

Human-AI Teams' Impact on Organizations – A Review

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Abstract

As Generative Artificial Intelligence (AI) is encroaching further on our work and social environments, we examine the increasingly common situation where teams of white-collar workers include both humans and AI. We explore three key themes via a comprehensive (n=122) systematic literature review: key success factors, use cases for human-AI teams, and challenges faced when implementing human-AI teams. The key success factors identified discuss the need for clear roles and responsibilities by playing to human and AI strengths, skill development and system transparency. Use cases can be grouped into problem-solving, decision-making, routine tasks, and personal assistants. Finally, the identified challenges relate to system trustworthiness, biases, time and effort to adopt, AI using data, and job insecurity. We conclude by identifying avenues for future research based on the gaps identified throughout this review.

Keywords: Literature Review, Human-AI Teams, Organizational Structure, Collaboration, Artificial Intelligence

1. Introduction: motivation and problem statement

The introduction of artificial intelligence (AI) in the workplace raises a myriad of questions for employers and employees alike, more specifically relating to generative AI which has the ability to learn and develop knowledge over time. Mainstream media has captured several discussions between large technology firms (e.g., Meta, Google, OpenAI, etc.), and the US Federal Government relating to regulating and managing artificial intelligence (Fung, 2023), particularly regarding concerns around protecting private information. Similarly, to the introduction of computers (Cortada, 2008), the internet (Brous, et al., 2020), and social media (Deans & Tretola, 2018) to organizations, the impact of generative AI and how employees interact with it is likely to be significant and history making.

It is likely that in the future employees will need to directly work with generative AI in some manner, creating a human-AI team (HAIT). The full replacement of some

existing roles and the creation of new roles is also likely, the focus of this literature review is on HAITs and what literature is saying about how organizations are or will be using HAITs, the key success factors for implementation of HAIT, and the challenges organizations may face. For clarity within this paper, we have defined a HAIT as a collaboration between a human and a system/machine counterpart whereby they work together to complete a common goal or task (Jarrahi, et al., 2023 & Seeber, et al., 2020). We acknowledge human-human teams have clear roles and responsibilities defined, and our assumption is for this to also be the case in a human-AI team. This literature review set out to investigate the research question, “how do human-AI teams disrupt organizational structure?” However, we were unable to identify studies that addressed this nascent area directly.

Therefore, we considered studies that investigated the disruptive impacts of developing HAITs, and inductively theorized about the impacts on organizational structures.

Implementation of new technologies to organizations require strategic planning and deployment to enable success and competitive advantage (Yu, et al., 2023). To effectively answer the research question, an organizational leadership perspective must be overlaid. The impact of change affects everyone in a corporate organizational structure today and has already started to occur for some organizations as they seek to increase productivity and performance through using AI (Husain, et al., 2022). This literature review will be of importance to organizational leaders as they seek to understand the impacts of such change and how they can enable success through implementing a HAIT for themselves.

Additionally, due to the copious amount of change HAITs could bring to an organization, employees also have a vested interest relating to how their roles are likely to be affected by the introduction of HAITs to their organization. Finally, scholars will also benefit from this knowledge as specific research on this topic is in its infancy, and further understanding needs to be developed.

Our analysis of 122 artifacts shows that there is a critical link between mitigating identified challenges and successfully implementing a HAIT within an organization by establishing clear roles and responsibilities for both human and the AI counterparts. Roles develop over time as humans move into more strategic positions and their AI

counterparts remain to complete the repetitive and supporting activities, altering some human roles within an organizational structure and removing others which are no longer required to be performed by a human.

2. Method

As identified, the topic of HAIT impact on organizations is in its infancy, therefore, we seek to make sense of the complex nature of the topic by completing a systematic data collection and using Grounded Theory methodology for ensuring thorough and relevant analysis of the selected papers (Wolfswinkel, et al., 2013). We applied the Grounded Theory method to our systematic review, by expanding on Wolfswinkel et al.'s (2013) step-by-step guide; define, search, select, analyze, present, to include an iterative approach to gathering all relevant information on a topic, ensuring a broad range of viewpoints are captured and the meaning understood (Myers, 2004), before drawing conclusions.

Throughout the analysis phases we took a concept-centric view on the information, which is recommended by Wolfswinkel, et al. (2013), opposed to theory testing, this outlook led to the refinement of the review scope, from looking at “how do human-AI teams disrupt organizational structure”, explicitly, to studies that investigate the disruptive impacts of developing HAITs. Through each iteration of paper selection, and analysis, each paper was assessed based on what value it can add to the conversation, what new angle was discussed on the topic (Corbin & Strauss, 1990), and what findings can we derive from this knowledge to theorize the impacts on organizations.

For each iteration we systematically selected and assessed literature to ensure complete coverage of the topic to answer the research question (Paré, et al., 2016) utilizing Scopus and Google Scholar. This was further developed as themes emerged around key success factors, use cases, and challenges came to light throughout the paper review. Initially the paper reviews included a broad range of contexts within the topic, this was further narrowed as the full paper context was realized, to only include those papers which held value in answering the research question. To ensure there is transparency regarding the process (Paré, et al., 2016), this multi-step process was used to complete quality screening, and further relevance checks (Mengist, et al., 2020), outlined in further detail in the appendix, before completing key theme analysis. Parameters around paper selection included: date range, quality, language, key word, and abstract review. As this systematic review process followed an iterative flow, a high-level overview of this is outlined in figure 1 below and explained in further detail in the appendix.

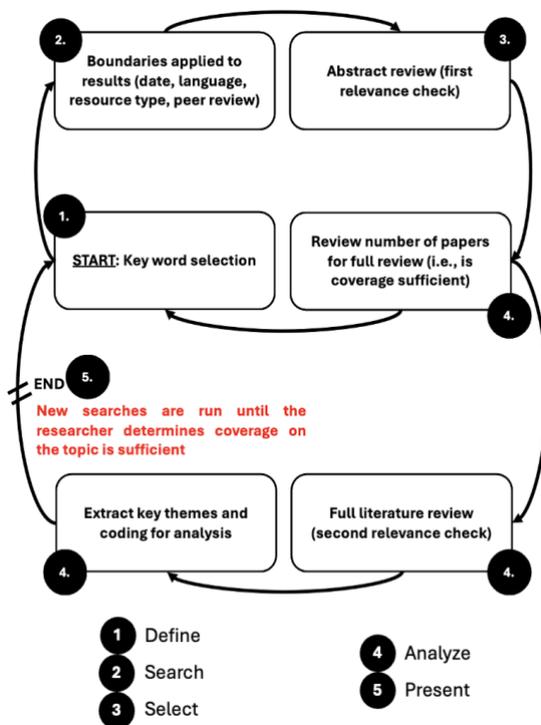


Figure 1 – Methodology Overview - adapted from Wolfswinkel, et al., 2013

3. Results

Through the paper analysis there were multiple findings which surfaced on the topic of how HAITs can cause disruption to organizations. The majority of the papers we identified acknowledged the importance of HAIT to enhance collaboration in their given fields, or the challenges likely to be faced by the introduction of HAIT, but did not state how this would likely, or does, affect the organizational structure(s) explicitly. Generalized analysis showed that approximately half of papers assessed did not discuss ‘change’, ‘impact’, or ‘disrupt’ in the context of the introduction of HAIT or generative AI on organizational structures. That said, of the papers which did mention ‘change’, ‘impact’, or ‘disrupt’, they primarily only lightly touched on the subject or outlined that further research was required in this area.

General statistical results are captured in the appendix; however, it is noted that there is a significant spike in publications in 2022 (42 publications), which was the year ChatGPT was made public (Marr, 2023), this spiked interest in the domain of AI and likely resulted in this occurrence. It is also noted there is a lack of literature review papers published on the topic of HAIT (6 publications), with the vast majority of publications assessed being research articles (91 publications). The 6 existing literature reviews discussed overlapping topics but not directly discussing the topic at hand. The assessed

literature reviews addressed topics such as; theories around human-machine collaboration (Li, et al., 2023), AI-driven automation impact on aspects of a socio-technical system (Götzen, et al., 2022), intelligent machine impact on decision-making processes (Bhandari, et al., 2021), how humans and AI could ‘work’ together from design to implementation and use (Anthony, et al., 2023), assessing human and machine competencies and autonomy to determine human-machine collaboration on an assigned task (Ansari, et al., 2020), and an assessment of HR practices in the fourth industrial revolution showed the importance of embracing human-machine collaboration in order to enhance organizational success (Schultz, 2021) (expanded in appendix).

Throughout the review and analysis of the selected papers, three categories emerged in relation to the topic of HAIT impact on organizations: key success factors, use cases, and challenges. These are expanded in the following subsections, each displaying 3-5 of the most repeated items for each theme throughout the assessed literature, with a focus on white collar corporations. The full list (although not exhaustive) is appended.

3.1 Key success factors for implementing HAIT

Throughout the paper review, a pattern emerged where key success factors were identified to ensure a successful HAIT could be implemented. These are outlined in table 1 below.

Table 1 – Key success factors for implementing HAIT

Key Success Factor
<u>Skill development</u> – AI supports the development of human skill sets (e.g., through the use of brainstorming innovative ideas, employee training, etc.), and human supports the development of AI knowledge to further enhance the HAIT
<u>Play to human and AI strengths</u> – the need to develop teams which utilizes the best of both elements to succeed at a common goal. Developing AI/machine job descriptions for collaboration/teaming, as it is with human employees, to ensure clear role establishment and strengths to be utilized
<u>System transparency</u> – ensuring the human element has visibility of the data set and processing of the AI element. Keeping the human within the team

We assessed a number of articles which discussed what makes a successful collaborative team. Such success factors included: 1. Playing to human and AI strengths (repeated in 16 papers), this included having a common goal, such as improving performance (Li, et al., 2023), understanding strengths of each party within the team,

including human versus machine strengths and capabilities (Dubova, et al., 2022), and ensuring there are clear roles and responsibilities established within the team to ensure true integrated collaboration occurs (Xiong, et al., 2022); 2. Skill development (repeated in 8 papers), including utilizing AI to develop the skills of the human and using the human skills and knowledge to develop the AI; 3. Improved productivity (repeated in 4 papers), which includes developing AI to assist humans in a manner that will increase productivity rather than creating overheads or additional complexity.

The resounding message which stood out throughout the success factor theme is that regardless of the team dynamic (e.g., human-human, human-machine, or machine-machine) there needs to be clear roles and responsibilities in order for it to be successful, as shown through the text under the key success factor ‘Play to human and AI strengths’.

Although this literature review is focusing on AI and humans as a team, it is also important to understand the capabilities of each party within the team (Muller & Weisz, 2022). Without first understanding the strengths of the AI and the human individually, how they will effectively work as a team will be unknown. The literature states the capabilities of ‘machine’ (AI) in a few ways, such as: completing the more routine tasks to free up the human to focus on other areas (Anthony, et al., 2023), being an assistant, forecaster (Chandel & Sharma, 2023), decision maker (either fully or partially) (Chandel & Sharma, 2023, Xiong, et al., 2022) and collecting and analyzing data (Xiong, et al., 2022). Bhandari, et al. (2021) clearly stated that machine strengths are power, speed, computation, replication, and simultaneous operations, to ensure an organization is implementing an effective HAIT, these machine strengths should be fully utilized (Bhandari, et al., 2021). Papers also discussed the human capabilities and what we bring to the HAIT. Alternatively, to machines, humans are freed from repetitive and mundane tasks to enable “‘higher order’ forms of work” to be completed (Anthony, et al., 2023). Similarly to their discussions regarding machine strengths, Bhandari, et al. (2021) clearly stated human strengths within their paper, these included: detection, perception, judgment, indication, and improvisation (Bhandari, et al., 2021).

Effective human and machine combinations create an ‘optimal system’, “humans have unique cognitive and reasoning capability; whereas machines compliment humans in their tasks requiring speed and precision” (Bhandari, et al., 2021). Understanding how human and machine strengths complement one another will likely determine whether an organization can effectively implement and use HAITs.

The likely organizational structure changes arising from these success factors include: the need for AI expertise in job design, and possible headcount changes as

a result of improved productivity. To ensure the role and function of AI in teams is clear, job design will need to be carried out by people with a rich understanding of the strengths of human and AI actors. Responsibilities and accountabilities (including, for example, clarification of issues such as the legal liability of AI agents) will need to be factored into the design of HAIT. The likely increases in productivity as a result of effective use of AI are also likely to have an impact on organizations. There will be potential for headcount reduction or expansion of business scope. There may also be a re-balancing of where in the organization human employees are deployed.

3.2 Use cases of HAIT

Throughout this research there were several use cases identified when it came to HAITs. Use cases were defined as being noted in 4 or more papers.

Table 2 –Use cases of HAIT

Use Case
<u>Problem-solving</u> – when complex problems arise, HAIT will be utilized in order to couple the contextual knowledge of the problem (human element) with outside of the box solutions through utilizing the AI vast knowledge
<u>Decision making</u> – further research is required in this area, primarily empirical to ensure use cases are relevant to organizational need. There is acknowledgement that AI can assist in a HAIT to make decisions, however the level of control the AI would likely have differs from paper to paper. It is likely the AI and human elements of the team would follow a similar pattern as outline in the problem-solving use case
<u>Routine tasks</u> – AI to complete routine tasks to enable the human team member to be free to work on creative or complex, strategic activities. What these tasks look like differs depending on the organization and business unit, however examples may include, data collection and analysis, collating minutes, and reporting, etc.
<u>Personal assistant (PA) and coordination</u> – utilizing AI to assist with activities such as a human PA would today, for example scheduling, calendar management, coordinating activities and meetings (internal and external), etc.. This is likely to occur without human intervention during the activities, but would require human input to commence the workflow (except for recurring standard processes)

The most frequently identified use case was decision making (mentioned in 15 papers), followed by routine tasks, which was mentioned in 13 papers, personal assistant/coordination was mentioned 12 times, with

problem solving being mentioned in 11 papers. For these use cases, the human element either collaborated explicitly on the activity to enhance the output or received the output from the machine to complete the next stage in the task, which freed up the human to complete the creative or empathetic element of a task.

There were 13 non-core use cases identified throughout this analysis. A couple use cases which we anticipated to see repeat throughout this research, which didn't, were analytics and data processing, which only showed up once in Schultz (2021) and Bolton, et al.'s (2018) research, respectfully. There could be a few reasons for this, either these tasks are anticipated to be fully replaced by a machine rather than a point of collaboration, remain fully under human control, or there is simply not enough research to determine how a HAIT would occur around these tasks. Further investigation would be required to determine this.

The common theme throughout the identified use cases is that they are predominantly implemented to increase work efficiency and decrease employee workloads (Li, et al., 2023). It was indicated that this would be achieved by leveraging the technology available to “reduce or moderate workload” (Frame, et al., 2019), thus improving employee performance. Additionally, utilizing technology to enhance collective intelligence between human and machine as part of the collaborative work approach also has the ability to increase efficiency (Jain, et al., 2023). However, as stated by Brückner, et al. (2023) “potential can only be exploited in future if they are accepted by users”, referring specifically to user's uptake of AI (Brückner, et al., 2023).

Implementing HAITs within an organization will enhance decision making and problem-solving abilities. This impacts the organizational structure as the human element of the team is able to move into more strategic roles within the organization, whereas the AI can complete the routine data analysis activities to inform such decisions to be made. This will see a change in human role structure and potentially a reduction of human junior analyst roles.

3.3 Challenges of implementing HAIT

The following table (3) identifies challenges which emerged through the literature.

Table 3 – Challenges of implementing HAIT

Challenge
<u>Job insecurity</u> – the fear that over time the HAIT may just become an AI team as organizations realize this is a faster and inexpensive mode for task completion
<u>AI using data</u> – due to the fear of data security and privacy there is a fear raised relating to AI having

access and being able to use the data for tasks such as analysis and reporting

Trustworthiness – this fear has been raised on the basis of the ‘black box’ of AI, when there is a lack of understanding of how the AI system works, there will often be a question around ‘can we trust it?’ in the sense of the outputs it produces, and parameters it is enabled to use the data for

Biases – as with many AI systems and the large language models they’re trained on, there is ongoing concern that the data the AI is trained on will inherit biases which will be produced within the task outputs

Time and effort to adopt – as with many major technology implementation projects, they often have long durations and impact users significantly. With high user impact, additional support is required and is often overlooked, which exacerbates this challenge

Throughout the full paper review, there were multiple challenges identified. The most raised fear was around trustworthiness, mentioned in 9 papers. With ‘biases’ (identified in 7 papers), ‘job insecurity’, ‘AI using data’, and ‘time and effort to adopt’ following with 4 papers mentioning the aforementioned challenges. The majority of the challenges discussed throughout the papers are centered around implementing the technology to enable HAITs within an organization, rather than using HAITs itself.

With the current lack in knowledge around AI, coupled with the fear of job loss with the introduction of AI in organizations, several papers highlighted the need for explainable and trustworthy AI (Chandel & Sharma, 2023) which aligns to the earlier key success factor to implement transparent (and explainable) AI. Aligning to this need, Brückner, et al. (2023) stated in their paper that we are currently experiencing a shift towards explainability and trustworthiness in research on “human-computer interaction (HCI)” (Brückner, et al., 2023). This is an important shift as constant change and unknown development of AI tools could cause humans to reduce uptake of such technologies, because of a lack of technological understanding (Anthony, et al., 2023).

As we move into a highly human-AI integrated environment there is an increasing need to understand and protect sensitive information. A lack of understanding increases fear, therefore explainable and trustworthy AI should be at the forefront of technological development in order to enable adoption success.

4. Discussion

Throughout the analysis, it was discovered that HAITs, and the introduction of AI tools is not about

human versus machine, but how humans integrate with machines. This develops the idea of enhanced joint capability rather than humans being replaced by intelligent machines (Peeters, et al., 2021 & Jarrahi, et al., 2023). A couple examples which were provided in text include using AI as a personal assistant, where the AI can be developed off human data and in simulations, and fine-tuned in the real-world, "we could develop AI assistants that complement human intelligence and depend on us for tasks in which humans have a comparative advantage" (Dafoe, et al., 2021). A second example is found in Siemon, et al.'s (2022) research paper, stating that an AI could become a creative assistant for entrepreneurs, the study primarily looked at how AI technologies can be used to assist entrepreneurs in areas which take up time but are mandatory, in order to allow them creative freedom (Siemon, et al., 2022).

With the introduction of human-AI collaborative teams, there have been many questions around how this will change work design (Xiong, et al., 2022) and organizational structures. Throughout the analysis phase it has become clear that organisational structures must change with the introduction of human-AI collaboration teams.

The primary reason for this change is the restructuring of existing human roles and responsibilities which redefines work design, moving from a fully human organizational structure to one which has human and AI counterparts, changing the organizational structure as we know it. One of the primary challenges identified is that machines (AI) will replace humans in the workplace, however, multiple papers suggest a human-centered integrated AI strategy (Mohanty & Vyas, 2018, Bolton, et al., 2018), process and task design (Götzen, et al., 2022), including assessment of human versus machine capabilities to perform certain tasks (Ansari, et al., 2020), human-in-the-loop configuration of machine roles (Elgendy, et al., 2022), and training and upskilling of employees (Ayinde & Kirkwood, 2020, Ansari, et al., 2020), as mitigations to the changing roles and structure changes which come with the introduction of HAITs.

Additionally, there were multiple papers which made mention of the fact that as AI/machines increase their roles within the workplace, there will be human roles which will be disestablished (Bauer, et al., 2018), such as cognitive workers (Ayinde & Kirkwood, 2020). However, in place of these, there will also be an increase in new roles being formed (Ayinde & Kirkwood, 2020). Chedrawi & Haddad (2022) were bold to state that “AI change [in] white collar jobs will be in 2025 and AI being responsible for decision making [will occur] by 2026” (Chedrawi & Haddad, 2022). As we have seen through the previous section, this brings with it a set of challenges, such as addressing the time and effort to adopt, reducing employee fear of job insecurity. Additionally, Bolton, et al. (2018), suggested that with the introduction of HAIT there will be a need to

change how these teams are managed and, in some cases, the organizational management strategy itself (Bolton, et al., 2018).

As identified throughout the assessed literature, the primary themes emerging can be allocated into three categories. Firstly, 'key success factors', these are highlighted areas in which HAIT can be implemented successfully within an organization. Secondly, 'use cases', are ways the literature has documented that HAITs are or will be used within organizations. Thirdly, 'challenges' when implementing AI technologies and HAITs. Each category is discussed further in the following sub-sections.

4.1 Key success factors for implementing HAIT

The most common key success factor which surfaced is to ensure human and AI strengths are played to. Siemon (2022) initially discusses in their article that the restraints around HAITs is the ability to have clear and concise roles and responsibilities within the team (Siemon, 2022 & Trunk, et al., 2020). This acknowledgement understands that the AI element within the team is there to enhance the team, not take away from human roles, as part of this it is of utmost importance to ensure the AI component of the team does not hold too much power within the team and understands the bounds of its role and does not defer from this (Siemon, 2022).

Within a HAIT, 'collective intelligence' theory can be applied, this has humans and machines as a joint cognitive system where the team should be assessed jointly, rather than the individual parts (Peeters, et al., 2021). This allows for the AI to compensate for the human, and vice versa, all the while retaining the human interaction within the process (Peeters, et al., 2021). For example, Lehner, et al. (2022) states, "In an ideal setup of human-machine collaboration, the human brain could ideate and make the final decisions, whereas AI would combine and analyse raw data and present the resulting information tailored automatically for different purposes" (Lehner, et al., 2022).

Multiple papers explained the AI role within the team as an idea generation collaborator, where the role played by the AI is to assist in brainstorming activities and innovative ideas, refining the ideas through collaboration (Bouschery, et al., 2023 & Dafoe, et al., 2021). However, when using AI systems to make and inform decisions relating to human resource management, there are many considerations required, including data collection, employee interaction and verification of the collected data, and how the AI technology uses this data to inform or make decisions relating to an employee (Zhai, et al., 2024). Although this increases productivity and accuracy of the process outputs, this use case opens risk of unrest, employee exit, and security implications (Budhwar, et al., 2022).

Secondly, system transparency, explainability, ethical framework, and an AI governance framework is a high importance key success factor (Perifanis & Kitsios, 2023, Chandel & Sharma, 2023 & Brückner, et al., 2023). Organizations and workers will either "embrace AI and engage in meaningful ways with it, prospering and benefiting from it. In other contexts, they will confront, resist, and potentially suffer from AI systems" (Jarrahi, et al., 2023). Without transparency of the AI technologies there is increased risk of humans not understanding how it works which causes resistance, and a lack of understanding around regulation, security and privacy risks would likely increase apprehension when using such technologies within business processes (Rezaei, et al., 2024). If a system is overly complex and difficult to understand then the system's value to the human agent may be negatively impacted, hindering "task efficiency and performance" (Jiang, et al., 2023). As a mitigation to this, Budhwar, et al. (2022) state "that the influence of the social-technological context, such as flexible organisational structure, proper training, dealing with fear and change management, and upskilling employees, can further strengthen to achieve favourable outcomes" (Budhwar, et al., 2022), for example by increasing AI literacy.

4.2 Use cases of HAIT

Through the analysis of the use cases identified, we saw prominence in decision making, closely followed by routine tasks, problem-solving, and personal assistant/coordination. The roles that both humans and AI play in the decision-making process requires further research (Elgendy, et al., 2022). Elgendy, et al. (2022) provided a clear breakdown of the different categories of human-AI (machine) decision making which need to be considered, these categories are defined as "1) Purely machine decisions (e.g. recommender systems, personalized ads); 2) Sequence-based decisions, which can involve two sub-types: (a) human-to-machine (e.g. sports analytics on which the human expert seeks evidence from data); (b) machine-to-human (e.g. ideation of innovation); 3) Aggregated decisions involving both humans and machines, in peer-like group decision making (e.g. assisted medicine healthcare applications)" (Elgendy, et al., 2022). Although decision-making categories have been defined, there is a lack of clear understanding on how successful HAIT collaborative decision-making would occur.

It was expected that routine tasks would show prominence in the use case results due to the ability for computing/AI to succeed at 'rinse and repeat' style activities. This predominantly drove the fear that AI is going to replace jobs. However, equally, using AI to complete routine tasks could be the positive result of change, freeing humans to complete creative activities and

tasks of higher importance, or tasks which require human empathy.

One area which was surprisingly discovered as a non-core use case was around data analysis. It is known that generative AI tools have a unique ability to identify trends and outliers, in a shorter timeframe than a human analyst, but was not explicitly identified as a core use case. However, utilizing this ability in problem-solving can enhance human ability to resolve issues in a shorter time frame, enhancing productivity and potentially profits. Problem-solving has typically been a human task due to complexities of internal and external environment, however, generative AI may be able to provide additional value by providing unbiased views and factual results to assist in informing the human to problem-solve effectively.

4.3 Challenges of implementing HAIT

It was raised that there are open “questions regarding the trustworthiness of AI-generated summaries” (Bouschery, et al., 2023) this is due to bias and trade-offs which are often unknown to the human element of the team. This opens the discussion that humans should use their expertise to screen for problems, as a solution to this, organizations should implement the key success factor identified - the system must be explainable. Additionally, as Lehner, et al. (2022) explains within their article, human intervention will always be required as AI cannot be trusted (Lehner, et al., 2022).

As highlighted within the key success factor discussion, if employees resist the implementation of AI technologies, the fear of job insecurity is likely to come to fruition (Jarrahi, et al., 2023), a challenge which needs to be overcome by organizations. This challenge was solidified through the identification of the use case that shows routine tasks are most likely to be performed by an AI to enable the human employees to focus on tasks of higher importance. This has fed the fear of job insecurity, however, a solution to this challenge is for organizations to align to the key success factors: ‘play to human and AI strengths’, i.e., develop roles for humans, and ‘skill development’, i.e., train employees with skills they need to work alongside the AI counterpart, so that as role changes occur, employees are also developed to grow into the new roles.

This key success factor identifies that AI should be utilized to expand the human toolkit in order to collaborate and increase productivity, and although there may be some instances of role replacement, humans who utilize the AI capability are likely to replace those who don't (Dafoe, et. al., 2021).

5. Conclusion, Limitations, and Future Opportunities

Within the literature assessed it was discovered that there were three key themes: key success factors for HAITs and collaboration, identification of use cases for HAIT, and comments on the challenges relating to AI taking over, which organizations need to prepare for. The identified success factors, use cases, and challenges within this article are not an exhaustive list, and can be used as a starting block for future researchers to develop as more information on HAIT impact on organizational structures is known.

The analysis did not show extensive research into how organizational structures are disrupted through the introduction of HAITs, explicitly, which this literature review initially sought to answer. This gap in literature clearly highlights that there is a need for further research. This realization became explicit through the paper review stage which moved quickly from 322 papers, down to 122 relevant papers throughout the review process, even though the authors extended search terms to include additional synonyms.

The core limitation of this research was the ability to investigate deeply into the link between human-AI teams and organizational structures, explicitly. It was discovered that literature on human-AI teams in a white-collar organization is still in its infancy and inhibited our ability to draw definitive conclusions. Due to this there is an opportunity for future research to enhance understanding around how humans and intelligent machines can and will work together effectively in the future and its direct impact on how work design may be altered in the near future.

Yorks, et al. (2020) described AI capabilities as “the extent to which the technology assists human capability, augments human capability, or operates autonomously without human involvement” (Yorks, et al., 2020). Although the majority of papers assessed mentioned the linkage between HAITs and how this impacts/changes/disrupts organizational structures to some degree, this analysis identified a gap in the documented knowledge of how these two elements impact one another.

Throughout this analysis we have theorized that implementing the identified key success factors and mitigating the challenges, when developing HAITs, organizations can successfully enhance their productivity through redeveloping their work design and organizational structures. This development will redefine what human roles and responsibilities are and enables collaboration to occur between humans and their AI counterparts, increasing strategic ability, problem-solving, and decision making. However, organizations

must display caution and mitigate the challenges identified early.

There is an opportunity for researchers to develop analysis in this area to inform business leaders, and academia alike, on what the implications of this research are for white-collar organizations. As we have identified gaps in the literature throughout this review, further research could be completed on the below research areas:

- Explicitly identify the disruption of human-AI teams with the focus on the organizational structure rather than use case itself.
- What are the changes organizations see over time when implementing human-AI teams? (through case study we would be able to see greater effects and the possibility of similarities/differences between industries).
- How does the implementation of human-AI teams disrupt work design?
- What are other challenges and risks which may arise with human-AI teams?
- Further development of organizational use cases for human-AI teams.
- What mitigations should be considered when implementing human-AI teams?

The key success factors, use-cases, and challenges of introducing HAITs into organizations will reshape organizations in ways that are only just beginning to be understood. A deep contextual understanding of how to effectively incorporate HAITs, leveraging the success factors and mitigating the challenges, will become a key differentiator between organizations that successfully make the change, and those that are left behind.

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7. Appendix

Expansion on the method description, results sections, and full tables, as noted in text, along with the full reference list of papers assessed, are in the repository linked below:

https://osf.io/gva7k/?view_only=980f61deda7b413681574e44795ed85a