the choice of the tool with the bottleneck previously identified
- Even though it was not highly evident in the survey, trainings should be included. Employees' might think they can use the tools but efficiently using them is different. Providing prompts trainings and guidelines will always help employees' to learn more and better understand how that tool can help them in the daily work.

Phase 3: Address Employees' Concerns & Phase 4: Monitor and Evaluate Impact

Ensure Ethical Data Modelling & Build Trust / Gather Performance Feedback & Be Agile

No notes – the Expert agreed with the proposal and did not suggest changes

Phase 5: Prepare for the future

Invest in R&D

- Clarify that companies should continue searching for third parties and new tools to look for new features, and not developing tools in-house.

APPENDIX C – EXPERT 2 INTERVIEW

General review: "Being such a new topic, it's appropriate to create a model/structure that guides companies through the use and integration of GAI tools to avoid the random use of these technologies. The suggested phases make sense, however due to the importance of tackling the employees' concerns, maybe this step should be prior to choosing the correct tools and giving the right access."

Phase 1: Assess Digital Readiness

Evaluate Digital Capabilities Infrastructure

"Assessing the current technological infrastructure is definitely important however it's equally important to consider the overall technological maturity of the company. Companies that are starting or have less resources may not find it practical or useful to immediately integrate GAI tools"

Identify Key Processes for Integration

"Identifying the current workflow and integrate the tools within is really really important since it allows the integration of tools that facilitate specific tasks on the daily life. As so, identifying in which phase of the creative process each tool should be used is key since different projects may require different workflows. It might also be relevant to do this assessment across different departments since different areas might need different tools"

Phase 2: Provide Access to Useful Tools

Offer the Correct GAI Tool

"As mentioned before, different projects might need different tools and so the initial identification of the workflows is essential to choose the tools to offer. For example, even creative teams have to do slides for client's presentations and so even though it's not directly linked with creativity and design, it's a relevant tool that could improve employee's efficiency (by using Copilot, for example)."

Promote and Encourage Usage

"This step is particularly important since currently employees learn "on the job" and so there's no clear training or rules regarding the use of the given tools. A better understanding of the capabilities of each tool and how it's supposed to integrate them in the daily operations would allow employees to be less overwhelmed. The wide offer and continuous development of new tools makes it hard for employees to know which tool to use and for which purpose. As so, providing guidelines or a shortlist would be a possible solution to give some directions to the users."

Allow Premium Access

"This step is super realistic. Usually companies have a limited budget and by offering the access to several GAI tools, not all users can have an advanced access. Correlated with the star users identification, the "star tools" should also be identified to clarify which are the priority tools that have more impact of the efficiency of the teams."

Phase 3: Address Employees' Concerns

Ensure Ethical Data Modelling

“This phase is so important that maybe it should come before the integration itself of the tools. These topics are very important and should be clarified before employees start using the tools. It’s key to clarify not only from where the data and information comes but also which data the employees can use for the input. For example, a lot of projects deal with information that is confidential and so, if employees are using a GAI tool it’s key that they know that the information given will be used by the tool to train itself and learn about the topic. As so, this information will no longer be private. “

Build Trust

“Building trust in the tools is also fundamental to ensure future use. Being such a trendy topic, clarifying the capabilities and limitations is key to demystify the “magic” of the tools. If GAI is presented as a “dreamland” and then users encounter problems and limitations, expectations will not be met which can lead to frustration. To avoid this and align users’ expectations, clarifying the purpose and advantages of each tool and their limitations will allow employees to be more confident when experimenting the tools in their daily routines.”

Phase 4: Monitor and Evaluate Impact

Gather Performance Feedback

“Evaluating the tools’ impact can go beyond performance feedback of the employees. Of course it’s important to gather users’ feedback about the tools, but due to the investment it’s also crucial to monitor performance KPIs. Evaluating if projects’ timeline reduced, if more disruptive solutions or ideas were presented to the final client, if each employee was able to participate in more projects in a certain period, can be example of impact KPIs that allow to evaluate if the tools have an impact on efficiency and productivity. Through this analysis, it will become clearer to the company if the chosen tools are giving the expected return and if they’re allowing to generate more value.”

Be Agile

“Having a team with ownership of the implementation and integration is key to not only control the project success but also to be the source of knowledge and point of contact. This team or person should be capable of answering questions and resolving access problems, unblocking barriers of usage.

Phase 5: Prepare for the future

Invest in R&D

“Keeping track of the new developments in this industry is key to being relevant in the market. There’s always new features and new tools being launched and so there should definitely have the means to have access to the news in the industry. Knowing what is happening is one part. The other part is after acknowledging the developments, going back to the start of the guidelines to understand if the new tool or feature is needed and adds value in the identified creative workflow. Having new tools that do not bring added value is not efficient nor for the company nor for the users.”