

“Augmented Brainstorming with AI” – Research Approach for Identifying Design Criteria for Improved Collaborative Idea Generation Between Humans and AI

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Abstract. Creative ideas need to be generated continuously in content marketing to communicate effectively to a given target group. Usually, brainstorming techniques are applied by content creators to stimulate new ideas. With the emergence of generative AI like ChatGPT, content ideas can be generated rapidly. The assumption is that by combining human and AI creativity appropriately, the creative results are higher than by humans or AI alone. The open research question is how to integrate humans and generative AI within the creativity process to augment the creativity. The research approach presented based on a currently running research project is aiming to identify appropriate design criteria to integrate generative AI in the form of ChatGPT into brainstorming processes to generate improved content ideas in the context of content marketing.

Keywords. Creative AI, ChatGPT, Augmented Brainstorming with AI, Human-AI interaction, Brainstorming, Collaborative Idea Generation

1. Introduction: AI and Brainstorming for Content Marketing

For successful content marketing, target group relevant and creative ideas are crucial in content creation [1]. At the same time, one of the biggest challenges for many Business-to-Consumer and Business-to-Business companies is finding enough topics, ideas, and content [2]. Brainstorming is a time-tested method which is often used in this context to generate a large number of ideas. It consists of two phases, where the first phase is idea generation, and the second phase is idea sorting and evaluation [3]. Recent developments in generative artificial intelligence (AI) like the GPT-3 language model and the derived ChatGPT application made powerful generative AI capabilities easily accessible [4] and made generative AI known to the general public [5].

The assumption is that by combining human and AI creativity appropriately, the creative results are higher than by humans or AI alone. People working in creative should not feel threatened by AI technology but should actively work to shape the interaction between humans and machines so the opportunities offered by AI can be leveraged [6]. The human-machine collaboration is expected to speed up and improve the brainstorming process by combining the strengths of both sides. It is therefore becoming increasingly relevant to understand how to design creative processes in a way that humans and AI can

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work together within the creative process and to increase the quality and quantity of the overall creative results [7].

The current state of research does not yet provide recommendations that would enable the systematic and effective usage of generative AI in specific creativity techniques such as brainstorming. Therefore, a systematic investigation based on experiments is conducted based on this research approach to evaluate the use of human-AI collaborative brainstorming. The research question is how ChatGPT can be used in content marketing for human-AI collaborative brainstorming to improve creative outcomes.

2. AI Augmented Brainstorming: Research Approach

Theoretical and literature based analysis

In the theory part, the aim is to identify influencing factors that support creativity in brainstorming. For this purpose, different theories and literature sources are consulted to develop a comprehensive understanding of factors that can promote creativity and stimulate the flow of ideas. It is discussed which brainstorming techniques are suitable for use in ChatGPT. The aim is to clarify to what extent ChatGPT can support creative processes and which techniques are best suited.

Research design, experiment and questionnaire

In order to test the effectiveness of ChatGPT in the brainstorming process, an experimental design is used to investigate cause and effect relationships [8]. In this case, an independent variable is manipulated to examine its effect on a dependent variable. The independent variable is the use of ChatGPT in the brainstorming process, while the dependent variables are the quality, quantity, speed, of the ideas generated. To conduct the experiment, several groups are formed to go through different scenarios using ChatGPT at different stages of the brainstorming process [9]. The groups are randomly selected and divided into at least two experimental groups and one control group. One experimental group uses ChatGPT throughout the brainstorming process, another only in certain phases, while the control group carries out the brainstorming process without ChatGPT. In addition, participants' experiences of using ChatGPT in brainstorming are queried using a standardized questionnaire following the experiment.

Data analysis and evaluation of the results

The groups are then compared to derive whether and to what extent ChatGPT is an enrichment to the creative process. Effectiveness is expected to be assessed using the following criteria:

- Quantity is measured by the number of ideas that are generated.
- Quality is measured by the How-Wow-Now-Matrix, a matrix based on feasibility and originality.
- The speed of idea generation is assessed by the time taken. [10,11,12]

The data of the experiment is analyzed and interpreted based on these evaluation criteria. The responses from the questionnaire is examined to determine the impact of ChatGPT on the creativity of ideas and to analyze the user experience.

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