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On the Potentials of Artificial Intelligence in Marketing – The Case of Robotic Process Automation

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ABSTRACT

The various applications of AI have not yet led to widespread acceptance in marketing. Nevertheless, AI has enormous potential to fundamentally change the field of marketing with its applications, making the topic highly relevant for companies. By analyzing current applications, potential use cases in the near future, implementation opportunities and optimization areas, the study can present a comprehensive understanding of the long-term impact of AI in marketing and on marketing as a discipline.
In particular, it looks at potential applications and challenges for companies that provide insight into the future of marketing. These are relevant to remain competitive in the future. In particular, the sub-area of Robotic Process Automation (RPA) will be addressed. For this purpose, two research questions were posed. On the one hand, the use cases in marketing that are given by the automation of processes by means of AI are examined. Secondly, the question is posed as to how the potential of AI in marketing can be further expanded and what trends can be identified or what significance RPA forms in this context. The analysis is based on a qualitative survey in the form of interviews with experts from the field.

1. Introduction

The topic of artificial intelligence and process automation have established themselves as central concepts in a digital world (Ammerman, 2019; Dornberger et al., 2018, p. 3ff.). Companies have also discovered the possibilities of artificial intelligence for themselves and are increasingly using it to optimize processes, among other things (Biegel, 2009; Naqvi & Munoz, 2020). Applications of AI such as chatbots, self-learning machines and robots through to autonomous vehicles are changing both industry and society and thus offer numerous advantages (Dalla Vecchia & Peter, 2018). The development of these technological applications therefore makes it essential to find out where AI can be used in the long term, especially for automating processes, and what potential it offers.

Robotic Process Automation and Artificial Intelligence represent two key technologies on the way to intelligent automation of processes (Fantina et al., 2022, p. 1ff.; Heimbach & Kostyra, 2015). When evaluating the potential of these technologies, it is important to have a clear understanding of what they can and cannot do. With the digital transformation, companies must

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prepare for a restructuring and in many cases even a realignment of their business processes (Osiyevskyy et al., 2020). Due to continuous technological progress and the associated innovation, new systems are replacing outdated, often historically grown processes over time. Automation is increasingly supporting a wide range of business processes and is reaching or surpassing human performance in certain areas (Mrohs, 2021). The relevance of the topic is further underpinned by a significant reduction in costs for companies (LeSueur, 2007, p. 105ff.).

In addition, automation is creating new potential in many business areas, including marketing (Monteiro, 2021; Vlacic et al., 2021), and in consumer applications (Dalla Vecchia & Peter, 2018). Key new products, services and capabilities that can be realized through AI include, for example, autonomous vehicles, automated medical diagnosis, voice input for human-computer interaction, intelligent assistants, automated data collection, and improved problem-solving approaches (Ammerman, 2019; Naqvi & Munoz, 2020).

The study is guided by two overarching research questions, which are also considered to guide the literature:

1. What are the use cases in marketing of automating processes using AI?
2. How will the potential of AI in marketing be further developed and what trends can be identified or what significance does RPA form in this context?

The research questions are motivated by a first theoretical section in the next chapter and they are discussed and answered in detail in the second part of the study based on expert interviews. In the theoretical part, Robotic Process Automation is presented as an example of AI. It will be discussed why RPA has gained in value and which potentials arise from it for companies. The link between Robotic Process Automation and Artificial Intelligence is shown to illustrate the potential, especially applications in marketing.

The practical part of the paper furthermore motivates the research design and describes challenges as well as opportunities and risks from a business perspective. The study concludes with a summary in the form of success factors and a discussion of recommendations for action derived from them.

2. Marketing Applications of Robotic Process Automation

2.1. Robotic Process Automation and Artificial Intelligence

Digitalization has changed the way organizations work (Dornberger et al., 2018, p. 3ff.). Robotic Process Automation is one of the digital areas that many companies are already using or at least discussing. This process technology is becoming a mainstream trend that is relevant to many companies. However, many organizations struggle to realize the full potential of RPA. RPA is typically designed to mimic simple rudimentary human activities (Axmann & Harmoko, 2020; Fantina et al., 2022). By this is meant that RPA is not adapting human behavior, but rather mimicking human actions (Gellera & Thompsson, 2017).

To pick up on the robotics aspect, the following section explains what potential RPA brings as a subcategorized example of AI, because RPA is often seen as a precursor to AI (PwC, 2019). Robotic Process Automation is a combination of related technologies such as autonomous systems, machine learning, AI, and robotics (Axmann & Harmoko, 2020). These emerging technologies shaped the structure of RPA solutions and became a framework for RPA. As a result, robotic process automation is the application of technology that enables employees in an organization to configure computer software or a "robot" to capture and interpret existing

applications to process, for example, a transaction, manipulate data, trigger responses, and communicate with other digital systems (Institute for Robotic Process Automation, 2019). In this way, time-consuming, rule-based, and repetitive tasks previously performed by humans are automated.

However, not all processes are equally suitable for automation. Since RPA is rule-based, the focus here is on structured processes that adhere to recurring rules and clear instructions (Taulli, 2019, p. 91ff.). The possible applications for RPA are as diverse as the processes themselves. RPA can be used wherever reproducible, predictable interactions with IT applications take place. At the operational level, these include filling out forms, copying, customizing and moving data, and accessing social media (Taulli, 2019, p. 91ff.). However, knowledge deficits ensure that much potential remains untapped to date (Lamberton et al., 2014).

The commercial viability of RPA represents much potential. RPA is built on top of existing systems. It uses and interprets existing IT applications and enables transaction and data processing and communication across multiple IT systems (Fantina et al., 2022). Also, due to low licensing costs compared to personnel costs, RPA offers tremendous cost leverage in times of increased efficiency. A robot in itself costs only one-third of a full-time employee. Added to this is the pure working time, which is about five times that of a full-time employee (Wismann, 2019). At the same time, process automation helps to improve accuracy and increase operational flexibility. Another point and thus a potential is the high user friendliness (Taulli, 2019, p. 91ff.).

Imitating user input via an application's user interface eliminates the need for cost-intensive programming of an application programming interface (API). Back-end integration with the associated effort is therefore not required. Experience shows that processes can be automated in two to six weeks (Schwab, 2019). After a one-time installation, the software robots operate the applications required for a process just like an employee. They communicate with all the necessary systems, obtain information and change the relevant data.

Another benefit of RPA is that it increases data and process quality. Even selective successes in optimization have not changed the fact that monotonous, standardized volume processes tie up competent human resources in large parts of a company. Thus, especially processes that require a lot of manual input in several systems offer a lot of potential for the use of RPA (Axmann & Harmoko, 2020).

The last point represents the liberation of employees from tedious routine work. As a result, RPA makes them available for other task areas that require human skills, such as emotional intelligence, logical thinking and judgment. Freed from monotonous routine activities, employees can once again focus fully on customers or other challenges in the company and increase their overall motivation (Gami et al., 2019).

Unleashing the full potential of applying AI and RPA requires combining the two also referred to as smart automation (Schmitz et al., 2019). The interaction of Robotic Process Automation and Artificial Intelligence, is still in the early stages of development, but at the same time holds a high potential for efficiency (Axmann & Harmoko, 2020; Schmitz et al., 2019).

The aim of a symbiosis of AI and RPA is not to analyze and improve processes that have been explicitly defined by experts. Rather, it is to create a somewhat autonomous system that can react dynamically to different situations. This can mean intelligently combining more complex processes, for example, understanding texts generated by humans, then automatically generating response texts and thus interacting directly with humans (Schmitz et al., 2019).

2.2. Existing Applications

The areas of data analysis and communication offer the greatest potential and current application. One of the pioneers in the use of AI in marketing is China (Marketing Club Schleswig-Holstein, 2020).

The current use of artificial intelligence in marketing is clearly focused on individualization and personalization (Feng et al., 2021; Monteiro, 2021). In general, the benefit of AI in marketing is always focused on the customer in order to better understand, serve and retain them. This applies to essential functions in marketing such as analysis, planning, development, implementation and success monitoring. Looking at these five elements, AI in marketing can be used effectively with simple methods (Feng et al., 2021; Terstiege, 2021).

For companies, AI offers countless optimization potentials, especially in marketing. It can be used to increase sales rates, predict customer behavior and display personalized advertising. For example, the e-commerce company Otto uses artificial intelligence algorithms to improve online activities and thus reduce the number of returns. Using Deep Learning systems, Otto tries to make a prediction regarding the buying behavior of its customers and improve it in order to subsequently order the desired product and deliver it to the customer without delay. The algorithm predicts with 90 percent accuracy which products will be sold in the next 30 days (Hecker, 2021).

Based on the entire marketing area and the above five steps, on the one hand, customer buying behavior can be accurately predicted and proactively served with campaigns at the optimal time (Verma et al., 2021; Vlacic et al., 2021). On the other hand, customer needs can be better understood along the entire customer lifecycle and addressed individually through personalized marketing. This leads increasingly to targeted marketing and stronger customer loyalty. In addition, the analytical evaluation is more precise, which means that the marketing budget is spent on those customers who have a high customer value (Patel et al., 2021). The aspect of success control is also already implemented through the early recognition of critical patterns. This enables a company to act in a timely manner and retain customers in the long term (Crimins, 2019).

It is not only within marketing channels that it is possible to generate profits through artificial intelligence. Artificial intelligence methods can also be used in e-mail marketing or in the web store to personalize the customer journey.

This customer-centric marketing, which is precisely tailored to customer needs, can also lead to increases in sales and improves customer loyalty. In the meantime, so-called recommendation systems, which optimize the interaction between the customer and the sales department, are already being used on a number of occasions. As a result, the right product offers are generated for e-mail campaigns or displayed on-site in the web store (Erner, 2019).

2.3. Future Potential Applications

Figure 1 in reference to (Gentsch, 2018) shows the fields of application in marketing in terms of their impact on the business. Here, the graphic distinguishes between maturity and degree of use. It thus summarizes aspects seen in the reviews by Heimbach and Kostyra (2015), Verma et al. (2021) and Vlacic et al. (2021) as well.

Today, there is already an increased number of possible applications for marketing based on artificial intelligence. These potentials can be characterized according to the dimensions of "automation" and "augmentation" and on the basis of the associated business impact in each case. Augmenting applications are particularly concerned with the intelligent support and

enrichment of complex and creative marketing tasks that are currently still generally performed by human actors. As visible in the figure, artificial intelligence can exemplarily support the field of marketing in media planning or the generation of customer insights. It is not surprising that the augment potential is only applied when companies are already using artificial intelligence. In addition, it is already possible that planning and decision-making processes are supported or even executed by artificial intelligence. With regard to the automation applications, it is evident that both the maturity level and the distribution are clearly dominant in comparison. There are many automation applications that are already being used in practice. These include, for example, marketing automation or real-time bidding (RTB) (Geng et al., 2021).

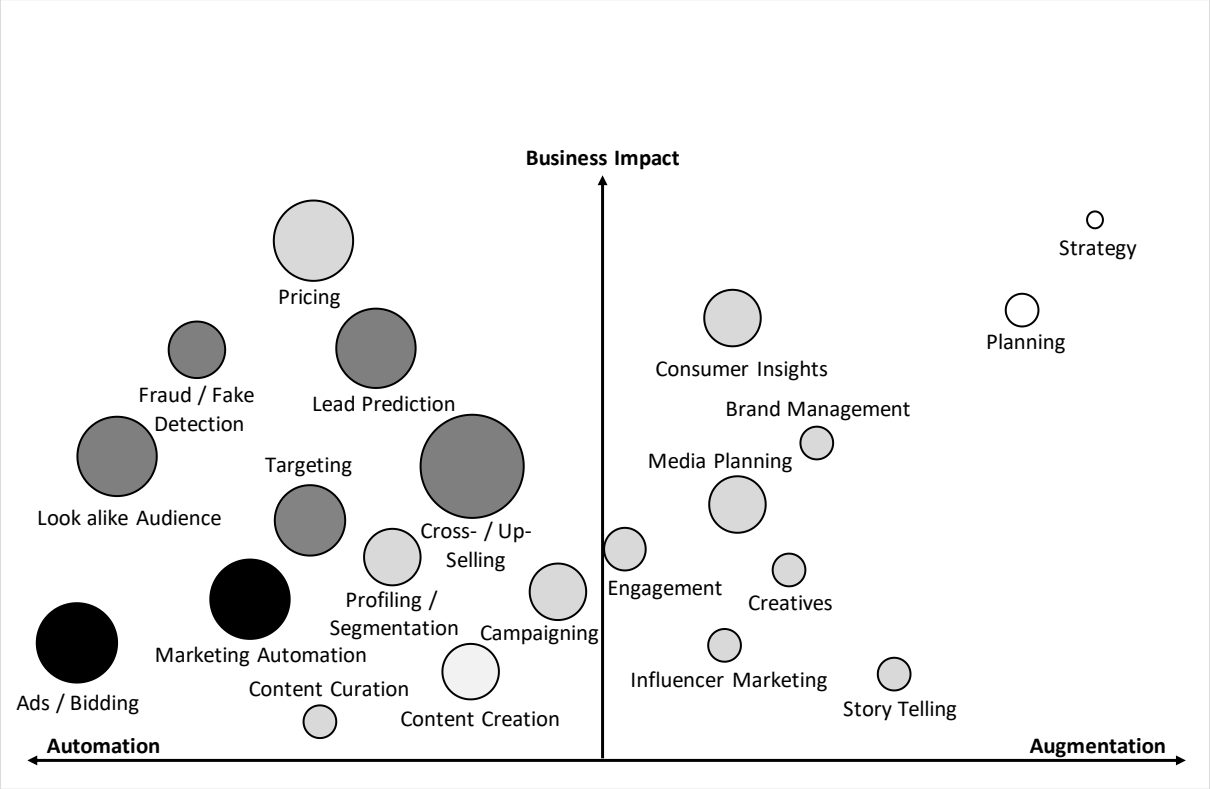

Figure 1. Marketing-Matrix following (Gentsch, 2018)

Nowadays, attention spans are decreasing (Lorenz-Spreen et al., 2019), so it is all the more important that marketing communication generates a high level of attention and is individualized. This can lead to a sensory overload, so that creative ideas are always necessary to inspire the customer and surprise him with content (Urdea et al., 2021). This task is currently still performed by humans, and thus artificial intelligence in marketing, no matter how well it functions, cannot create the necessary differentiation from the competition. In the present view, the use of AI is still a relative advantage, since the right use of the technology can represent a competitive advantage. However, this advantage will disappear over time, as everyone will be using the same technology. The decisive difference will therefore be creativity (Fantina et al., 2022, p. 2), even though there is further potential to be found in the use of AI. As a result, it is precisely this creativity that will make the crucial difference in the future, underpinning the success of an advertising campaign.

Already in the start-up phase and thus at the present time, the use of AI can provide a competitive advantage for a company, but already here the communication potential is enhanced by the connection between a creative idea and artificial intelligence. In the established phase, it is assumed that the use of AI will then already no longer offer a

competitive advantage. Accordingly, there is a level playing field and the initial advantage for the early use of AI is reduced. Here, a disruptive creative idea can not only increase the potential, but also establishes itself as a central factor for future success under the same conditions (Terstiege, 2021, pp. 90–93).

2.4. Challenges and Restrictions

The complexity in the application of AI, as well as the increase in areas of life in which AI is expected to advocate or even make decisions itself, pose new challenges for the technology. Precisely because the decisions of learning systems are hardly predictable ex ante and hardly provable ex post, their use has an unknown number of risks.

There are regular warnings that many jobs will be lost as a result of automation and the further exploitation of its potential, and that precisely this aspect could not only be a challenge, but could also represent a limit (Palka, 2018; Vlacic et al., 2021). A study by McKinsey shows that around 30% of the task areas in 60% of occupations can already be automated (Manyika et al., 2017). However, the use of AI will also create new job profiles that will enable future-oriented careers and upgrade the average skill levels of workers.

Humans could therefore become one of the biggest limitations in the development of AI. Society therefore urgently needs to find answers to these developments. Here, a key challenge is to decide in which areas of work decisions should be transferred to machines at all. In addition, it must be defined which contexts and categorizations are acceptable. Furthermore, the question arises as to whom the decisions of artificial intelligence are to be attributed by default, since it too can make mistakes, i.e. AI will rather make systematic errors due to its programming as compared to human random errors. It may therefore be problematic to replace humans in certain task areas and completely remove "human-in-the-loop" systems (Wells & Bednarz, 2021).

Lack of employee competencies in AI methods is of similar importance. Accordingly, the demand for AI experts is high, but the supply of workers with methodological skills is very low, which is reflected in a high number of unfilled positions in the field of AI (Büchel & Mertens, 2021). It is therefore necessary to train employees across departments and thus increase interdisciplinarity not only within the teams or projects, but also to acquire more diverse skills for each employee. As working with AI is becoming more and more commonplace, the pressure to gather new knowledge has also increased (LeSueur, 2007, p. 137ff.). Therefore, many companies expect knowledge transfer from the management level of the company. The reason for this is that AI applications are clearly related to and optimized for the professional context. It turns out to be increasingly relevant that employees understand how AI works. For this, transparency on the data used by the AI must be ensured in order to be able to assess the new technology and its results. Therefore, it is also a challenge for managers in particular. It is therefore necessary to increase the acceptance of AI systems among employees and to communicate transparently from which data the forecasts come and what the goal of the forecast or optimization is (Haufe, 2020).

Furthermore, data quality is a major challenge for AI. The question about the use of data is critical to the implementation of AI for several reasons. First, almost all AI applications rely on the availability of large amounts of data in which patterns and norms can be identified and learned from for future tasks (LeSueur, 2007, p. 149ff.). Second, one of the biggest advantages of AI systems is being able to efficiently process large unstructured data sets. In general, implementation is based on two pillars. Firstly, acceptance from the customer, i.e. consent to use their data, and secondly, the legal aspects of data protection. One factor in the problem of

data collection is the legal perspective. Here, companies must take legal aspects into account. A number of laws must therefore be observed when using data, including the

- Federal Data Protection Act (BDSG) which applies when personal data is involved, such as contract data, usage data, location data, etc. (Bundesdatenschutzgesetz [German Data Protection Act], 2021).
- Copyright Act (UrhG), which serves to regulate the storage and use of data (Gesetz über Urheberrecht und verwandte Schutzrechte [German Copyright Act], 2021).
- Telemedia Act (TMG), which applies if data such as surfing behavior, login and logout times, or search terms entered are stored, the customer must agree to the storage of the data according to TMG (Telemediengesetz [German Act for Telemedia Services], 2021).

In this context, the need for customer acceptance also becomes apparent. Using customer data poses a problem for data collection and, in this context, also for data quality. It is relevant here that the customer journey cannot be traced 100% or that there is a lack of transparency with regard to the first points of contact with the company. In addition, the low consent volumes in content management are challenging for the use and linking of the data basis. However, the availability of data would enable personalized marketing advertising.

In summary, data provides the foundation for the application of AI. It is a major challenge for companies to obtain customer data that can also be used for processes and self-learning systems (PwC, 2021).

Another challenge that AI-active companies face when using AI is the potentially high cost of development and implementation which, however, is not recognized by every study (Axmann & Harmoko, 2020). It is contradictory that the availability of financial resources has such a high relevance, as the expenditure of AI-active companies on the development and implementation of AI is actually relatively low. An evaluation of AI use in the German economy in 2019 has shown that the average annual AI expenditure per AI-using company is around 270,000 euros and thus accounts on average for only 0.09% of the companies' annual revenue (BMWI, 2019). However, the level of costs for the development and implementation of new applications must always be seen against the background of the revenues that can be hoped for.

If these are difficult to forecast or entirely indeterminate, even correspondingly low costs for the development of AI can pose a challenge. In the field of AI, the problem is likely to often lie in quantifying in advance the revenues to be expected later in order to be successful in the company's internal resource allocation process. The prerequisites that companies believe are necessary for companies to enter active AI use are only partly the reasons for abandonment. The most frequently cited factor that would increase the likelihood of actively using AI is government financial support (Rammer et al., 2021).

2.5. Deduction of the Research Questions

There are already numerous use cases that play a role in marketing (Järvinen & Taiminen, 2016), but the implementation of these is not yet holistically developed and is in the very early stages of development. In this context the first main research question considered in this study is:

Q1: What use cases in marketing are given by automating processes using artificial intelligence?

One challenge for many companies is the costs incurred by a well-implemented AI system in connection with RPA. It was presented that according to a survey from 2019, the costs for AI

are very low compared to the annual turnover and the benefits (PwC, 2019). From this, the following sub-research question can be derived:

RQ1.1: Is there insufficient expertise in the introduction and use of AI? Are the costs of introduction the main counter-argument?

A further sub-research question is derived from the application potentials, which place the customer journey at the center of the application (Gentsch, 2018; Verma et al., 2021).

RQ1.2: Will the customer journey be controlled and monitored by AI systems in the future, enabling more precise advertising playout?

The second main research question continues the reasoning behind the first research question into the future and relates to the resulting potentials:

Q2: How will the potential of AI in marketing be further developed and what trends can be identified or what significance does Robotic Process Automation form in this context?

Creativity is assigned to humans and currently not to artificial intelligence. However, it is precisely this creativity that can potentially create competitive advantages . Therefore, in order to also obtain a long-term competitive advantage through AI, creativity must be implemented in the AI systems. Such a combination enables optimal execution of processes. As a result, task fields that are performed by analysis alone will be able to be completely replaced by AI systems in the future. This sub-question is also motivated by PwC (2019):

RQ2.1: Will Humans no longer be needed in certain applications? Which areas that are performed by analysis alone will be able to be completely replaced by AI systems in the future?

Many areas in marketing cannot perfectly be automated, since they require an intelligent decision maker in the loop, even if the intellectual burden is minimal for the decision maker (Czarnecki & Fettke, 2021). As such the integration of AI and RPA is assumed to become pronounced resulting in the fourth sub-research question of this study:

RQ2.2: Will Robotic Process Automation no longer be used as a stand-alone application in the future, but will much more strongly interact with AI? Will RPA thus be understood as part of AI?

Increased efficiency through the use of RPA and AI was already highlighted at the beginning of the study (Axmann & Harmoko, 2020). Therefore, the fifth and final sub-research question of this study reads as:

RQ2.3: Will the use of AI, but also of RPA, brings with it an additional increase in efficiency?

3. Methodology

3.1. Methodological Design

Since the number of people who have in-depth knowledge of the topic or are regularly confronted with the use of RPA in a marketing context or beyond is limited, the expert interview method is the most suitable.

The guideline is designed in such a way that both research questions are covered by the interview. The two central questions of the guide motivate themselves accordingly from the guideline, which were worked out above.

In detail, the interviews start with a short introduction that informs the participant about the topic, the time frame of the interview and gives some instructions. The participant is also assured of anonymity and privacy.

To introduce the topic of the interview, an introductory question about the definition of artificial intelligence and robotic process automation is asked where the interviewee has to define the terms and draw a distinction between them. Subsequently, a working definition of the two terms is presented so that all interviewees can answer succeding questions having the same minimum background knowledge.

Consecutively, the experts are asked to state their professional activity and the contact that exists with RPA as a technology. As a transition to the main part of the survey, perceived advantages and disadvantages of the technology are queried.

Subsequently, the two main questions are addressed but confronting the experts with the research questions RQ1.1 to RQ 2.3. Finally, the interviewee is given the opportunity to make his or her own comments or additions to the topic.

The interviews are evaluated deductively, based on a category scheme determined by the sub-research questions that coincided with the questions asked from the interview guide.

In addition, the experts' statements on their own contact with RPA and the future potentials argued are classified on a five-point rating scale. For this purpose, three sub-aspects were considered in each case, which are compiled in the following Table 1. This evaluation of the statements allows the results of the study to be better placed in context.

Since, no existing scale currently exists that ranks interviewees' background knowledge and perceptions accordingly two new scale are presented and used herein.

Table 1.
Categories of Evaluation

Category	Background Knowledge	Potential Perception
A	Marketing Background	Current Applications
B	Professional Use of AI / RPA	Perception of Limits
C	Quality of Definition	Development Speed

The background knowledge of the experts consists of a first scale for their marketing background, used to elicit whether they have the knowledge required to evaluate the potentials for RPA in a broad range of marketing applications. The second scale measures their personal experience with using AI and RPA technologies. It is implemented to evaluate how knowledgable the experts are about different applications of these technologies and whether they already have seen them in action as compared to having only theoretical knowledge. Finally, they are asked for a definition of both term AI and RPA. This question adds to the second part whereas at this point it is more about the theoretical knowledge as compared to the practical experience broached in the seond part.

To objectively determine scores a five-point scale has been prepared beforehand, with the extremes being set as the expert having no experience with the topic and the interviewee being confronted with the topic on a routinely daily basis. Evaluating the definition of AI and RPA given the scale ranks from the interviewee lacking a basic understanding to the interviewee having an expert understanding of both topics and can give a definition that is in line with current professional understanding of the topic as discussed in the sections above. Table 2 provides an overview over the three different scales while Table *7* in the appendix summarizes

the ranking of the interviewees according to this scale and their answers that lead to the respective ranking.

Table 2.
Levels of Evaluation - Expert Background Knowledge

Score	A	B	C
1	No marketing background	Never had any contact	Wrong definition
2	Basic knowledge and skills	Use of AI and RPA only seldomly	Basic definition used
3	Qualifying marketing education or training	Already used AI or RPA in a practical context	Definition contains major aspects
4	Academic ;marketing education and practical experience	Often uses AI or RPA but on part of daily routines	Definition with only small deficits
5	Long-term practical and academical experience	AI and RPA are part of daily routines	Exact definition

The answers with regard to the perceived potentials of RPA and AI are as well as ranked on three sub-scales. The first scales measures in how far the interviewee is able to name currently used applications and future developments. It combines therefore the knowledge of the expert about the technologies with their perception of development and implementation potentials. The second scale ranks the interviewee's perception of potential limitations. It thus adds a negatively connotated perspective to the first scale. Taken together both scales offer the chance to elicit whether the potentials or their limits outrank each other in the interviewees' perceptions. The third and final sub-scale broaches the development speed of the technologies and thus acts as a measure on the interviewee's optimism regarding the implementation and development of these technologies. It thereby adds to the first scale by putting a timeframe to it. Table *3* summarizes the three sub-scales and their characteristics, while Table *8* in the appendix lists the answers of the interviewees and the respectively assigned scores.

Table 3.
Levels of Evaluation – Potential Perception

Score	A	B	C
1	Can name no current applications, stays vague	Sees significant limits which are very hard to overcome	Technology use and development will not develop or decline
2	Can name only single applications, remains vague	Limits are seen as harder to overview	Technology use will slowly be expanded
3	Can name some applications	Sees some limits	Technology use and development will expand
4	Can name multiple applications	Limits are seen as marginal or easy to be overcome	Technology use and development will develop rapidly
5	Can name multiple applications and their developments	Sees no limits	Technology use and development is accellerating

3.2. Expert Selection

In order to cover as broad a context as possible and at the same time to take account of the problem that only a limited number of experts are available on the subject, a selection of five interview partners was made. The experts cover both the academic view (I2) and the technical view (I1, I5). In the practical context, opinions from sales (I4), in-house marketing (I3) and marketing consulting (I2) are represented. The majority of respondents also have more than ten years of professional experience, so they can make a valid forecast on the subject. Table 4 summarizes the interviewed experts.

Table 4.
Selected Experts

Experts	Code	Company	Professional Title
Simon Wingen	I1	Fielmann AG	Data Market Analyst
Nina Wiese	I2	CEWE Stiftung & Co. KGaA	Head of CRM & Dialogue Marketing
Eugen Neigel, Dr. Jana Bohnstengel	I3	CEWE Stiftung & Co. KGaA	Head of BI and Analytics, Senior Data Scientist
Prof. Dr. Meike Terstiege	I4	Docmarketeer Agency & Consulting for Digitalization and Digital Marketing	Consulting, Training University Professor
Jan Meel	I5	Fruitcore Robotics Industrieroboter HORST	Sales Engineer

4. Analysis of Potentials

4.1. Evaluation of the Experts' Background Knowledge and the Perceived Potentials

As noted in the previous part of the study, the background of the interviewees was evaluated according to a ranking scheme as detailled in Table 2 and motivated in section 3.1. The final scores assigned to each of the interviewees are based on their answers that are summarized in Table 7.

Collecting the scores for each of the three partial categories of the experts' background knowledge and averaging them, results in Table 5. In summary, a high level of basic knowledge on the part of the experts is present, which is reflected in various capabilities. The only expert with generally low score is I1, who, however, has a purely technical background.

Considering that the selected experts report differing professional backgrounds, their selection is ex-post justified. Since no expert consistently reports maximum scores, highlights that the three categories, as detailled in section 3.1, provide a broad basis for reflection on the experts' understanding of the topic at hand.

Table 5.
Average Scoring – Background Knowledge

Interview	Average Background Knowledge Score	Sum	A	B	C
I1	1.67	5	3	1	1
I2	4.00	12	3	4.5	4.5
I3	3.67	11	3	4	4
I4	4.33	13	5	3	5
I5	3.5	10.5	4.5	2	4

In addition to the experts' expertise and background knowledge, the potentials they perceive regarding AI and RPA is also evaluated in terms of three factors. Again a five-point rating scale is implemented, using the levels as detailled in Table 3, in rating the answers of the experts as summarized in Table 8. Table 6 provides a summary of these evaluations as well as an average score for the evaluation of the experts' perception of potential uses of the two technologies.

Table 6.
Average Scoring – Potential Perception

Interview	Average Potential Score	Sum	A	B	C
I1	2.00	6	1	3	2
I2	3.50	10.5	3	4	3.5
I3	3.00	9	2.5	2.5	4
I4	3.33	10	2.5	4	3.5
I5	3.50	10.5	4	4	2.5

The empirical evaluation showed that there is promising potential in the application of artificial intelligence in marketing in general. Nevertheless, most experts are ranked in the middle range, indicating that they definitely see positive potentials for the two technologies but they are no technovagelists that blindly see automatization and AI as the ultimate tools in solving all problems in marketing and beyond. With a score of 2, even the most critical expert still does not full deny the use of the two technologies. Summarizing, the technologies are seen as beneficial but the experts are also aware of their shortcomings and potential risks related to them. Additionally, they all perceive limits to the spread of the technologies not only from an application-based perspective but as well from other factors hampering the speed of spread and development of the technologies.

Since the categories again report differing scores across experts, again the group of experts and their views on the topic can be seen as heterogenous, stressing that for professionals with different backgrounds different aspects of AI and RPA might be relevant and different problems most prevalent.

Combining the average scores from Table 5 and Table 6 in a single diagram, Figure 2 results.

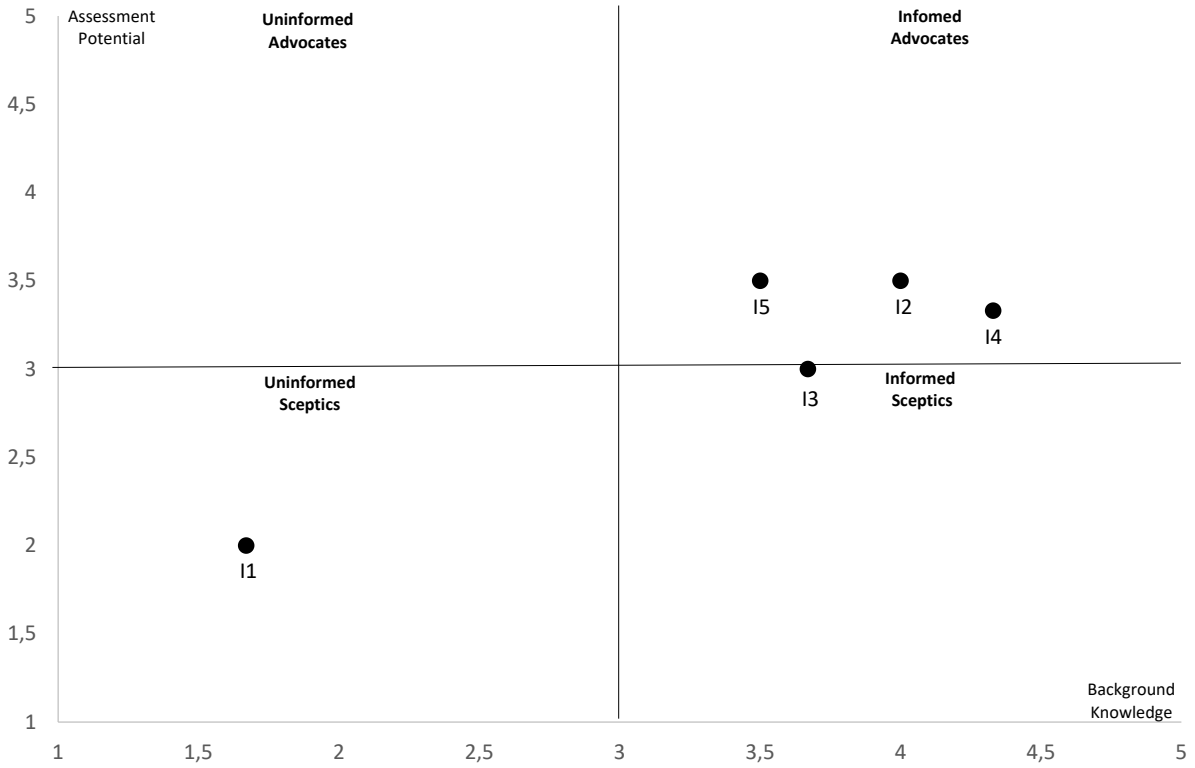

Figure 2. Interviewer Classification

The figure illustrates that on average a higher level of awareness, as given by a more pronounced professional background regarding the topic and the use of technologies in a professional context, the higher the assessment of the potentials and their impact. From this it can be concluded that there is still a considerable amount of unused potential in marketing, which would affect the efficiency of a company.

Considering only the four experts in the upper right corner of the diagram and their answer with regard to the three sub-scales on the potentials, it also shows that there is no perfect linear relation between the background knowledge and the perceived potentials. It rather seems to indicate that while the perceived potentials increase with more knowledge on the topic, so do the perceived limits and risks.

Looking at the experts' comments in more detail, there are still regulatory problems to be overcome that hamper current commercial use (I2-L.23 / I5-L.29). Here, the lack of education of the application (I4-L.29) is a particular hurdle, as is the problem of data collection (I3-L.22; L.30; L.59). Depending on the assessment, the problems represent long-term limits. However, past experience has shown that when a market has seen opportunity or a significant increase in productivity in an innovation, it has prevailed over the long term. Therefore, for many of the experts, forecasting into the future is a question that cannot be answered precisely. On the other hand, experts point out that the lack of understanding, as well as the lack of ambition and the resulting reluctance of managers to deal with artificial intelligence, are slowing down penetration in the German market (I3-L.43). It is noted here that, in addition, the lack of development of digitalization in Germany is not a good basic prerequisite for addressing the issue of applying AI in companies (I4-L.31). RPA systems require a lot of newly embedded process landscapes (I2-L.11). These mostly require time and personnel, which is currently not feasible for many companies (I4-L.29; L.31). In many cases, the lack of resources is not only a problem, but also one of the central challenges in the context of implementation (I5-L.31). One issue that has not yet received any attention is that the resources here can be described not only on a financial level, but could represent a material shortage (I5-L.31).

One of the decisive limits of the evaluation is the human being. Here, the experts refer to ethical backgrounds (I3-L.57) that partly correlate with the problem of data collection (I2-L.23). Humans serve as morally trapped in this construct, as they consciously decide against the use of artificial intelligence (I1-L.45 / I4-L.41). However, this does not apply to process automation. In general, however, a discrepancy is visible between theory and practice regarding the "human as a boundary" issue (I4-L.12; L.41 / I5-L.29). In practice, the boundary tends to be on the side of the customer (I4-L.16 / I5-L.11). From a theoretical point of view, however, the human being will represent a boundary on the employee side. Here, it can be argued quite clearly that the employee side has no decision-making power in case of doubt and thus cannot represent a boundary. It can also be stated that the implementation of RPA is significantly more advanced than the application of artificial intelligence (Gentsch, 2018). This is justified, among other things, by the fact that RPA can be implemented in a more straightforward manner and is considered a precursor to AI (I4-L.35; L.37).

Expert were queried about costs and benefits or the implementation of AI and PRA solutions and those fields they deem the most promising for automation. Based on the analysis, it becomes apparent that costs naturally play a significant role in implementation. Many experts substantiate this by weighing the costs against the benefits. However, it should be noted at this point that implementation usually pays off after a short time (I5-L.15). The research question RQ1.1 whether costs are a pretext for the actual lack of awareness holds therefore true to a limited extent. In the area of marketing, it can be seen that there are nevertheless many ambiguities. One reason for this is that many marketing managers have a qualitative, creative focus and are thus less concerned with processes and structures (I2-L.15). Nevertheless, the lack of resources is an additional problem rather than an excuse (I5-L.31).

Asking in research question RQ1.2 which fields the experts see as potential applications for AI and RPA in particular it is that the customer journey will be controlled and monitored by AI systems, so that more precise advertising playout can be provided (I5-L.11 / I3-L.28). This is confirmed by the presentation of the predicted fields of application. Recommendation systems as well as customer identification have their origins in the customer journey and thus offer one of the greatest potentials in implementation and elaboration – they are quoted by all five experts. Based on the interviews, it also becomes clear that customers do not always complete a purchase process. In e-commerce in particular, this is an advancing problem and thus untapped potential.

In detail Figure 3 summarizes the four most prominent fields named by the experts as those fields where the implementation of RPA might offer significant benefits to its users. Refering to Figure 1 from above it can be seen that the fields named as relevant by the professional experts coincide with those discussed in the literature in the context of marketing automation (Verma et al., 2021).

Figure 3. Potential Areas for Increased RPA Use

4.2. Discussion of the Results

With regard to the first research question, which points of contact are given in marketing by the automation of processes by means of artificial intelligence, the following therefore applies:

- Artificial intelligence offers marketing advantages with regard to the customer journey.
- Artificial intelligence can be used to increase sales and reduce marketing costs.
- Applications of artificial intelligence in marketing are diverse and range from NLP systems to recommendation systems.

Furthermore, it was necessary to address the activities of the predictable developments. For this purpose, the research question RQ2.1 was posed in the interim conclusions whether humans will no longer be needed in certain applications. The results indicate, task fields that focus on analysis will be completely replaced by AI systems. The evaluation of the work has shown that humans will always be a factor. In this regard, AI will therefore not replace humans, but rather assist them this coincides with the evaluation by Davenport et al. (2020).

It is important that a creative exchange of interdisciplinary teams find ideas together to were exactly the aspect of uniqueness. Models such as "Human in the Loop" can therefore act as a prime example and place the concept of artificial intelligence and subordinate process automation in a positive light. This is confirmed, among other things, in the assessment of the experts.

The research question RQ2.2 was whether RPA will disappear as a term in the future and a symbiosis will form between artificial intelligence and robotic process automation.

The expert evaluations indicate that there is a clear tendency in this direction. The combination of Artificial Intelligence and Robotic Process Automation reveal high potentials. In addition, it is sometimes directly mentioned in the interviews that the term RPA will become obsolete. In some cases, there is also the view that RPA already represents a partial aspect of the applied AI and not a single functioning system. One reason for this is that process automation is

referred to as a precursor to AI. The theoretical thesis of a perfect symbiosis is consequently supported by the experts' assessment, as the future lies in the application of combined systems.

Overall, the possibilities that arise with the development of AI are extensive and would bring about a digital revolution. Therefore, the advantages outweigh the disadvantages and the use of AI is desirable. Therefore, the research question RQ2.3 that needs to be explored in more detail is whether the use of RPA and AI can increase efficiency for businesses as motivated by Axmann and Harmoko (2020). One possibility that the future brings with self-learning and independently developed computers is an ease for employees in their daily work. In addition, increased efficiency is one of the biggest benefits that come from using RPA and AI. The automation of manual processes in particular not only saves employees time, but could also be a motivation booster in marketing, as manual tasks are simply taken over, making room for new innovative ideas and creative input. From a business perspective, it is increasingly relevant to use these technologies, as the efficiency factor creates a competitive advantage and is therefore indispensable for many companies. The developed thesis can therefore be confirmed.

The research question of how the potential in marketing will continue to expand in the future and which trends can also be identified in the context of RPA can be answered as follows:

- Marketing in particular requires a wide range of skills, such as creativity and imagination, but also a good understanding of numbers, analytical skills and IT knowledge. These contents are diametrically opposed to each other and thus ensure that the profession cannot be performed perfectly or that more personnel are needed. Collaboration between human and artificial intelligence thus enables optimal execution. Models such as "Human in the Loop" thus provide an insight into the future.
- Robotic Process Automation is already a widespread approach to expand Artificial Intelligence in the long term and thus represents a potential to promote faster establishment.
- Combining different systems is an important step in terms of implementation.
- Predictions on speed cannot be predicted by the different advanced companies, also in terms of digitalization.
- The use of RPA and AI enables an increase in efficiency in companies and thus ensures competitive advantages in the long term

5. Conclusions

5.1. Recommendations for Practitioners

Based on the results, several implications for practice as well as for research emerge from the analysis listed. First, this work illustrates the relevance and consequences of AI and RPA in marketing. The executives and employees of many companies in Germany are already aware of the general importance and are already using it sporadically. The change that will result from the use of artificial intelligence for the value creation activities and the entire ecosystem and thus also for the company will be greater than expected. Therefore, under no circumstances should we rest on our laurels. Second, the point of increasing efficiency shows the competitive advantages that can be delivered by well-functioning AI. Since process automation is presented as a preliminary stage of AI, it is important to already use this technology and establish it in companies as quickly as possible. In this way, one generates a short-term advantage in the implementation of an AI.

In order to maintain a long-term competitive advantage, it is necessary to implement a clever combination of AI with human intelligence and to renew it regularly. The more complex and

unique the functioning acts in the company, the more difficult it becomes for competing companies to imitate. To reach this stage for the first time and overcome potential hurdles, transparent communication with the customer is required, for example, to obtain an increased amount of customer data. The better the data quality, the better an AI recommendation can be made as well. The use of data is therefore inevitable for companies if they want to maintain or improve their market position. However, the customer's fears and concerns must be taken seriously and a trusted basis must be created. In addition, it is important for a company to provide information for employees in the future, which can be done, for example, through training or the hiring of informed employees.

5.2. Limitations and Outlook

The evaluation of the interview questions is an inventory and reflects the situations of companies in Germany. Insights into future potential and current trends in marketing are provided. In practice, it is important to develop strategies and measures as a company in order to remain competitive on the market in the long term. Even if the technical potential is there, the automation of processes will not happen overnight.

The progression of automation and the adoption of new technologies, and therefore their impact on employees, will vary depending on the job and skill set. In addition, the speed of development depends on the cost of the technology, the advance of competition in the international environment, and the possible savings in labor and thus the benefits of efficiency. Legal framework conditions and social adaptability also play an increasing role.

To enable further valid statements to be made, more experts are needed to confirm the thesis that reconnaissance has a direct influence on the assessed potential. A wider range of different occupations should be surveyed. Possibly, additional surveys could be created in large companies. The work was viewed from the perspective of the companies. In order to gain a broad understanding of the development, but also its limits, an additional view from the customer's perspective, as well as from the perspective of data protection law, is required. It would also be interesting to look at developments across continents, as China is already relatively advanced in the elaboration of artificial intelligence. However, the Chinese and Westernized worlds are markedly different. In order to understand and properly classify the innovative power that is emanating and will continue to emanate from China, particularly in AI, the differences between the societies must be examined. The goal is therefore to be able to assess the potential even better in the future. In view of international trade, this is necessary in order to make a forecast regarding the speed of AI development.

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Appendix

Table 7.
Expert Answers on Background Knowledge

Expert	A	B	C
I1	**Score: 3** Ok yes with pleasure, I have been a web analyst for four years and now I am a data analyst in marketing for almost a year, in total I have 5 years of work experience. This is divided into web analysis and data analysis… (L.5)	**Score: 1** I must honestly confess that I do not know any applications from my work. (L.9)	**Score: 1** OK, then I understand that with the help of self-learning technology you try to automate processes that are actually done by hand. (L.9)
I2	**Score: 3** ...am responsible in the area of dialog marketing at CEWE, since 5 years and have a total of over 25 years of professional experience mainly in CRM and dialog marketing. This in various fields both in customer service and in marketing itself. (L.5)	**Score: 3** So actually we already have such a small RPA bot in use. (L.9) Attempt not only from historical data and pattern recognition, but beyond that then also predictive, so to generate data anew and also to develop the algorithms of course also always further. (L.7)	**Score: 3.5** Yes, for me RPA has always been a software application technology that ultimately does something similar to Excel, but across different software tools and applications, i.e. something like a record of the manual process steps that have occurred primarily in instructional activities and yes, i.e. constantly repeating tasks are then recorded once in order to repeat them automatically on a regular basis as soon as they are then switched on again. (L.5)
I3	**Score: 3** ...I have a doctorate in mathematics and now have professional experience since 2011, so 10 years in different areas. I started in the automotive field, then it went on with biostatistics so in the field of finance in the broadest sense and then again in a consultancy there also as Datascient (L.6). Have work experience round about 24-25 years. (L.7)	**Score: 4** Yes, of course we also use RPA, but not in my area now. (L.9) Yes AI, what do you understand by the term AI, so AI I would like to divide into machine learning and artificial intelligence. (L.9) So for RPA I have none or not directly so in the application with. .....Em Yes, training models is what I do every day. (L.15)	**Score: 4** ...actually it is an automat that has achieved things for us and that just quickly, what we would otherwise click by hand, or where we would make manual decisions, where people would slow down the whole process, a robot can do that. Yes, the more complex the tasks are, the larger such a farmwork could become and then such an RPA is used that is correct... so I would like to divide AI into machine learning and artificial intelligence. (L.9)
I4	**Score: 5** ...PhD in business psychology with a professorship in strategic digital marketing. Mainly at the International School of management, but also active as a marketing consultant in the field of digital marketing, strategic marketing consulting and especially agency consulting and pitch consulting. Professional experience on the corporate and agency side for over 20 years. (L.8)	**Score: 3** I sell purely in terms of consulting or I refer a lot of agencies that can do AI. (L.18)	**Score: 5** Artificial intelligence is in itself a big misunderstanding, ... actually it's called Artifial Intelligence. That's something with smart handling of processes, so smart handling of data and not intelligence per se, ... That was ultimately artificial intelligence and then I also go directly into automation. This is about everything that is standardized, 0815, routine, that is error-prone and that ultimately does not really have to be done by an intelligent, let alone an intellectual human being, that we replace with software. (L.10)
I5	**Score: 4.5** ...I already have a total of 12 years of professional experience, but before that I worked in a completely different field. I was in a mechanical engineering company, so the whole topic of sales and lead generation was completely new and I dealt with it a lot and recently we started integrating chatbots via various sales tools or marketing tools and installing marketing workflows. (L.5)	**Score: 2** So I'm also the link between marketing and the sales force. (L.12) So that was really the process automation and what was previously done manually. (L.9)	**Score: 4** ...the topic of RPA was really the automation of workflows according to our specifications, ... this artificial intelligence takes hold and "intelligently" decides who I now write to with what. That's the difference I see to process automation... (L.9)

Table 8.
Expert Answers on Potentials

Expert	A	B	C
I1	**Score: 1** In the professional context I do not have so many interfaces here, but of course I know algorithms which are trained, especially in data analysis (L.17). I also know biddingsystems, for example search engine optimization and ad placement (L.17) .... automated decisions are made, so to speak, such as budget distribution and on which channels I place particular emphasis and also to learn in terms of target groups and, in principle, to address the right segments. (L21)	**Score: 3** There where man prevents it quite consciously and there where it is not simply about solving where simple questions, but where it [is] about emotions. (L.45)	**Score: 2** So basically I think the whole thing will progress and more and more areas will be covered by it, however, it may take some time. (L.39) .... Namely an intelligence and that's why I can imagine RPA much better in application than AI. (L.47)
I2	**Score: 3** ...many manual activities, I can very well imagine that you can still do a lot there, especially RPA, and accelerate processes (L.13). So what I would automate is a whole part of data tracking and data reading. (L.13) We have the first approaches via neural networks and have developments in predictive scoring. (L.13)	**Score: 4** ...in terms of data protection law, the customer must agree to this. (L.23)	**Score: 3.5** I think the development will accelerate. (L.21) .... professions will have many reservations about technology. All in all, I think it is still worthwhile. (L.29) That's why creativity and innovation are two topics that I don't think can be depicted quickly. (L.27)
I3	**Score: 2.5** ...I would first of all do what is easiest - completely automate the process of the customer journey (L.28) which product is the most likely and when would it be most likely to fit for him (L.21)	**Score: 2.5** One is always dependent on the data one has and if these data are not good, then also the model does not become good (L.22). Yes, with all ethical issues... (L.57)	**Score: 4** ...the implementation speeds are getting faster, that's because the tools are simply getting better. (L.50) So, I think that a lot is still possible, once you have the appropriate data. (L.59)
I4	**Score: 2.5** ...so standard tasks like answering Q&As, call center tasks, straight in the customer retention or in the customer acquisition take over (L.24) Customer journey analysis and lead generation, at the end of the day these are the two main points where there are many sub-points. CRM and customer acquisition. (L.27)	**Score: 4** ...in the transferring sense that AI has a certain measure of intelligence, however, it has neither mind nor reason. (L.41) Creativity and strategy, there are already still humans necessary and that you also did not want to make yourselves off. (L.41)	**Score: 3.5** So I'm always an optimist, but I can't imagine AI going significantly faster than digitization. (L.35) ...and there is always a human being involved. Yes, independent of humans, no, it's never independent of humans, because AI learns, it learns from us. (L.12)
I5	**Score: 4** So it's things that you would otherwise have had to do manually, send manual e-mails, work with Excel lists, etc., and that's where we were simply relieved of working time. (L.11) ...because let's say this artificial intelligence takes effect and "intelligently" decides who I write to with what. (L.9)	**Score: 4** It's their kind of intelligence to access data and they will run out of resources to make chips and storage. (L.31) I think also that sometime humans come more and more behind it.... (L.31)	**Score: 2.5** But I think it will go more and more to the point that information will continue to be collected, no matter what you do, no matter if you buy something. (L.25) The AI is more and more able to make decisions on its own, but I hope it will never be on the level of a human decision level, at least not so fast. (L.29)