# Framing Patterns of Generative AI: An Exploratory Survey of Utilization, Benefits, and Challenges

Constantin von Brackel-Schmidt
University of Hamburg
constantin.schmidt@uni-hamburg.de

Stephan Leible
University of Hamburg
stephan.leible@uni-hamburg.de

Gian-Luca Gücük
University of Hamburg
gian-luca.guecuek@studium.uni-hamburg.de

Dejan Simic
University of Hamburg
dejan.simic@studium.uni-hamburg.de

## Abstract

*Organizations and individuals are still identifying new and value-adding utilizations for generative artificial intelligence (GenAI) that offer great potential. Simultaneously, the introduction in organizations and private spheres is at a momentum in which promises and fears are communicated via various (informal) networks. Both lead to different attitudes towards GenAI. Given the passage of time and the ongoing progress, it is to be expected that the experimentation phase will follow a broad and structured deployment. Consequently, organizations must pay attention to suitable utilization scenarios and the attitudes of those potentially affected by GenAI to enable a successful deployment. Therefore, we surveyed utilization scenarios and attitudes towards GenAI. Building on this, we derived a structured overview of GenAI utilizations and identified four attitude (frame) patterns towards GenAI ranging from negative to enthusiastic. Our results contribute to explorative knowledge and can aid research and practice when dealing with human-centered GenAI utilization and deployment.*

**Keywords:** GenAI, frames, human-AI collaboration, utilization, challenges

## 1. Introduction

The rapid development of GenAI is very present and has led to immense attention in research and practice, reflected in the record of 100 million registrations in two months after the release of the most prominent GenAI tool, ChatGPT (Homolak, 2023). Organizations, the broad public, and politics have noticed the fast development of artificial intelligence (AI), particularly GenAI, and are pursuing to unfold the technological potential. This evolution is also reflected in the ongoing experimentation and discussion of suitable GenAI utilization, which can be found across various sectors and industries, for instance, in information systems, tourism, or research (Bahrini et al., 2023). Its ability to create output considered to be human-like (Floridi & Chiriatti, 2020) makes GenAI a candidate for a variety of possible utilization, both in direct human-AI collaboration scenarios and as (autonomous) integration in specific business processes (Rane, 2023). After undergoing variously extensive experimentation, GenAI appears to be delivering on some of its promises, as it seemingly can unfold performance improvements (e.g., Dell'Acqua et al., 2023). Given the passage of time since GenAI tools like ChatGPT were broadly introduced and the ongoing experimentation phase that a structured deployment likely will follow, it is important for researchers and practitioners to gain an overview of the applied utilization of technology. This knowledge can aid a successful deployment by paying attention to suitable utilization scenarios. Different studies have already shed light on specific use cases of GenAI (e.g., Feuerriegel et al., 2024; Fui-Hoon Nah et al., 2023). However, there is a lack of a structured collection of primary data regarding the concrete utilization of GenAI. This leads to our first research question (RQ):

*How is GenAI (professionally) utilized?*

AI and GenAI not only indwell positive effects for organizations and individuals for various task-related utilizations but also can improve the daily life of individuals with disabilities (Pancholi et al., 2023) and aid individuals, e.g., through the generative capabilities in language difficulty scenarios (Varghese & Chapiro, 2024). Simultaneously with the positive utilization scenarios, challenges and fears arise. They range from people warning against dystopian consequences for society (Sabherwal & Grover, 2024) that go in the

URI: https://hdl.handle.net/10125/108860
978-0-9981331-8-8

direction of AI domination of society, over job displacement up to hallucination, the need for regulation and adequate use, e.g., when using GenAI tools that (re-)produce content that may be discriminating or illegal (Fui-Hoon Nah et al., 2023).

Those promises, challenges, and fears underlying this technology are experienced or communicated via various (informal) networks, ultimately leading to different interpretations (Orlikowski & Gash, 1994) and attitudes toward the acceptance and use of GenAI in organizational and individual environments. Therefore, to ensure a balanced utilization and adequate measures to deploy it, attention must be paid to a suitable utilization and the interpretations of the technology by those potentially affected by it. To achieve this, practitioners and researchers need to collect and understand those interpretations and react accordingly to them to foster acceptance and use, especially when the deployment is still unstructured due to the current nature of sampled use. Orlikowski and Gash (1994) provide a valuable approach to grasping such individuals' interpretations of technology, referred to as technological frames. They provide a 'snapshot' of perceived risks, demands, and potentials based on their assumptions, knowledge, and expectations (Orlikowski & Gash, 1994). While attitudes have been studied in certain domains like education (e.g., Preiß et al., 2024), an observation leading to a broad spectrum of frames remains understudied. This leads to our second RQ:

*What frame patterns can be identified regarding the utilization of GenAI?*

To investigate our RQs, we collected the utilization and belonging attitudes, expectations, knowledge, risks, and fears regarding GenAI through a survey. Those represent the views of humans regarding this technology that few have yet deployed in a structured form (Rezazade Mehrizi, 2023). Thereby, we collected insights about GenAI and its influence on humans to derive frame patterns that shed light on its utilization, perceived and experienced limitations, challenges, and threats arising.

Our results contribute to an overview and a classification of GenAI utilization, providing a solid reference for both researchers and practitioners when dealing with GenAI application scenarios. Further, we draw limitations, challenges, and counteracting recommendations perceived by the respondents to prevent discrimination when introducing and utilizing this disruptive technology, especially in human-AI collaboration scenarios.

This paper is structured in the following way: Section 2 introduces the relevant theoretical background in the context of this work, encompassing frames and pre-frames, GenAI, and human-AI collaboration. Afterward, in Section 3, we present our methodical approach, namely our survey and its circumstances. Following this, in Section 4, we present our results before delving into the discussion and conclusion of the results in Section 5. Finally, we thematize the limitations and give an outlook as avenues for future research in Section 6.

## 2. Research background

### 2.1. Emerging technologies, their perception, and acceptance

With new technologies, new opportunities for organizations and individuals arise. They often promise to bring relief or efficiency and not infrequently undergo sampling cycles in various environments that put them under examination. Thereby, they are subject to criteria for acceptance, which can be key performance indicators (KPIs) such as working hours saved or successful applications, or be underlying human-oriented, 'soft criteria' arising from the individuals that are meant to use and include the technology in their everyday. Those 'soft criteria' can be measured through models like the technology acceptance model (TAM) by Davis et al. (1989), which includes aspects such as perceived usefulness and perceived ease of use. It can be essential to consider these aspects when a new technology is deployed on a broad scale since they determine the actual use and success of the deployment. Other models, such as UTAUT, expand the TAM by introducing factors indicating risks, such as social or privacy-related ones (Martins et al., 2014).

Orlikowski and Gash (1994) refer to those perceptions regarding an emerging technology in an organizational context as technological frames. They define technological frames as "*interpretations of technology*" (Orlikowski & Gash, 1994, p. 1) and determine them to be "*central to understanding technological development, use, and change*" (Orlikowski & Gash, 1994, p. 1). Frames can be individual or group-based (e.g., managers) interpretations and are shaped by their backgrounds, such as knowledge, expectations, and assumptions (Orlikowski & Gash, 1994). Davidson (2006) investigated frames described in studies and derived six generic frame categories. They deal with frames related to technologies' (missing) capabilities (1: "*Frames related to information technology (IT) features or attributes*"), with frames related to the value, requirements, and conditions before an application of the technology (2: "*Frames related to potential organizational applications of IT*"), frames related to the actual use in work practices (3: "*Frames related to*

*incorporating IT into work practices*"), frames related to the development from certain applications in the organization (4: "*Frames related to developing IT applications in organizations*"), frames related to social aspects (5: "*unidimensional, social frame*"), and 6: "*other frame categories*" (Davidson, 2006, p. 27). Given the potential of emerging technologies, their broad (structured) deployment may be yet to come. Given this case, assumptions and expectations about the use can be valuable and help align the deployment strategies with the frames. Rezazade Mehrizi (2023) builds on this with his concept of 'pre-framing' that explores people's assumptions and expectations before the (structured) deployment, thereby enabling the implementation of appropriate strategies for a certain emerging technology (Davidson, 2006; Orlikowski & Gash, 1994). Those frames can then aid in building settings for technology integration, especially in environments where humans closely work with such technologies, for instance, in human-AI collaboration scenarios.

## 2.2. Human-AI collaboration

With AI continuously included in professional and individual environments, its interaction with humans, especially when aiming towards achieving a certain shared goal (Terveen, 1995), surges increasing attention. As GenAI is often utilized in direct human-AI collaborations, with an intertwined interaction through a conversation, we must pay attention to this relation to consider its impact when investigating utilization and frames in such contexts. Therefore, this section introduces the collaboration and utilization of (Gen)AI and humans, referred to as human-AI collaboration. Research in this field has grown vastly in recent years, with the benefit of interdisciplinary views, ranging from information systems to healthcare (Braun et al., 2023). This comes not without a reason: AI enables performance improvements, for instance, by being more accurate (Fogel & Kvedar, 2018) and faster (Mergel et al., 2023). On the other hand, humans excel in tasks such as intuitive decision-making (Jarrahi, 2018). Combining the capabilities of humans and AI by collaborating makes the constellation potentially outperform the individual human and AI (Dellermann et al., 2019). Both entities complementing each other is referred to as hybrid intelligence (HI), a term that Dellermann et al. (2019, p. 640) define as *"the ability to achieve complex goals by combining human and AI, thereby reaching superior results to those each of them could have accomplished separately, and continuously improve by learning from each other."*

HI and human-AI collaboration occurs in various scenarios ranging from customer support (Brynjolfsson et al., 2023) to citizen science projects like galaxy classifications (Gal et al., 2022). In such scenarios, the degree of (Gen)AI utilization can differ: it can assist humans by providing decision suggestions backed with confidence levels (Hemmer et al., 2023), by receiving tasks that the human actively delegates to the AI, or by more general forms of utilization, where AI is used primary in the form of a tool assisting an ordinary task such as research through the internet (von Brackel-Schmidt et al., 2023). On the meta-level, such collaboration influence can be classified in that sense that either the AI supports humans with information that then can be used in cases like decision-making (Agrawal et al., 2018) or the AI being supervised, influenced by humans (Dellermann et al., 2019). This value-creating collaboration (Siemon, 2022) can occur in various environments, private and organizational. Here, the success of such collaboration can rely heavily on factors "*like trust, acceptance, or attitudes towards AI*" (Zercher et al., 2023, p. 1). When humans trust too much in proposals of AIs, it can lead to overreliance, and as a result, incorrect proposals are deemed acceptable (Bansal et al., 2021). This, however, can have negative consequences when AI proposals are perceived as reliable in the sense of an objective, neutral representation of facts (Pethig & Kroenung, 2023) that one otherwise would have searched and processed himself (Mosier & Skitka, 1999). This 'automation bias' represents biased decision-making inherent in humans (Pethig & Kroenung, 2023) and shows that often-believed myths, AI being more impartial than humans (Claudy et al., 2022), are misleading. Potential misleads by AI that are noted can prevent false decisions from being made – however – it "*can lead to a loss of trust in the system*" (Hemmer et al., 2023, p. 455). Therefore, especially with the introduction of GenAI, its potential, and associated challenges like the tendency to hallucinate (Fui-Hoon Nah et al., 2023), it is even more essential to consider frames and characteristics regarding AI in human-AI collaboration use cases to ensure a well-balanced, fair deployment and usage.

## 2.3. Generative AI

This section describes the landscape, characteristics, applications, and challenges of GenAI. Individuals of all ages, genders, and backgrounds worldwide are experimenting with ChatGPT, exploring and identifying plausible utilizations, as well as encountering hurdles. ChatGPT is a tool released by OpenAI that facilitates GenAI in an easily usable, conversational setting. After its release in November 2022, it has reached over 100 million users in barely two months, marking a record up to that point (Homolak, 2023), which leaves competing GenAI tools such as

Google Gemini (formerly Bard), Claude, Mistral, Aleph Alpha or LLaMA behind. The underlying technologies behind those tools build on GenAI, which is characterized by its ability to create human-like output that is not necessarily distinguishable from humans' work (von Brackel-Schmidt et al., 2023). It can generate such outputs for specific tasks without needing task-specific training, which makes it able to support "*humans in [an] almost unbounded area of language-mediated tasks*" (von Brackel-Schmidt et al., 2023, p. 2), especially as it masters capabilities thought to be handled only by humans (Kirkpatrick, 2023). Its multi-modal ability to handle different forms of output and input, such as text, sound, or videos (Feuerriegel et al., 2024; Leible et al., 2024), further opens the potential utilization areas. Given the human-like output that can be created for a great variety of different tasks, it is noteworthy that those outputs rely on statistics that (simply) predict the next output based on the previous input (Bender et al., 2021). Therefore, GenAI does not know or understand any of the given context (input or output); it only acts as a "*stochastic parrot*" (Bender et al., 2021, p. 617), which is especially important when dealing with GenAI or output generated by it. As stated before, GenAI is not being tested clandestinely; it is publicly available even though it is still under (rapid) development, leading to various fields of (unstructured and exploratory) utilization and research. It has already proven to be useful, e.g., for ideation (Joosten et al., 2024), problem-solving (Wu et al., 2022), supporting public participation (von Brackel-Schmidt et al., 2024), or even cyber security (Huang et al., 2024). However, this promising outlook of (future) integration is accompanied by several challenges ranging from the black box character of the underlying technology that hinders transparency and traceability regarding output generated over potentially illegal usage to discrimination like bias (Fui-Hoon Nah et al., 2023). For an ordinary user, it, therefore, may be challenging to achieve an understanding and value-oriented usage of GenAI that is balanced between utilizing its opportunities while considering its limitations and threats. Contrarily, this can lead to negative attitudes and low acceptance, which could lead to constraints and divergence based on the refused use and participation regarding a good implementation of such technology. Therefore, collecting individuals' utilization and their (pre-)frames on GenAI is crucial. This can aid in deriving measures to deploy GenAI and enable a human-centric adoption strategy of human-AI collaboration scenarios, opposing potential misuse, restrictions, and discrimination.

## 3. Methodology

This study aims to gain insights regarding the utilizations and implications of GenAI with belonging perceptions, called (pre-)frames. We conducted an online survey following Groves et al. (2009). We aimed at a diverse group of survey participants to build a broad understanding of perceptions between various fields of profession, sectors, expertise, and educational backgrounds. We also aimed to include participants still in education, i.e., students. Our survey was distributed by direct contact and posted on various survey platforms. The survey included questions on demographics, expertise regarding GenAI (tools), application scenarios (utilization) of GenAI, and situations where users were positively surprised or where they tried to apply it but failed or were disappointed. We also asked about its impact on their work or everyday activities, trust regarding GenAI, ethical concerns, potential factors to consider when using such technology in organizational or private contexts, its role as a potential assistant, and future limitations. Respondents had to be at least 18 years old. Of the initial 259 responses, 235 were analyzed. Twenty-four had to be sorted out due to implausible (e.g., random, unrelated) answers or short response times. Table 1 depicts the demographics of the respondents. Two researchers analyzed the responses in orientation to the frame categories derived by Davidson (2006), as described in Section 2.1.

**Table 1. Demographic data from the respondents**

| Category | Value | Amount [∑] | Percentage [%] |
|---|---|---|---|
| Age group | 18-24 years | 36 | 15.32 |
| | 25-34 years | 68 | 28.94 |
| | 35-44 years | 77 | 32.77 |
| | 45-54 years | 40 | 17.02 |
| | 55-64 years | 13 | 5.53 |
| | >= 65 years | 1 | 0.43 |
| Gender | Male | 144 | 61.28 |
| | Women | 90 | 38.30 |
| | Other | 1 | 0.43 |
| Position | Education/Trainee | 7 | 2.98 |
| | Student | 19 | 8.08 |
| | Employed (without personnel responsibility) | 71 | 30.21 |
| | Lower management | 30 | 12.77 |
| | Middle management | 59 | 25.11 |
| | Higher management | 49 | 20.85 |

Based on the survey's aim, we selected the frame categories related to technology features or attributes, technologies' potential application in an organizational context, related to incorporating technologies into work practices, and related social frames. The focus was not on collecting frames related to concrete development and other areas, so it refrained from using categories dealing with such topics (Davidson, 2006).

## 4. Results

Technology utilization strongly relates to knowledge and experience about its capabilities as well as the acceptance of (AI) technology (Davis et al., 1989; Kučević et al., 2024). Therefore, we collected GenAI utilization scenarios and humans' frames towards (the use of) GenAI. Our results are presented in the following.

### 4.1. Utilization of Generative AI

Our survey shows a wide variety of GenAI utilization. In summary, 268 codes of utilization were derived and condensed, as depicted in Table 2. They were clustered in eleven focus categories. The most mentioned utilization refers to **text**. It includes using GenAI to generate text, e.g., concepts to improve the text like a first draft whose wording could be improved, to reformulate text, e.g., to be more polite, text structuring, e.g., sorting arguments, translation, e.g., instructions to a native language, or summarization, e.g., of a proposal. In **education**, it is used in school and studies, mainly for homework and assistance. GenAI is often utilized to make inquiries and retrieve information. Here, participants mentioned using it as operation assistance, e.g., how to use a particular tool, to use it to gain an overview, e.g., recent developments in a very topical area, for data analysis, e.g., of results from a process, or to gain an understanding, e.g., about a logarithmic formula. Moving towards **music**, GenAI is described as being applied to create melodies or even to write songs. Besides certain scenarios, GenAI can also be used for **activity reflection**. It can serve in different forms to reflect the activities of an individual or a group: For instance, when using it for simulations such as salary or price negotiations, for comparisons, e.g., from different versions or results, for feedback, e.g., regarding a created concept, for validation, e.g., of a chosen approach, or even for leadership support, e.g., identifying use cases for the company. In terms of image-related utilization, participants described using GenAI for image generation and editing. With regard to **creativity**, GenAI is used as inspiration, e.g., for gifts, for idea generation, e.g., for complex problems, or to create presentations. When using GenAI, the focus can also be laid on **social interaction**. In this vein, it can be utilized for online dating, customer communication, marketing, or social media. Furthermore, participants report cases where it is used for structured **process improvement**, such as work- and production processes and efficiency gains. **Coding** is also a major GenAI meta utilization area. Here, it can be leveraged in several ways, starting with programming, i.e., the creation of code, e.g., based on a description in text form, for

**Table 2. Specified utilization by the participants**

| **Meta utilization** | **Specified utilization** | | | | | |
|---|---|---|---|---|---|---|
| Music | Melody creation | Songwriting | | | | |
| Images | Image editing | Image generation | | | | |
| Activity reflection | Simulations | Comparisons | Feedback | Validation | Leadership support | |
| Creativity | Idea generation | Inspiration | Presentation creation | | | |
| Social interaction | Online dating | Marketing | Social media | Customer communication | | |
| Process improvements | Work and production processes | Efficiency gains | | | | |
| Coding | Programming | Debugging | Testing | | | |
| Text | Generation | Reformulate | Structuring | Translation | Summarization | Improvement |
| Education | Studies | School | Homework | Assistance | | |
| Inquiry and information retrieval | Gaining an overview | Gaining understanding | Data analytics | Operation assistance | | |
| Domain application | Cyber security | IT Consulting | Construction | Traveling | Banking | Stock market |
| | Taxes | Cooking | Medicine | Recruitment | Production | |

debugging or testing of code. Finally, specific **domain applications** can be identified. They range from recruitment to medicine, cooking, taxes, stock market, banking, traveling, IT consulting, and cyber security.

The quota of entries per respondent can be calculated by setting the utilization entries in relation to the specified expertise regarding a GenAI tool like ChatGPT. For the group of participants with no to mediocre expertise, 107 entries were made, which is, based on 101 participants belonging to this group, 1.06 entries per participant. Compared to the group with expertise from high to very high, the quota is 12% lower, as this group had specified 161 entries distributed among 134 participants, leading to 1.20 per participant. Those differences also are reflected in the variety of utilizations mentioned. Those participants belonging to the group with high to very high expertise depict utilization in aspects regarding music that are missing in the other group. Further, they depict features in activity reflection, such as feedback, comparison, and leadership support, that are also missing for the other group. Interestingly, the group with higher self-reported expertise mentions various specific domain applications, whereas the other group mentions only banking and the stock market.

When asking the participants if GenAI has changed either their work or everyday activities, only a third of those previously mentioned utilization scenarios agreed (36.06%). In contrast, nearly three-fifths (59.13%) disagreed, indicating that although many utilization scenarios had been described, their impact seems limited and more experimental.

## 4.2. Multi-perspective pattern framework towards Generative AI

To analyze attitudes towards GenAI, we collected (pre-)frames. Based on those, we derived a multi-perspective pattern framework for GenAI, which is shown in Figure 1. Our framework presents four frame patterns for the utilization of GenAI and characterizes those potential usage groups accordingly based on the chosen frame categories derived by Davidson (2006), as explained in Section 3. It thereby sets the utilization and perspectives in relation to serve as a guiding framework. This can aid procedures such as conducting a GenAI integration, enabling adequate measures to ensure a successful and beneficial use of GenAI. The frame patterns range from negative to positive perceptions.

The first pattern, the **Rejection**-frame, involves the most negative attitude towards GenAI utilization and refusal of the technology. It includes the nature of the technology to be perceived with poor features, such as incorrectness, inaccuracy, lack of understanding and reliability, and missing attributes like creativity or aptitude as an assistant. Referring to an organizational application, the potential for damage and dependency, hallucinations, unsatisfactory or false answers, steadfastness, and needed authenticity are mentioned, also indicated by very low trust in potential GenAI decisions. Further, no influence is attributed to the application potential, and such an application is also regarded as a waste of time. In the lens of incorporating GenAI into work practices, its lack of application for human tasks, general missing applicability, and context length limits are mentioned. Individuals of this pattern believe they do not have enough expertise to use GenAI, which generally indicates that they do not want to use it, at least not in private. They are very concerned about ethical questions in the context of GenAI, such as questions about data protection, manipulation, and copyright. Finally, the pattern contains social-related frames, namely ethical topics occurring and manipulation or abuse potentials by the GenAI.

The second pattern is called **Skeptical**-frame. It has neither a firm positive nor a negative attitude. It does not reject GenAI in principle, but it is not convincing and highlights the aspects to be critically considered when applying this technology. When the features and attributes of GenAI are considered, this pattern mentions the limited ability to ‘understand’ logic and human capabilities like humor. Further, its forgetfulness, missing creativity, and eligibility are highlighted in areas not researched. The ability to act as an assistant is also declined. Frames in the context of the category of potential organizational application describe its unsuccessful use for future predictions and areas such as education, science, medicine, and psychological questions critically. Further aggravating factors perceived are data protection issues such as security and breaches, necessary expert knowledge when using it, and copyright. The trust regarding decisions made entirely by GenAI is low. If GenAI is applied, its influence may cover inquiries or text-related tasks. Concerning incorporation into work practices, security, verifiability, necessary human control, and limits such as no possible application in complex topics are mentioned. Regarding ethical questions, the individuals of this pattern are worried. Furthermore, they state that they do not have the necessary expertise to use GenAI for work practices. They emphasize responsibility regarding the use and associated outcomes and demand preventing the use of GenAI from getting out of hand. In terms of social frames, individuals of this pattern are worried about potential abuse, e.g., the creation of fakes or illegal content, which they underpin by addressing the question with regards to handling social principles. Finally, they mention the possibility of accessing a suitable GenAI tool.

| | **Rejection frame pattern**<br>Is dismissive of the technology. | **Skeptical frame pattern**<br>Does not reject GenAI, sees problems, is cautious and critical. | **Optimistic frame pattern**<br>Is open to the technology and uses it. | **Enthusiastic frame pattern**<br>Sees the technology as universal solution. |
|---|---|---|---|---|
| Frames towards features & attributes | Incorrectness<br>Inaccuracy<br>Lack of reliability<br>Lack of 'understanding'<br>Not creative<br>Not suitable as assistant | Limited 'understanding'<br>Forgetfulness<br>Not creative<br>Lack of logic<br>Lack of humor<br>No eligibility in areas not researched<br>Not suitable as assistant | Expression strengths<br>Application possibilities<br>Knowledge<br>Variety<br>Ease of use<br>High quality<br>Speed<br>Autonomy<br>Creative<br>Daily work tasks assistance | 'Thinking' ability<br>Emotional capacity<br>Human likeness<br>Reliability<br>Universal utilization<br>Creative |
| Related to potential organizational application | Damage potential<br>False statements<br>Hallucinations<br>Unsatisfactory answers<br>Steadfastness<br>Disappointing use (inquiries)<br>Dependence<br>Authenticity<br>No application potential<br>Waste of time<br>Very low trust towards GenAI decisions | Unusable for future predictions, in medicine, science, education, or for psychological questions<br>Data protection issues (security, breaches)<br>Necessary expert knowledge<br>Copyright<br>Applicable for inquiries<br>Applicable for text related tasks<br>Low trust towards GenAI decisions | Support potentials<br>Efficiency potentials<br>Necessary expertise in field of application<br>Necessary education (use, technology, limits, false fears, susceptibility to errors)<br>Applicable to increase efficiency<br>Applicable for support (planning, getting familiar with topics, creativity)<br>Applicable as catalyst<br>Trust towards GenAI decisions | Potential to increase the quality of life<br>No disappointments<br>Define targets<br>Very high trust towards GenAI decisions |
| Related to incorporating into work practices | Lack of application for human tasks<br>Missing context length<br>No applicability<br>Worried towards ethical questions<br>Refuses usage<br>Not enough expertise to use GenAI | Safety<br>Verifiability<br>No application for complex topics<br>Worried towards ethical questions<br>Need for human control<br>Need for responsibility<br>Need to prevent use getting out of hand<br>Not enough expertise to use GenAI | Few or no disappointments<br>Little worried towards ethical questions<br>Clear rules of GenAI use<br>GenAI as support<br>GenAI is not a substitution<br>Human control<br>Human mind & self contribution<br>Verification of GenAI outputs (correctness, bias, copyright, illegality, tenability)<br>Appropriate use<br>Time savings<br>Simplification<br>Assistance<br>Enough expertise to use GenAI | No concerns towards ethical questions<br>Transparency and traceability<br>Enabler<br>Colleague<br>Delegation<br>Automation<br>Person of trust<br>Full entity<br>Substitution<br>Coach<br>Decision-making power<br>Enough expertise to use GenAI |
| Related to social | Manipulation by GenAI<br>Abuse potential by GenAI<br>Ethical questions | Questions handling social principles<br>Potential for abuse (fakes, illegal content, …)<br>Possibility to access a suitable GenAI tool | - | - |

**Figure 1. Multi-perspective pattern framework towards GenAI utilization**

The third pattern, the **Optimistic**-frame, represents individuals that leverage GenAI already and have a comparatively positive attitude towards the utilization. It highlights features and attributes related to GenAI, such as expression strengths, application possibilities, knowledge, support and efficiency potentials, variety and ease of use, as well as high quality, speed, and autonomy. They acknowledge GenAI's ability to be creative and assist with daily work tasks. When concerned with organizational application, frames are mentioned that highlight value from efficiency and support potentials, given that enough expertise in the field of application exists. For an adequate application, adequate education is also required, including the technology, limits, susceptibility to errors, and false fears. The value that may arise from GenAI is also noted by its utilization to increase efficiency and support, e.g., by planning, aiding in getting familiar with topics, helping with its creativity in creative tasks, and serving as a catalyst. Trust in decisions made by GenAI is perceived as relatively high. Frames regarding the potential incorporation into work practices describe many aspects to be followed. It includes a positive mindset that has not yet experienced disappointments. Therefore, individuals in this pattern are less concerned about ethical questions. However, they set clear aspects to consider when using this technology. It is necessary to set clear rules of use in place with human control, as humans are also responsible and contributing by themselves, using the human mind. Aside from this, the individuals believe that they have enough expertise regarding the functionality of this technology. They demand that the use must be appropriate and, given a verification of GenAI-tools output regarding correctness, bias, copyright, illegality, or tenability, GenAI can positively influence their work practices by providing assistance, simplification, and time savings, bearing in mind that it is a support, not a substitute.

The fourth and last pattern, the **Enthusiastic**-frame, portrays individuals who herald GenAI as a universal solution, looking for a ubiquitous implementation and its unparalleled benefits. The enthusiastic pattern has a positive frame regarding GenAI's abilities and highlights its ability to 'think,' emotional capacity, human likeness, and reliability. Besides praising it as being creative, no fields exist where GenAI could not be utilized. Therefore, in the context of application frames, this pattern considers that GenAI holds the potential to increase the quality of life as no disappointments were experienced. This leads to very high trust in decisions made by GenAI, where targets must be defined when applied in organizations. Individuals of this pattern deem having enough expertise when considering frames incorporating GenAI to work. They have no concerns

regarding ethical questions, which is underpinned by the expression of GenAI possibly acting even as a 'person' of trust or entity with decision-making power. Further, if transparency and traceability are given, it is viewed as an enabler, colleague, or substitution that can be used for automation and delegation. They tend to emphasize efficiency and functionality over moral or ethical dilemmas, seeing these concerns as secondary or irrelevant in the face of technological advancement.

## 5. Discussion and conclusion

With the enormous exploration around GenAI, this study aimed to understand the current utilization of GenAI and (pre-)frames of humans to build a pattern framework that fosters an understanding of people's attitudes and perceptions towards this technology.

The utilization of GenAI varies between the respondents. Its use ranges from text-focused applications to utilization in scenarios that involve emotions, such as online dating. They can be linked to utilization areas described in the literature (e.g., Fui-Hoon Nah et al., 2023). Utilization, such as the reflection from activities, e.g., in the form of feedback, simulations, or leadership, underlines the potential people perceive even for complex problems, which aligns with findings by von Brackel-Schmidt et al. (2023) and reflects the willingness to integrate it into cognitively challenging and critical tasks. The impact of GenAI on work or everyday activities is yet limited, indicating that the use is still experimental. The participants with less expertise mentioned also had less potential for utilization. It might be that with ongoing expertise, the awareness of utilization areas grows. Going beyond current literature, we not only depict single use cases, areas of GenAI use, prompt dimensions, or usage parameters (e.g., Braun et al., 2024; Feuerriegel et al., 2024; von Brackel-Schmidt et al., 2023) but offer a data-derived overview of discrete utilizations that can be used and built on by both practitioners and researchers, e.g., when introducing GenAI and illustrating concrete utilizations or identifying suitable application potentials in different departments with respective operational activities.

Our frame patterns include attitudes towards GenAI that range from positive to negative. The reject frame pattern raises essential issues: Concerns about attributes such as incorrectness, lack of reliability, or 'understanding' weakening the technology, and includes negative consequences in terms of copyright, data protection, potential harm, abuse, and manipulation potential by GenAI. The skeptical and optimistic patterns include aspects that play a crucial role when using GenAI, as they mention aspects to be considered to enable adequate use. These aspects may be central when implementing GenAI in both private and organizational contexts. Finally, the enthusiastic frame pattern represents individuals who view the technology positively and seek broad integration in its environment. It is possible that this pattern could play a role in the adoption of the technology by acting as a facilitator for GenAI utilization. However, this pattern could also be particularly exposed to the associated risks if it does not pay enough attention to these and existing boundaries, e.g., by blindly trusting and over-relying on GenAI.

The collected frames provide knowledge and an approach to understanding the individuals' perceptions and feelings regarding GenAI use. We apply and extend the framing landscape of (emerging) technologies outlined by Davidson (2006) and enrich already described frames towards GenAI, e.g., in the educational context (Preiß et al., 2024). Going beyond collecting utilization parameters, our pattern framework can foster the implementation process of GenAI. Here, it can serve as guidance between different possible stakeholder group classifications (Davidson, 2006) with their respective attitudes toward GenAI. In addition to skeptical uses, which focus on comparatively basic aspects such as research and text-based activities, patterns such as the optimistic or enthusiastic frames seem to actively aim to integrate the technology into everyday life, which is also confirmed by the statement that GenAI is attributed the ability to perform many tasks and is seen as an assistant or a replacement. This coincides with approaches to HI described by Dellermann et al. (2019) and represents a possible team-AI scenario described by Zercher et al. (2023).

The other two patterns go much less far and, in contrast, even emphasize the impossibility of use, e.g., in cases of complex problems. In practice, all four patterns could be encountered, which, as technology progresses continuously, must be paid attention to. An adoption strategy, e.g., in an organizational context, could be constructed so preliminary surveys are carried out, and people are classified into frame patterns according to their answers. They are then offered different types of training depending on the pattern they belong to, addressing the specific aspects that need further attention. In an additional step, joint events could be organized in groups that are put together so that as many patterns as possible are represented in each. These groups then stimulate each other, e.g., by demonstrating the potential for use through enthusiastic participants and thematically addressing reservations that skeptics would express. This results in a far-reaching exchange, which can support the promotion of a more extensive and balanced use of GenAI. At the same time, aligning governance components and design decisions with the identified patterns is possible. Use challenges could be addressed in detail and counteracted by creating suitable

handling procedures. Possible tools that would be made available could provide appropriate assistance but also suitable usage restrictions. It is conceivable, e.g., to design a tandem fed with the different patterns and associated characteristics in advance. It then is instructed to continuously monitor the interaction with regard to these aspects and, if necessary, to assist. Finally, during implementation, introduced solutions could be examined in relation to the criteria mentioned, e.g., the risk of manipulation through GenAI and interfaces designed to ensure human control and responsibility. This could lead to value-creating and balanced use. Otherwise, potentially recurring incidents, such as a 'new' digital divide, could be the consequence.

## 6. Limitations and outlook

Even though our study extends the knowledge base in the context of GenAI utilization and attitudes, it has limitations that offer avenues for future research. Our analyzed data is based on a survey with 235 participants. Though it provided valuable insights that led to the derivation of different frame patterns, they are qualitative, based on the expertise of this study's authors, and therefore serve as a basis for further investigating frames towards GenAI utilization. In this vein, the link between utilizations and corresponding attitudes could be further explored as it might unfold overarching patterns that result from the experienced use, e.g., in scenarios where a developer successfully utilized GenAI for programming and, therefore, might has an enthusiastic frame pattern, or a student that utilized it for inquiry and information retrieval that led to hallucinations, causing a skeptical frame. Regarding the technology progress, future developments should be elaborated on potentials such as the integration in application landscapes (e.g., offices), the use of multi-chaining or -agents or customized model integrations that could change the utilization as well as frames, but also might provide opportunities to counteract fears and criticism expressed, such as agents monitoring outputs of GenAI regarding weaknesses like bias, data protection, hallucinations, or incorrect answers.

## 7. References


Agrawal, A., Gans, J., & Goldfarb, A. (2018). *Prediction Machines: The Simple Economics of Artificial Intelligence*. Harvard Business Review Press.

Bahrini, A., Khamoshifar, M., Abbasimehr, H., Riggs, R. J., Esmaeili, M., Majdabadkohne, R. M., & Pasehvar, M. (2023). ChatGPT: Applications, Opportunities, and Threats. In *Systems and Information Engineering Design Symposium (SIEDS)* (pp. 274–279). IEEE.

Bansal, G., Wu, T., Zhou, J., Fok, R., Nushi, B., Kamar, E., Ribeiro, M. T., & Weld, D. (2021). Does the Whole Exceed its Parts? The Effect of AI Explanations on Complementary Team Performance. In *CHI '21: CHI Conference on Human Factors in Computing Systems*, Yokohama Japan.

Bender, E. M., Gebru, T., McMillan-Major, A., & Shmitchell, S. (2021). On the Dangers of Stochastic Parrots. In *Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency* (pp. 610–623). ACM.

Braun, M., Greve, M., & Gnewuch, U. (2023). The New Dream Team? A Review of Human-AI Collaboration Research From a Human Teamwork Perspective. In *Proceedings of the International Conference on Information Systems (ICIS2023)*, Hyderabad, India.

Braun, M., Greve, M., Kegel, F., Kolbe, L. M., & Beyer, P. E. (2024). Can (A)I Have a Word with You? A Taxonomy on the Design Dimensions of AI Prompts. In *Proceedings of the Hawaii International Conference on System Sciences (HICSS2024)*, Hawaii, USA.

Brynjolfsson, E., Li, D., & Raymond, L. (2023). *Generative AI at Work*. Cambridge, MA.

Claudy, M. C., Aquino, K., & Graso, M. (2022). Artificial Intelligence Can't Be Charmed: The Effects of Impartiality on Laypeople's Algorithmic Preferences. *Frontiers in Psychology*, *13*, 898027.

Davidson, E. (2006). A Technological Frames Perspective on Information Technology and Organizational Change. *The Journal of Applied Behavioral Science*, *42*(1), 23–39.

Davis, F., Bagozzi, R., & Warshaw, P. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, *35*(8), 982–1003.

Dell'Acqua, F., McFowland, E., Mollick, E. R., Lifshitz-Assaf, H., Kellogg, K., Rajendran, S., Krayer, L., Candelon, F., & Lakhani, K. R. (2023). Navigating the Jagged Technological Frontier: Field Experimental Evidence of the Effects of AI on Knowledge Worker Productivity and Quality. *SSRN Electronic Journal*.

Dellermann, D., Ebel, P., Söllner, M., & Leimeister, J. M. (2019). Hybrid Intelligence. *Business & Information Systems Engineering*, *61*(5), 637–643.

Feuerriegel, S., Hartmann, J., Janiesch, C., & Zschech, P. (2024). Generative AI. *Business & Information Systems Engineering*, *66*(1), 111–126.

Floridi, L., & Chiriatti, M. (2020). GPT-3: Its Nature, Scope, Limits, and Consequences. *Minds and Machines*, *30*, 681–694.

Fogel, A. L., & Kvedar, J. C. (2018). Artificial intelligence powers digital medicine. *NPJ Digital Medicine*, *1*.

Fui-Hoon Nah, F., Zheng, R., Cai, J., Siau, K., & Chen, L. (2023). Generative AI and ChatGPT: Applications, challenges, and AI-human collaboration. *Journal of Information Technology Case and Application Research*, *25*(3), 277–304.

Gal, Y., Segal, A., Kamar, E., Horvitz, E., Lintott, C., & Walmsley, M. (2022). A new Workflow for Human-AI Collaboration in Citizen Science. In *GoodIT 2022: ACM*

*International Conference on Information Technology for Social Good*, Limassol Cyprus.

Groves, R. M., Fowler, F. J., Couper, M., Lepkowski, J. M., Singer, E., & Tourangeau, R. (2009). *Survey methodology* (2nd ed.). Wiley.

Hemmer, P., Westphal, M., Schemmer, M., Vetter, S., Vössing, M., & Satzger, G. (2023). Human-AI Collaboration: The Effect of AI Delegation on Human Task Performance and Task Satisfaction. In *Proceedings of the 28th International Conference on Intelligent User Interfaces* (pp. 453–463). ACM.

Homolak, J. (2023). Opportunities and risks of ChatGPT in medicine, science, and academic publishing: A modern Promethean dilemma. *Croatian Medical Journal*, *64*(1), 1–3.

Huang, K., Wang, Y., Goertzel, B., Li, Y., Wright, S., & Ponnapalli, J. (2024). *Generative AI Security*. Springer Nature Switzerland.

Jarrahi, M. H. (2018). Artificial intelligence and the future of work: Human-AI symbiosis in organizational decision making. *Business Horizons*, *61*(4), 577–586.

Joosten, J., Bilgram, V., Hahn, A., & Totzek, D. (2024). Comparing the Ideation Quality of Humans With Generative Artificial Intelligence. *IEEE Engineering Management Review*, *52*(2), 153–164.

Kirkpatrick, K. (2023). Can AI Demonstrate Creativity? *Communications of the ACM*, *66*(2), 21–23.

Kučević, E., Leible, S., Lewandowski, T., von Brackel-Schmidt, C., & Ohlsen, F. P. (2024). A User-Based Study on the Acceptance of Artificial Intelligence-Based Decision-Support Systems. In *Proceedings of the Pacific Asia Conference on Information Systems (PACIS2024)*, Ho Chi Minh, Vietnam.

Leible, S., Gücük, G.-L., Simic, D., Brackel-Schmidt, C. von, & Lewandowski, T. (2024). Zwischen Forschung und Praxis: Fähigkeiten und Limitationen generativer KI sowie ihre wachsende Bedeutung in der Zukunft. *HMD Praxis Der Wirtschaftsinformatik*, *61*(2), 344–370.

Martins, C., Oliveira, T., & Popovič, A. (2014). Understanding the Internet banking adoption: A unified theory of acceptance and use of technology and perceived risk application. *International Journal of Information Management*, *34*(1), 1–13.

Mergel, I., Dickinson, H., Stenvall, J., & Gasco, M. (2023). Implementing AI in the public sector. *Public Management Review*.

Mosier, K. L., & Skitka, L. J. (1999). Automation Use and Automation Bias. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, *43*(3), 344–348.

Orlikowski, W. J., & Gash, D. C. (1994). Technological frames. *ACM Transactions on Information Systems*, *12*(2), 174–207.

Pancholi, S., Wachs, J. P., & Duerstock, B. S. (2023). Use of Artificial Intelligence Techniques to Assist Individuals with Physical Disabilities. *Annual Review of Biomedical Engineering*.

Pethig, F., & Kroenung, J. (2023). Biased Humans, (Un)Biased Algorithms? *Journal of Business Ethics*, *183*(3), 637–652.

Preiß, J., von Brackel-Schmidt, C., & Leible, S. (2024). Student Perspectives on Generative Artificial Intelligence: Exploring Pre-Framing and Risks in Higher Education. In *Proceedings of the European Conference on Information Systems (ECIS2024)*, Paphos, Cyprus.

Rane, N. (2023). Role of ChatGPT and Similar Generative Artificial Intelligence (AI) in Construction Industry. *SSRN Electronic Journal*.

Rezazade Mehrizi, M. H. (2023). Pre-framing an emerging technology before it is deployed at work: the case of artificial intelligence and radiology. *Journal of Computer-Mediated Communication*, *28*(4).

Sabherwal, R., & Grover, V. (2024). The Societal Impacts of Generative Artificial Intelligence: A Balanced Perspective. *Journal of the Association for Information Systems*, *25*(1), 13–22.

Siemon, D. (2022). Elaborating Team Roles for Artificial Intelligence-based Teammates in Human-AI Collaboration. *Group Decision and Negotiation*, *31*, 871–912.

Terveen, L. G. (1995). Overview of human-computer collaboration. *Knowledge-Based Systems*, *8*(2-3), 67–81.

Varghese, J., & Chapiro, J. (2024). Chatgpt: The transformative influence of generative AI on science and healthcare. *Journal of Hepatology*, *80*(6).

von Brackel-Schmidt, C., Kučević, E., Leible, S., Simic, D., Gücük, G.-L., & Schmidt, F. N. (2024). Equipping Participation Formats with Generative AI: A Case Study Predicting the Future of a Metropolitan City in the Year 2040. In F. F.-H. Nah & K. L. Siau (Eds.), *Lecture Notes in Computer Science. HCI in Business, Government and Organizations* (Vol. 14720, pp. 270–285). Springer Nature Switzerland.

von Brackel-Schmidt, C., Kučević, E., Memmert, L., Tavanapour, N., Cvetkovic, I., Bittner, E., & Böhmann, T. (2023). A User-centric Taxonomy for Conversational Generative Language Models. In *Proceedings of the International Conference on Information Systems (ICIS2023)*, Hyderabad, India.

Wu, T., Terry, M., & Cai, C. J. (2022). AI Chains: Transparent and Controllable Human-AI Interaction by Chaining Large Language Model Prompts. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems*, New Orleans, USA.

Zercher, D., Jussupow, E., & Heinzl, A. (2023). When AI joins the Team: A Literature Review on Intragroup Processes and their Effect on Team Performance in Team-AI Collaboration. In *Proceedings of the European Conference on Information Systems (ECIS2023)*, Kristiansand, Norway.