Exploring the Potential of AI to Increase Productivity in Small Marketing Teams

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Abstract: Marketing scientists as well as practitioners believe that artificial intelligence (AI) holds the promise of productivity gains for organizations. However, there has been little scientific research into these theories. This study investigates the role of AI in enhancing marketing productivity, deriving insights from a case study conducted with the marketing team of an industrial software start-up. Drawing upon Case Study Analysis by Yin (2018) and Participatory Action Research by Kemmis and McTaggart (2007), the study employs a combination of survey interviews, AI tool research and AI tool testings. Key findings indicate that productivity gains are more likely than productivity impairments with the use of marketing AI tools. This effect is even stronger when knowledge workers possess high levels of AI skills and utilize AI tools with suitable capabilities. Having closely analyzed six marketing disciplines, particularly SEO / content and design demonstrated significant productivity gains including generative AI (GAI) tools the team already subscribed to like ChatGPT 4 and Canva, but also new AI solutions. While an AI tool's level of integration only showed a weak positive productivity impact, future studies are suggested to further investigate this variable by comparing the effects of less advanced but more accessible tools like generative AI versus highly advanced, but less accessible business AI. Having navigated the vast and dynamic landscape of AI tools, insights further emphasize the importance of AI experience sharing and informed decision-making, implying knowledge of own user rights and always staying updated on AI advancements. Zooming out from process level, the work's literature review further highlights the role of environmental and organizational AI enablers, like budget allocation, fostering AI trust and mindset, but also implementing AI routines and responsibilities. Overall, this research underscores the imperative for companies, especially startups and SMEs, to explore AI technology as a means to enhance productivity and gain a competitive edge.

Keywords: Artificial Intelligence, Large language model, ChatGPT, Case study, Marketing productivity

1. The Interest of (Small) Businesses in AI

AI seems to be of substantial value for businesses – not only from a product perspective, but also a productivity perspective. The OECD describes *productivity* as "ratio between the volume of output and the volume of inputs" (OECD iLibrary, no date). What makes studying AI's impact on productivity so relevant, is the aim of countries, companies and our analyzed startup case to improve business productivity by optimizing their relation of input factors like HR, time and costs, and output factors, namely high quality and quantity results and, eventually, turnover. Further, the investigated startup has gone through layoffs resulting in a HR decrease of 30 % company-wide and 60 % within the marketing team down to three employees. So while input resources were extensively cut, the start-up did not want to accept equally high marketing output losses. One answer to this situation was the use of AI tools in daily operations.

Late studies confirm how input and output aspects of productivity drive AI adoption: IBM (2022) finds that 42 % of companies worldwide adopt AI because they want to reduce costs, Salesforce (2023) evaluates marketing time savings through AI of roughly 32.5 days per year, and Dell'Acqua et al (2023) show how consultants who were using ChatGPT produced 40 % higher quality results than those who did not. According to Chui et al (2023), such effects are especially high in marketing and sales, where the use of generative AI (GAI) has the potential to generate $760 to $1,200 billion in value – significantly more than other functions such as customer operations ($340 to $470 billion) ranking second, and R&D ($230 to $420 billion) ranking third. With such productivity potential and a general AI hype, it is no wonder AI adoption rates among marketing teams go up to 87 %.

As to the latter, SMEs or startups, indeed show lower AI adoption rates between 26 % and 36 % than bigger companies (Constant Contact, 2023; Unbounce, 2022). Despite a generally high interest of SMEs in adopting AI amounting to 74 %, their top concerns are data security (44 %), high costs to implement AI (41 %) and that it would take too much time to learn or adopt it (33 %), as Unbounce's survey of 486 US American SME managers with less than 250 employees showed. This brings up, what can be called an *AI dilemma of smaller companies* and teams: Those who are in biggest need of AI productivity effects have the least resources and higher constraints to adopt it, which again holds back their potential for growth and more sophisticated AI. So while AI could, in the long run, free up much time and thus save personal and financial resources, there must be an initial

minimum investment to implement and educate on the technology. SMEs must take on this debt before they can benefit sustainably from AI. This explicitly applies to more integrated and costly business AI, but does not exclude less integrated GAI tools, which are a good starting point for SMEs as they are usually free or inexpensive, user-friendly, accessible, and have many use cases.

Mirroring the status quo of the analyzed startup, the following research question was posed:

RQ: How does Artificial Intelligence influence productivity in small marketing teams?

To answer this question along with the marketing team of an industrial software startup, an explorative, embedded Single Case Study by Robert Yin (2018) was performed. This includes an initial literature review which supported the derivation of propositions to guide the study and answer the research question. Then, data was collected by conducting semi-standardized survey interviews with each marketer. Based on these interview evaluations and requested 'AI tickets', AI tools were then researched, tested and presented to the team in nine meetings for a period of three months in orientation to the PAR method by Kemmis and McTaggart (2007). Eventually, all data sets including the interviews and AI tool testings were merged in a triangulating manner resulting in 20 practical implications. Lastly, based on these results and literature insights, an AI White Board was created to help the startup and other small (marketing) teams leverage AI for productivity gains in the future.

2. Theoretical Background

2.1 AI Productivity Potential on Organizational and Process Level

Literature has different answers to how marketing or more broadly business productivity can be increased using AI. Starting on organizational level, a number of scientists highlight the *requirements* teams must fulfill to successfully adopt AI. So do Enholm et al (2022) in their TOE framework theorize how technological enablers (data and technology infrastructure), organizational enablers (top management support, organizational readiness, culture, employee AI trust, AI strategy and tech-task-compatibility), and environmental enablers (ethical and moral aspects, regulations and environmental pressure) will lead AI to positive productivity effects.

At process level, hands-on recommendations are made by practice: Kaput (2021) defines steps on how marketing teams can systematically *find performant AI tools*: Firstly, teams must evaluate their use cases such as 'create blog post', 'create newsletter' etc. Out of all use cases, one should be picked, e.g. 'create blog post', which then must be broken down into many steps, e.g. brainstorm topics, pick topics that perform, build an editorial calendar etc. Turned to keywords, one can then research AI provider's websites, AI tool review pages and articles. The next step involves testing the most interesting tools by registering online, signing up for demos or waitlists and, lastly, building an AI strategy for the chosen tool/s including budget allocation and a rollout with all stakeholders.

There further exist several guidelines on *how to prompt* in order to quickly receive high quality output e.g. by Bozkurt and Sharma (2023) who define ten rules to consider when prompting: (i) define the objective, (ii) understand the model's capabilities, (iii) be clear and concise, (iv) provide context, (v) provide examples, (vi) fine-tune, optimize and debug, (vii) specify the format, (viii) include key details, (ix) test and iterate, and (x) consider safety and ethics. But also instructions by the most used and known providers like OpenAI and Google can and should be trusted, as they pass on even more detailed and technical tips such as "use delimiters to indicate distinct parts of the input", "specify each step required to complete a task", or "ask the model if it missed anything on previous passes" (OpenAI, no date).

What moreover supports AI to unleash its productivity potential is a proper *setup of the AI tools* themselves (MacDonald and Harris, 2024). This includes (i) making use of a shared prompt library to apply or copy and paste prompts, (ii) feeding the document library or 'custom instructions' with data on the company, target group, content samples, past campaigns and corporate design, (iii) including approval flows ensuring generated content gets checked e.g. on biases, and (iv), if relevant, security suites to keep content private before publishing. If wished, teams should further make use of the possibility of (v) setting up time frames for prompt auto-deletion, and (vi) opting out of data processing.

These last two settings would not exist in many AI tools, if *privacy laws* like the GDPR (2022) and the CCPA (State of California, 2023) did not defend user rights, hence, knowing of them is key when using AI. In accordance with these two laws, and considering the data privacy terms of the biggest AI providers, in the present study the researchers made sure the following legal aspects were covered when checking out AI tool websites: (i) tools have privacy policies, data protection terms or FAQs, (ii) offer information on how long data is stored, ideally

not exceeding three months, (iii) comply with known data privacy regulations, (iv) show user access controls on how prompts can be deleted, or data storage be refused, (v) encrypt data before processing or when in transit, and (vi) show data ownership (e.g. that data was shared with LLM providers like OpenAI).

2.2 How the Technology Influences AI Productivity Potential

Taking the technology's perspective, it is sensible looking at the different *types of AI tools* and how their characteristics impact productivity. As to Davenport et al (2021), the level of intelligence decides whether a tool uses 'only' automation as the least intelligent type of AI, or machine learning as the most intelligent type of AI. The second dimension on their 'Four kinds of marketing AI' matrix is the level of integration, differentiating between isolated and integrated tools. Process-wise, marketing teams would start with the first cluster of "stand-alone task automation tools" and gradually implement more intelligent and more integrated AI tools until the fourth cluster of "integrated machine learning apps" is reached "which has the potential to create the most value" (Davenport et al, 2021) and was, hence, considered for proposition 5.

A much more prevalent categorization of AI, however, is the one into generative AI (GAI) and non-GAI. Susarla et al (2023) define GAI as "a category of AI systems capable of creating apparently new content through text, images, or other forms of media". Little and Lucas (2023) delimit non-GAI or 'classical AI' as "the subset of AI models that does not generate new content but rather focuses on tasks such as classification, recognition, and prediction". So while the ability to quickly generate content holds great productivity potential for marketing teams, non-GAI is still critical for key tasks like analysis (e.g. sentiment or KPI analysis) or personalization (e.g. ad targeting or customer segmentation in CRM systems). In an interview for onlinemarketing.de, Dr. Markus Wübben, who has been involved with AI in businesses since the 1990s, has a clear opinion on the value of GAI and non-GAI, stating: "By the way, AI-supported data analysis and decision optimization ultimately determine the success of a campaign far more than the AI-generated visuals and ad texts, I'm sure of that. So if companies are planning to use AI, they should never equate AI with ChatGPT or other generative tools – business AI is in a completely different league." (Lewanczik, 2023).

Besides different levels of integration and intelligence, also the *capabilities of an AI* were shown to positively impact productivity effects. Having 758 consultants execute easier and more difficult tasks with and without AI, Dell'Acqua et al (2023) found that easier tasks were 40 % better and 25 % faster solved by the consultants who were supported by AI, whereas the more complex tasks were better off without AI, as consultants using AI were 19 % less likely to produce correct solutions. Hence they figured that AI indeed has the potential to improve productivity, but the degree depends on the AI tool's capabilities, which for some tasks are higher and for others lower. Moreover, Bozkurt and Sharma's (2023) second rule for prompting is 'understand the model's capabilities'. According to them, familiarizing oneself with the AI's strengths, limitations, and the types of queries it performs well on, helps crafting prompts that align with the model's expertise.

2.3 How Users Influence AI Productivity Potential

Moving away from the technology's expertise towards the *user's expertise*, Dell'Acqua et al (2023) further found that less experienced consultants increased their performance with the use of AI to 43 %, whereas more skilled worker's performance with AI only increased by 17 %. This is consistent with the findings of an online experiment by MIT researchers Noy and Zhang (2023). They evaluate that with the help of ChatGPT, writing professionals who received a low grade on a first writing task increased in grades and decreased in time spent on a second task, while workers who initially received a high grade only maintained their grade level.

Further, different AI productivity studies place emphasis on the variable *'AI skills'*. Different from the variable 'personal expertise' which refers to a worker's operational abilities for tasks, 'AI skills' investigates a workers abilities in working with and getting the most of AI tools. Whereas several studies found that employees are concerned of not having enough AI skills or time to acquire them (Constant Contact, 2023; Salesforce, 2023; Wamba-Taguimdje et al, 2020), other studies support such concerns suggesting that today's executives and leaders in fact expect their employees to assess AI skills. For instance, EdX (2023) concludes that 87 % of 800 US C-level managers say they have a hard time acquiring talent with AI skills while 79 % are worried of being unprepared for the future of work, if employees do not improve AI skills. Such skills can be prompting skills and knowing where to add custom instructions, but also knowing how to double-check LLM answers (talking 'explainable AI') or to recognize and avoid biased output (talking 'responsible AI'). While acquiring such skills seems doable, dealing with more integrated machine learning requires data maintenance skills e.g. for deduplication or data enrichment that marketers might find more challenging.

In accordance with the literature presented, the following propositions were posed:

Table 1: Research propositions derived from literature

	Propositions
P1	There is a higher potential to *increase productivity* than to decrease it via AI.
P2	The lower the *user's expertise* for a task, the higher the productivity gains via AI.
P3	The higher the *user's AI skills*, the higher the productivity gains via AI.
P4	The higher the *AI's capabilities* for a task, the higher the productivity gains.
P5	The more *intelligent and integrated* an AI is, the higher the productivity gains.

3. Methodology: Yin's (2018) Case Study and Kemmis and McTaggart's (2007) PAR

To answer the research question, an explorative, embedded single case study (type) was conducted on how AI influences productivity (phenomenon) for the different tasks (analysis unit) of a startup's marketing team (case) influenced by selected AI context factors (propositions), as can be seen in figure 1.

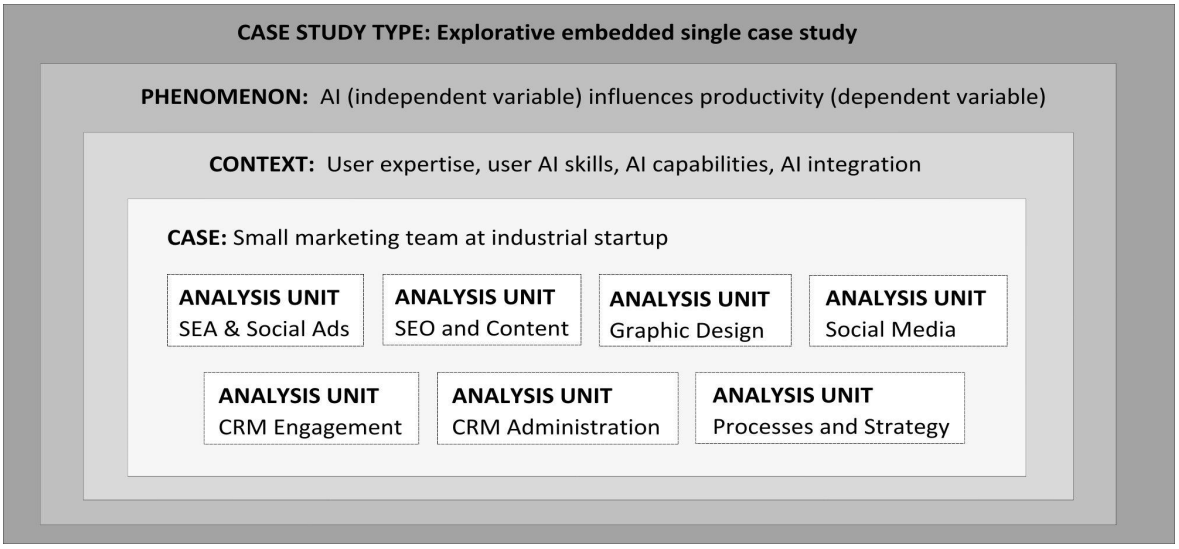

Figure 1: The research design – Components of the embedded single case study based on Yin (2018)

After the 'research design' was set up in step one of the case study, step two involved the 'preparation of data collection' and with that the creation of an Asana Board that acted as case study protocol and database. It helped showing the course of the study and important deadlines for both researchers and participants e.g. when the next AI tool presentation happens or until when the survey interviews should be returned. During step three, the 'collection of data', the Asana board supported the participants in handing in 'AI tickets' such as titled "AI to help design the perfect sign-up page" or "AI transcribing and summarizing meetings". This way, participants could describe marketing issues which the researchers would then seek AI tools for, test them and evaluate their productivity potential by commenting on the Asana task or during the 'Weekly AI updates'. Further marketing issues were collected from the answers of three survey interviews conducted with all participants.

In accordance with the method of Participatory Action Research (PAR) by Kemmis and McTaggart (2007), the data collection in step three happened in a collective and interactive, reflexive and action-oriented manner between researchers and participants. The method holds "the belief that those who are most impacted by research should be the ones taking the lead in framing the questions, the design, methods, and the modes of analysis of such research projects" (Torre, 2009). PAR is originally grounded in social justice and critical theory (e.g. feminist or indigenous perspectives) which aims to actively include minorities into research to challenge power dynamics for positive change. While the startup marketing team is neither an oppressed group within the company, nor suffering from top-down-management, it is the idea of "bring[ing] people together to learn from each other's experiences" (Kemmis and McTaggart, 2007), which appeals to the present case. In this context, the PAR's 'spiral of self-reflective cycles', as shown in figure 2 and adopted during the whole data collection period, suits this case study very well.

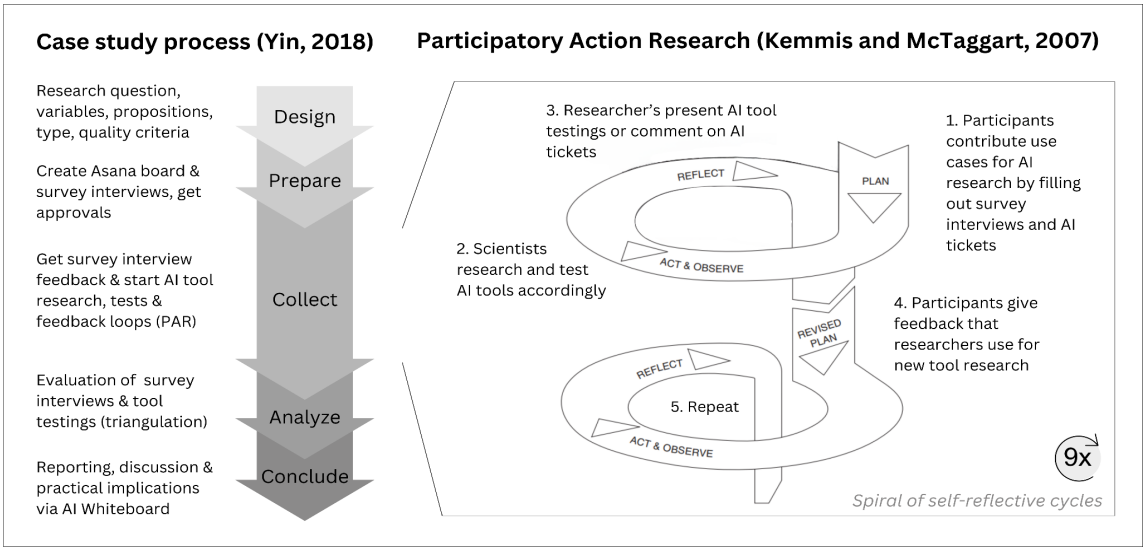

Figure 2: Overview of the case study process

After three months of data collection, in step four of the case study the sources of evidence were analyzed along all five propositions and in a triangulating manner to pay tribute to the quality criteria of qualitative research. Eventually, these insights then were reported, discussed and translated into 20 practical implications as well as a proposal of an AI board for small (marketing) teams to use for their purposes.

4. Research Results

The evaluation of the three survey interviews showed that respondents saw the highest urge for productivity gains through AI in graphic design, SEO / content, and processes / strategy. Accordingly, most AI tools were researched in these analysis units. The following table, on the one side, visualizes selected issues and use cases that participants mentioned in three survey interviews and 21 AI tickets. On the other side, based on all 49 AI tool testings and 22 tools that were more closely checked out but not tested, the researchers propose promising AI solutions rated with a high productivity score of 3, 4 or 5 out of 5 including suggestions from literature. In the tool research process, AI features, apps or extensions of tools which the start-up already uses like Notion, HubSpot, Canva, Slack, Wordpress or Google Workspaces were preferred towards new tools. Furthermore, review websites such as thereisanaiforthat.com and AI newsletters like the one from the Marketing AI institute supported a mostly search engine driven research via Google.

Table 2: Selected AI issues and solutions as derived from survey interviews, AI tickets and AI tool testings

Issues: Input from survey interviews & AI tickets	**Solutions: Promising tool testings & literature**
Interview: "I am pretty sure that they [*data*] are not used for training the model itself"	Legal education: This statement was proven wrong as the data privacy terms of OpenAI and Google showed
Interview: "the first *prompt* doesn't work, you edit it, but results are not getting any better"(prompting trap)	Prompting practice and education (e.g. Bozkurt and Sharma, 2023; OpenAI, no date)
Interview: "It's harder to get great *German language texts*."	Neuroflash or Mindverse (also trained on German datasets); GPT4 prompt "take care of natural German"
Interview: "they struggle with creating correct in-depth metal-*industry specific content*"	Create a customized GPT in ChatGPT 4, that answers technical questions like expert colleagues ('NateGPT')
Design ticket: "Create quicker and better videos"	Text-to-speech: Canva apps 'Voiceover' for natural overlays or 'Deepreal' for realistic, speaking avatars URL-to-video: Pictory (uses stock images & page text) Video-to-shorts: VidyoAI (5 shorts from 1 video)

Issues: Input from survey interviews & AI tickets	**Solutions: Promising tool testings & literature**
SEO/SEA ticket: “automate keyword clusterization”	GPTs like Keyword Clustering GPT by juliangoldie.com
CRM Administration ticket: “deduplicate CRM records”	HubSpot marketplace apps like Koalify, or integrated deduplication features in HubSpot
Process ticket: “summarize communication channels”	Slack AI (announced, not yet in-app), Spoke.AI for Slack and bundling channels (public beta available)
CRM Engagement ticket.: “AI to calculate & automate newsletter sendings for each contact’s optimal sending time”	HubSpot app ‘Email delivery optimization’

Besides this list of promising AI solutions, there were 13 solutions with a score of 1 or 2 out of 5 considered rather lowering productivity. For example, did the three LLMs with search engine access ChatGPT 4, Microsoft Copilot and Google Gemini perform similarly poorly, when asked to generate short, up-to-date news of the German metal industry for Q1 2024. Either the output was referring to the wrong time frame or the attached sources were outdated or irrelevant. Another tool which seemed promising, but disappointed is ChatSpot. Intended to act as LLM for the CRM System HubSpot, unfortunately it is not yet capable of executing prompts such as “Which 10 companies opened our newsletters most often the past 30 days?” reliably.

Ultimately, with regard to the propositions of the survey, P1 can rather be supported. Even though in the survey interviews respondents only rated productivity gains through AI with a 6 out of 10, the tool testings painted a brighter picture as the majority of testings resulted in productivity gains instead of impairments. While the analysis units Design and Content / SEO profited the most of mostly GAI tools with productivity scores of each 4 out of 5, CRM administration tools usually consisting of non-GAI tools showed the lowest productivity potential with 2 out of 5 productivity points.

Also P2, which suggests that higher AI skills improve productivity can rather be supported. Though in the survey interviews respondents were rather confident that, besides AI struggles, they do not need extra AI training, the majority of tool testings showed that AI education leads to more and better results - may it be due to prompting skills in GAI tools or being able to quickly navigate in more complex non-GAI tools.

The impact of general expertise as stated in P3 was harder to be proven in this context. Insights here are mixed. On the one hand, people with a high experience in their field of expertise profited more from AI, as they know which task-specific problems need to be solved in what way by an AI. On the other hand, less experienced people benefit from AI tools as they can help solve tasks better and faster. For example, ChatGPT 4 saved the coding-inexperienced researchers a lot of time when trying to create HTML email templates. Nonetheless, general expertise is nothing that, for the perks of AI, should be actively tackled, but rather it is a moderating factor with differing effects.

Switching from the user’s to the technology’s perspective, AI indeed for some use cases shows higher capabilities than for others which accordingly influences productivity and therefore supports P4. Thus, users should learn which kind of tools have what kind of capabilities for which tasks, and which do not. For example, remembering that the big LLMs are simply not (yet) able to give trustable news content, or that CRM LLMs like ChatSpot are not (yet) able to answer or execute prompts with CRM data, can already save a lot of time.

Lastly with regard to P5, the level of intelligence and integration of AI tools does not seem to matter much for small marketing teams as data heavy tools like the HubSpot CRM, Asana or ChatSpot and their AI features were not automatically more performant. Though much potential is seen in integrated tools that machine-learn from huge amounts of internal data, their execution is on many levels – especially regarding data quality, time, costs, expertise – much more difficult than simply using less integrated tools, which often happen to be GAI tools.

5. Limitations and Future Work

Though the exploratory case study approach was a suitable choice for the case and researcher’s resources, it came with limitations. Firstly, the method requires many different sources of evidence for triangulation and reliable results. While the researchers considered adding a ChatGPT4 analysis of all prompt inputs and AI outputs for a month, this idea was soon rejected for different reasons. Though some LLM tool testings consisted of

analyzing prompts, adding a more extensive standardized prompt analysis would have enriched the results even more.

Following on here, one could criticize that, despite the collaborative PAR method, AI tool testings were mostly up to the researchers. Future works would profit even more from PAR's ideas of collective learning, if AI tool testings were distributed more across all participants. This way, the Weekly AI Updates could have been presented by another person each week.

Further criticizable is the small sample size of participants. Though semi-structured interviews were all the more extensive and in-depth, it was not possible to cover all analysis units. For example, one social media interview was missing due to the researcher not having attended, and the input of designers who were dismissed before. At least, thanks to the work's multi-method approach, this social media and design gap could be filled through respective tool testings.

Furthermore, besides extensive testing of GAI tools, the present study could just to a limited degree test more integrated, often non-GAI, like ChatSpot, or HubSpot Marketplace apps. Also, literature and news coverage on integrated AI is scarce which lead participants to not even seeing this kind of AI as noticed in the survey interviews. Therefore, future studies should more often research on marketing use cases like predictive analytics, segmentation and personalization, that can just hardly be covered by GAI tools like ChatGPT.

6. Practical Implications and Conclusion

The question of how AI can increase productivity in small marketing teams is an extensive one. This qualitative case study represents an approach to systematically tackle project AI. Insights were generated not only in the data analysis phase, but throughout the entire course of the case study. Based on all findings, 20 implications were documented as part of an AI whiteboard, which is intended as a practical guide for SMEs as visible in figure 3.

Figure 3: AI Whiteboard for SMEss for orientation and adaption

Acknowledgement

We would like to thank the German Research Foundation (DFG) and the Open Access Publication Fund of Anhalt University of Applied Sciences for their financial support. Further, we thank the colleagues and participants of this study, who very well served us with qualitative data despite the extra workload. Moreover, the main author

would like to thank her partner who during this thesis supported her in every possible way, as well as professor Dr. Stefan Stumpp and Tobias Knopf without whom this paper would have never been published.

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