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Design of a framework for evaluating customer perception of AI-based emotion recognition for marketing

[1]st examiner:	Prof. Dr. Philipp Brune
[2]nd examiner:	Prof. Dr. Andy Weeger

Author: Hurnaus, Marina

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Abstract

This research paper deals with the perception of emotion recognition (ER) in a marketing context.
As artificial intelligence (AI) is developing at a rapid pace [1], the use of ER in marketing is also increasing. From the literature review of numerous peer-reviewed publications, a research gap arises as to what specific attitudes users have towards ER, how users can be segmented into groups and how companies can best address them. This results in the first research question (RQ) what differences exist in the acceptance of emotion extraction in the marketing context among different customer groups and the second RQ how companies can communicate the benefits and concerns from the customer's perspective to increase their acceptance and dispel concerns.

To answer these questions, the methodological approach includes conducting interviews and analysing them using Mayring's qualitative content analysis. In addition, a mixed methods online questionnaire with over 20 participants is carried out. The Technology Acceptance Model (TAM) is included in both data collections and is subsequently evaluated. In addition, the collected findings are used to develop an innovative framework with recommendations regarding action and communication for companies that want to use or are already using ER. This enables a suitable general approach to users and also to specific customer segments in order to increase the willingness of potential customers to use ER.

By answering both RQs, the work shows that there are segments among customers that are characterised by extremes in terms of their attitudes towards ER. In addition, numerous communication aspects for increasing the willingness to use ER are identified. Among other aspects, these include transparent communication from companies and emphasising user benefits. The evaluation of the TAM shows that the respondents' willingness to use the technology is currently still leading to a rejection of ER. The innovative framework is therefore intended to serve as a method to enable ER use that takes the concerns and wishes of users into account and leads to an increased acceptance of use.

Keywords: Emotion Recognition, Artificial Intelligence, Marketing, Consumer acceptance, Innovative framework

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Nomenclature

AI	Artificial Intelligence
ER	Emotion recognition
H	Hypothesis
RQ	Research question
TAM	Technology acceptance model

1 Introduction

AI is developing rapidly and is creating major changes and potential in many fields. For example, AI is finding significant application in marketing.

The technology of ER in particular is of great interest, as it represents an efficient and innovative way of determining the reactions and emotions of users and adapting marketing strategies accordingly [2]. Despite research in this area, many aspects remain unclear. There is research on the technical implementation of ER and the application of AI or specifically ER in marketing. In some cases, there is also a focus on consumers and their perception of ER. However, there is a gap in research on how exactly consumers can be segmented, which factors are decisive for this and which factors are important in communication for the respective segments, as people's concerns and opinions are often neglected in the face of rapid technological development.

This research is therefore focussed on how ER is perceived in the marketing context. It focuses on the differences that exist between groups of people in order to segment them and address them appropriately. In addition, generally important factors in corporate customer communication are to be analysed. Perceived potential and concerns are identified in the course of ER. These relate, for example, to consumer benefits, ethics and data protection. To this end, interviews and a mixed methods online survey are carried out, which are designed to be as representative as possible.

The data obtained should help to ensure that consumer and user concerns about technical developments are not ignored, but analysed, taken into account and, if possible, resolved. In this way, an ethically responsible development of technology can be guaranteed. Companies can implement the findings and recommendations for action, which are gathered in an innovative framework, and optimise the use and data collection through ER by increased customer trust and satisfaction. The results of the work should therefore benefit companies that use ER, potential users and also researchers on the subject.

2 Literature Review

2.1 State of research

Several relevant core topics exist for this research, which need to be examined in more detail both individually and in combination. These are explained in the following.

AI-based ER:
AI can be used to recognise and classify human emotions. Emotions can be detected from the human face, for instance happiness, fear, disgust, sadness, surprise, anger and contempt [3]. Other channels are also possible for recognising emotions, such as speech and audio files, which are considered to be particularly reliable [4]. In general, however, it is a challenge to distinguish between particularly similar emotions such as anger and frustration [5]. Physiological signals such as heart rate, body temperature, or electrodermal activity can be analysed and emotions [5] can also be recognised via text. All these applications are used in numerous areas such as the service industry, in the medical field [4], human resources, defense and safety, education as well as market research [6] and in the marketing environment [7], for instance for developing products and services [8], as ER helps to record the state of mind of users and minimise risks [5].

The aspects of privacy, general security and ethical concerns were analysed in the area of AI in relation to emotion extraction [9]. According to Lee et al., the collection of emotions poses an ethical problem, as particularly personal information is collected and stored, which is subject to the risk of data misuse or the violation of portrait rights. For these reasons, the European Union has initiated a General Data Protection Act to prevent the collected data from being used to find people through biometric data[10].

AI in Marketing:
AI has many areas of application in digital marketing. These include, for example, sales forcasting [11], chatbots, advertisement refinement, email marketing, customer behaviour focused marketing, lead generation, automated content creation and image recognition. AI can be used to create personalised content for customers, for example through emails or when communicating with a chatbot [12]. In addition, customised information and purchase recommendations can be displayed during online shopping [13]. The great advantage of AI in marketing is increased efficiency for companies. [14]

For example, AI in marketing can help to reduce expenditure and optimise processes. Machine learning, an AI application, can help to automatically generate content for social platforms and thus reduce the workload for employees. Employees can instead

devote more time to other tasks [12]. For example, statistical data on the address, means of payment and past purchases provide information about future positioning for a customer and thus reduce costs [15]. AI can improve the consumer experience through targeted personalisation [16]. It also makes it easier to attract customers [13] and subsequently strengthen customer loyalty [14]. Understanding consumer behaviour enables companies to adapt the presentation of products and prices to the demand [17]. AI can also be used to segment customers into groups based on various emotional behaviours [18], [19]. Criteria must therefore be developed to differentiate between these groups and then address them appropriately. This should enable people to be addressed in a personalised manner and campaigns to be optimised [20].

Despite numerous advantages, AI also entails disadvantages and risks such as the disclosure of personal data, environmental pollution and ethical concerns. Information ethics refers, for example, to the use and development of data [1]. Big data in particular, in other words a large amount of unstructured or only slightly structured data, puts personal data at greater risk of being published [19], [21] . Ethical aspects also include human rights, as access to technology is not equally granted to all people and this promotes inequalities in terms of welfare. Furthermore, morality, liability in relation to those responsible for mistakes made by AI with regard to the current legal situation, and bias in AI due to the underlying data and algorithms are in question. The integration of ethical aspects into the development of AI is extremely important for the reasons mentioned. As it is difficult to reliably predict the effects of AI, rules must be established and monitored [1].

Another important aspect in the field of AI is customer acceptance and the consideration of ethical aspects, which can be decisive for consumers. Customer acceptance of AI devices in the service industry, for example, has been examined in more detail in a study from 2019. In this context, the AIDUA model was applied and respondents were asked about demographic criteria such as age as well as education or profession. They were also asked questions about the acceptance of AI, including questions relating to anthromorphic appearance and other factors such as expectations of AI in the service sector. Research shows that people who have a positive attitude towards AI are able to use it more efficiently [22].

However, research emphasises that human supervision of the application is crucial and that AI cannot function without humans. It is also made clear that under these circumstances and in the case of AI that handles communication, it cannot be considered harmful software. With regard to the attitude of customers towards technology, many people prefer to communicate with a person rather than a technical

application, as they trust them more [12].
In the field of AI in marketing, many publications document and evaluate technical possibilities and modelling [23] as well as their advantages and disadvantages [3].

ER in Marketing:
When consumers are asked for their opinion on products, this opinion is often biased. As emotions are particularly crucial in the decision-making process, the use of ER in the evaluation of products is advisable [2]. Recognising emotions in facial expressions can be used to create customer segments. Categories for recognising and assigning people can, for example, be gender and age. The use of ER is a particularly cost-effective solution in marketing [24]. For example, facial expressions allow conclusions to be drawn about the attitude and behaviour of people [25]. A possible use case in marketing would be that a display with an advert identifies a person who is viewing the advert. This person could then be shown the advert, in case the AI identified it as suitable for the person, on other social platforms [24]. Another case would be the installation of a camera in shopping centres that processes customers' emotions in real time for marketing purposes [26].

The discipline of neuromarketing also studies the brain activity of people in a marketing context [24]. This makes it possible to record how the presentation of products or companies affects customers [17]. A study presented in 2019 examines how customer emotions can be recognised using neural networks [17].

Recommendations for future research:
Due to the simple usage options of ER, there is a risk that the technology will be used without sufficient understanding and regulation. Research into the appropriate use of the technology is therefore important [6]. Peltier et al. also emphasise that there is still a lack of understanding in the marketing sector of how AI can benefit both marketing teams and users [16].

It turns out to be equally important that users have a proper understanding of how AI is used in marketing [27].A publication on AI published in 2023 recommends providing consumers with transparent information on data use and processing. Their reactions should be used to determine the effects on the willingness to use value co-creation and the decisive factors for this [28]. Vlačić et al. recommend using the TAM to determine why consumers accept or reject technologies such as . Key customer characteristics should be identified and aspects such as ethics and privacy should be taken into account [27]. Hentzen et al., who analysed the acceptance of AI in the financial services sector, recommend in-depth research in the field of digital

marketing [29].

2.2 Research gap

The literature review shows that the topics of ER through AI and AI in marketing were considered both separately and in combination with each other. Research has already been conducted on specific subject areas to determine which attitudes customers have and which aspects are decisive in the area of ethics and privacy.

A study from 2023 examined the attitude of consumers towards AI and segments respondents by documenting information such as age, gender and job exposure to AI. However, the focus of the study is on how acceptance would turn out in the event that AI defeats humanity [30]. Therefore, some vital questions remain unanswered in the application area of digital marketing with AI-based emotion extraction. For example, the factors by which customers can be classified must be researched for precisely this use case. In addition, further questions need to be researched in detail that relate to customer concerns. These include topics from the areas of data protection, privacy and ethical aspects, as well as points relating to efficiency and personal benefits of using this technology. Customer group segmentation helps companies to address each group specifically and as efficiently as possible. Companies recognise potential customer concerns and can adapt their communication accordingly in order to resolve these issues and avoid risks. In this context, surveys must be conducted that provide an authentic and in-depth insight into the attitudes and backgrounds of the respondents. This needs to be conducted as representatively as possible. It is important to relate the survey specifically to the marketing benefits and to familiarise the participants with ER in order to create a concrete understanding and achieve the most accurate results possible.

This results in a research gap in terms of how different groups of people feel about AI -based ER in a marketing context, what risks and benefits they perceive and how companies should shape their communication in order to minimise concerns and take customer wishes into account. Customers therefore benefit from this research, as their needs and reservations are recognised and taken into account. Hence, existing publications that deal with partial aspects of the topic can therefore be scrutinised and expanded by adding essential aspects.

2.3 Research questions

Two RQs result, which will be examined in more detail in the following scientific research.

RQ1: What differences exist in the acceptance of emotion extraction in the marketing context among different customer groups?

RQ2: How can companies communicate the benefits and concerns from the customer's perspective to increase their acceptance and dispel concerns?

3 Research Design

3.1 Hypotheses

H1: The more familiar a consumer is with the topic of AI, the more they are positive about emotion extraction in a marketing context.

H2: The better companies adapt their communication to a specific target group, the more willing these customers will be to use the technology.

Qualitative and quantitative data are gathered to validate or refute the above hypotheses, as described below.

3.2 Mixed Methods approach

A triangulative online questionnaire with the online software SoSci was sent to at least 20 people. The questionnaire was also distributed in several LinkedIn groups that deal with marketing and AI in order to involve experts on the topic. The survey combines qualitative and quantitative elements. On the one hand, the exact concerns and benefits that customers perceive should be recorded, which is why a qualitative approach is suitable. For a better comparison of the participants, an additional quantitative approach using scale-based questions creates further added value.

The respondents were first informed about the research work and the data protection regulations. Socio-demographic data such as age, gender, educational qualifications and occupation are then collected. This should enable customer segments to be formed and groups to be categorised. In addition, an assessment was made of the extent to which digital technologies are used privately and professionally and how high the affinity for them is. A study conducted in 2021 on the use of AI in the service industry looked at similar factors such as age range, gender, previous experience and education [31]. Those questions were followed by more detailed information on the use of AI-based ER in a marketing context. Based on this information, the interviewee was asked to answer the following questions from the perspective of someone who has learnt about a company's ER technology and is thinking about using it.

Both single- and multiple-choice questions, 5-point Likert Scales, sliders with two extremes and open text entries were used for collectig data. The basic attitude towards and relevance of emotion extraction by AI, data protection, privacy, ethics and customer benefits were queried. Respondents' concerns or optimism about an

aspect were be briefly explained in text form. Measures to minimise concerns should be evaluated and advantages and potential from the customer's perspective should be described. This was followed by an evaluation of which aspects potentially prevent the respondent from using and how companies can organise their communication more effectively.

Attention was paid to the fact that the questions are also aimed at the TAM. Perceived Usefulness, for example, refers to the benefits for the customer, while Perceived Ease of Use refers to user-friendliness [32], for example hurdles such as privacy, data protection ethics and also communication from the company side. A cognitive-instrumental process variable is, for example, job relevance [33] and education, while an external variable is demographic data [32].

From these characteristics, customer groups can be formed that are summarised by similar traits and attitudes. Depending on the customer group, recommendations for companies on how best to address the respective groups are developed in the form of an innovative framework. One disadvantage of this method is that interesting and informative answers from respondents cannot be followed up with further questions. Therefore, additional interviews were conducted.

3.3 Qualitative approach

Interviews represent a solely qualitative approach in this data collection. This serves to explore important questions and the hypotheses in more detail. In this way, customer attitudes can be analysed in more detail and, if necessary, questions from the questionnaire can be revisited. Semi-structured interviews were conducted until several groups of knowledge about KI and marketing have been covered and no more new insights have emerged. The interview is based on an interview guide containing several potentially relevant questions. Depending on the participant's attitude, some topics and questions can be examined in more detail or left out for the time being or completely so as not to influence them. Interviewees could freely express their views and focus on their experiences, while follow-up questions were also asked. The interviews were then evaluated, transcribed and analysed using MAXQDA software. Relevant findings were also visualised. The aim was to cover as many age and occupational groups as possible, so that both laypersons in the marketing and AI field and experienced people can give their opinions.

The interview were primarily used to deepen questions from the questionnaire, which is designed and conducted as representatively as possible. The following

guidelines form the basis of the interview and were also provided in German.

Interview guideline:
Many thanks for taking part in the interview. Its purpose is to collect data for my bachelor's thesis and the interview will last approximately 15 minutes.

Your answers will be recorded anonymously and stored for a maximum of 10 years at Neu-Ulm University of Applied Sciences as anonymised research data. The analysed data may be included in publications in aggregated form. By participating in the following interview, you agree to this data protection agreement. Do you agree to this?

Thank you very much in advance for your participation! The interview deals with artificial intelligence - hereinafter referred to as AI - in a marketing context. In particular, the attitude of customers or potential customers will be analysed with regard to various aspects. The insights gained should benefit both users and developers or providers of the technology. In the following, I will ask you a few questions in order to be able to consider suggestions from users based on the findings. You are welcome to describe your personal views in detail.

- To begin, could you please tell me your age, gender, profession and educational degree?
- How familiar are you with digital technologies in your professional and private life?
- To what extent are you familiar with AI and what are your first associations with AI?
- In your opinion, what image of AI is conveyed by the media?
- What positive and negative aspects of AI do you perceive as a result?

I would now like to give you an overview of the area of application that we will be discussing in more detail. In this case, AI, a computer system that can learn and think in a similar way to humans, can recognise people's emotions from audio files, physiological signals or texts, for example. Faces, for example, can also be used to recognise the emotions of happiness, fear, disgust, sadness, surprise, anger and contempt. In the marketing context, this offers an enormous advantage for companies, as the emotions of customers can be recognised reliably and automatically and the company's strategy can be adapted accordingly. For example, it is possible to determine how customers react to the company's products and whether and how companies need to adapt them to satisfy customers.

- Do you have concerns about this technology or do you expect potential and progress?
- How do you perceive ethical aspects in the context of this technology?
- How do you perceive data protection aspects in the context of this technology?
- How do you perceive privacy aspects in the context of this technology?
- What advantages do you perceive for yourself as a potential customer or user of a product if customer opinions have previously been recorded using emotion extraction?
- What disadvantages do you perceive?
- How could your previously mentioned concerns be resolved?
- Imagine that you work with similar technologies and are more familiar with how they work. Now assess your attitude towards the use of emotion extraction in the marketing context.
- In your opinion, what measures should be taken and how should these be communicated in order to increase customers' willingness to use the technology?
- This brings me to my last question. Has your view changed as a result of this interview?

Thank you very much for your time and your insightful answers, we have now reached the end of the interview. With your insight, you are helping to contribute to the ethical and customer-orientated use of emotion extraction in the marketing context. The results will be analysed anonymously and published as part of the bachelor thesis.

4 Empirical study

4.1 Mixed Methods data

The survey was completed fully by a total of 21 people and was analysed accordingly. The socio-demographic questions help to identify differences between different customer groups with regard to the answers to RQ1.

Age (single choice): 14 people stated that they were in the age range 16 - 25 years, 5 people in the range 26 - 35, one person in the range 36 - 45 and one person in the range 56 - 65 years.

Gender (single Choice): 12 people identified with the male gender, 9 people with the female gender.

Education (single choice): 8 people stated that their highest current qualification was a school-leaving certificate, 4 people stated an apprenticeship and 8 people a university degree.

Professional fields (multiple choice): The chart reflects the professional fields in which the respondents are currently working and have previously worked in percentage values. A large proportion of the respondents, namely 10, have already worked or are currently working in engineering, technology or IT. In the area of design, media and marketing, there were 5 people. The remaining 60 per cent represent other professions, as the figure 1 shows.

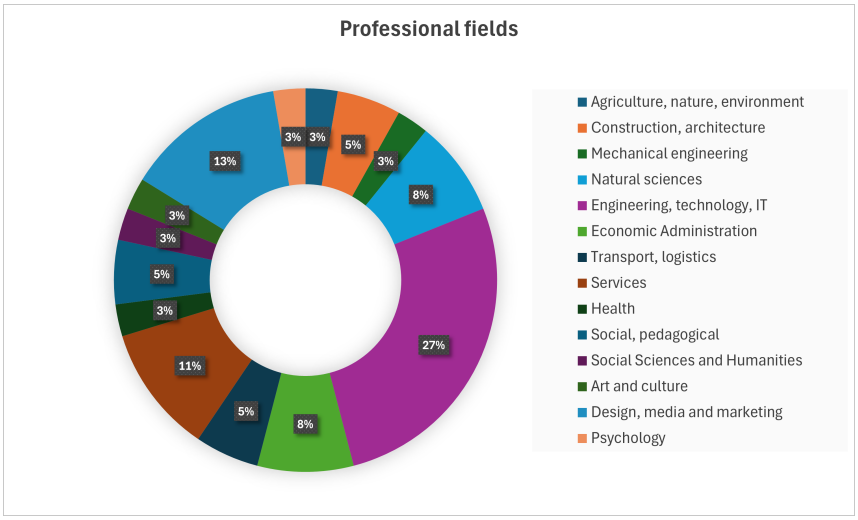

Figure 1: Prior and current professional fields of the survey participants (Source: own data)

In addition to the professional fields, the following questions provide information about H1, that people are more positive about ER in a marketing context the more familiar they are with AI.

Points of contact and affinity with digital technology (multiple choice): In order to assess how familiar and affine the respondents are with digital technologies, numerous options were available as multiple choice selections.
It is striking that the use of digital technologies only occurs privately and professionally, in this case for 19 people, but never just one of the two options was stated. Furthermore, none of the respondents stated that they rarely use the technologies. Only one person reported a lack of understanding of digital technologies. 10 people have a sufficient understanding and 8 people have a high level of understanding. 6 people are informed about current trends (see figure 2).

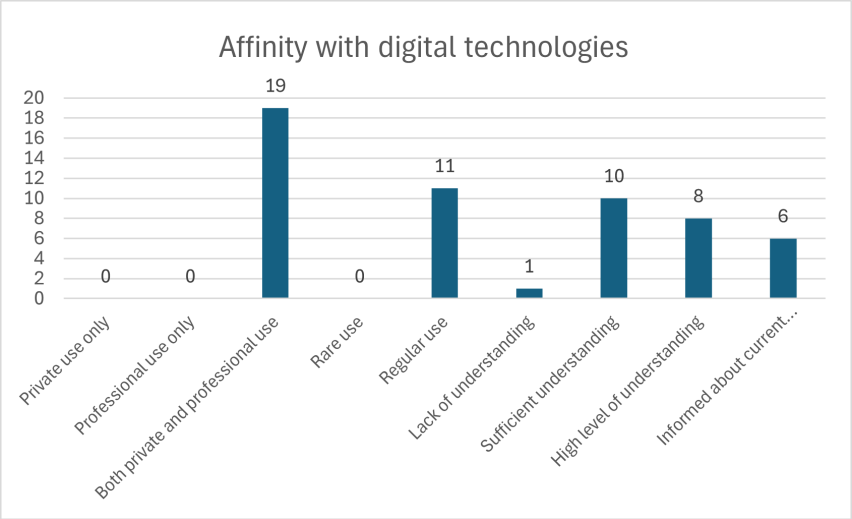

Figure 2: Affinity with and use of digital technologies (Source: own data)

The following text was then used in the survey to provide more detailed information about the application of ER:

To facilitate digital marketing, some companies use ER technology. AI has the technical ability to analyse and recognise the emotions of consumers and potential consumers. This provides companies with information about how people react to advertising measures, for example, and enables marketing measures to be adapted efficiently. Emotions can be recognised from audio files, faces, texts and physiological signals. In the following survey, please take the perspective of someone who is finding out about a company's emotion recognition technology and thinking about using it.

Assessment of AI-based ER (single choice): One person stated that they were extremely critical of emotion extraction based on AI. The majority of respondents, 14 people, were critical of the technology and 2 rated it as neutral. In contrast, only 3 people perceived ER as optimistic and only one person as very optimistic (see figure 3).

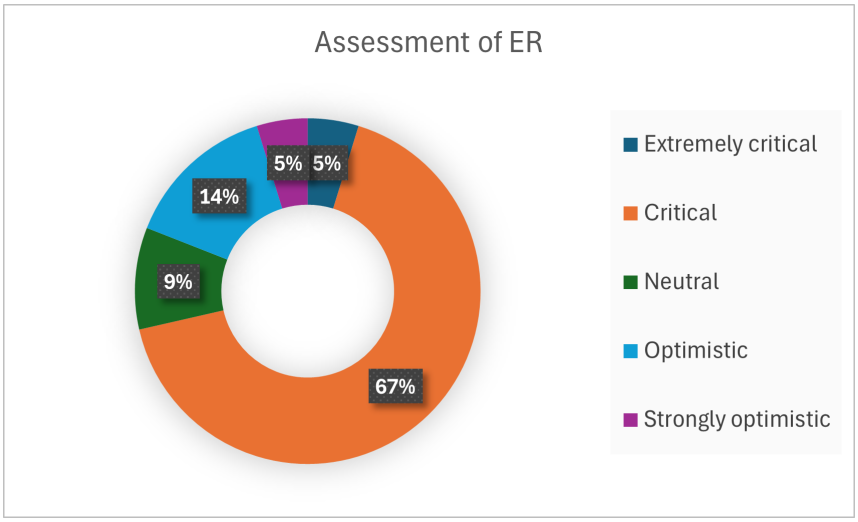

Figure 3: Assessment of ER (Source: own data)

Willingness to use AI-based technologies for emotion extraction (slide bar): The importance of data protection, privacy, ethical corncerns and advantages for customers was assessed in relation to the willingness to use ER. To do this, each aspect was rated using a slider from 1, which corresponds to low relevance, to 101, which corresponds to high relevance. The following average values were calculated from this (see figure 4).
Data protection (average value): 73
Privacy (average value): 87
Ethical concerns (average value): 85
Advantages for customers (average value): 40
Particularly striking are the high relevance of data protection, privacy and ethical concerns, which were often rated with the highest relevance of 101, and the relatively low relevance of customer benefits.

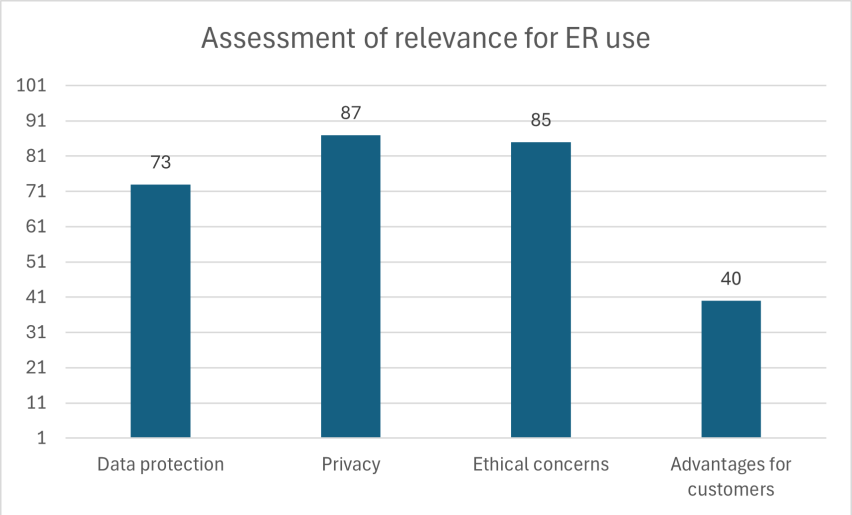

Figure 4: Assessment of relevance for ER use with average values (Source: own data)

Ethical aspects (Single Choice): Ethical aspects were evaluated in the context of ER technology. This showes that the respondents were mainly extremely critical to critical with a total of 14 votes, whereas 6 people were neutral and only one was optimistic (see figure 5).

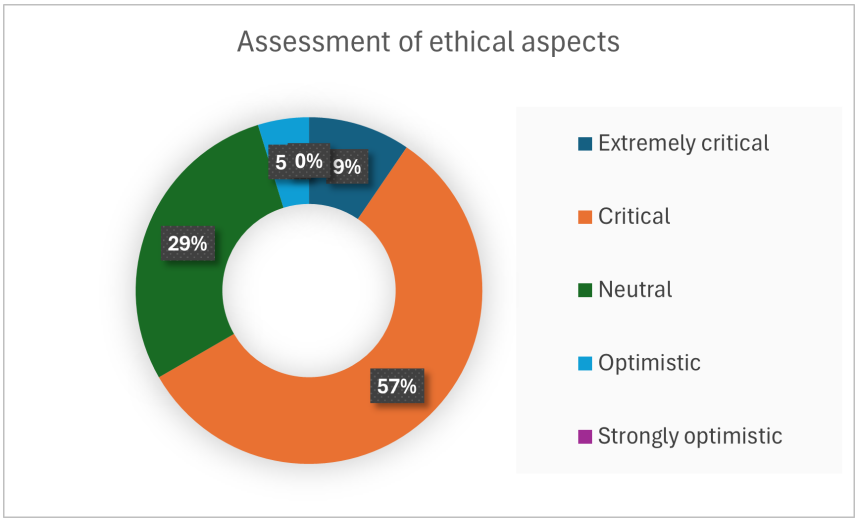

Figure 5: Assessment of ethical aspects (Source: own data)

All participants in the survey were then asked to explain in text form which ethical concerns they perceive or why ethical concerns are not relevant.

Many respondents stated that the manipulation of consumers and their purchasing behaviour is questionable. In particular, the manipulation of more easily influenced groups such as older people or children or the targeted exploitation in a consumer's emotionally vulnerable position were mentioned as critical examples. In addition,

the fact that both the data collected and the AI itself could be misused as well as manipulated was often discussed. The concern that AI always conveys a political conviction because it is programmed by a politically convinced person or that AI is misused for political or ideological purposes was also mentioned more frequently. Some respondents expressed the view that discrimination is possible as a result of the technology, that there are too few controls in place, that AI could replace human beings and that an unequal relationship between customer and company is emerging.

In addition to concrete concerns, opinions were expressed that call for more consideration. For example, working conditions and the impact on the environment must be taken into account when developing and using AI, more education on the topic of AI must take place due to the increasing integration of AI and the correctness of data and data processing must be ensured. Besides an increase in consumer behaviour, one person pointed out the positive side of improving the online shopping experience or social media experience.

Data protection (Single Choice): Aspects of data protection were assessed in the context of ER technology. Similar to the ethical aspects, there was a predominantly concerned opinion here, namely 5 extremely critical and 12 critical people. Only 2 people each were neutral and optimistic. Similarly, there were no strongly optimistic opinions at all (see figure 6).

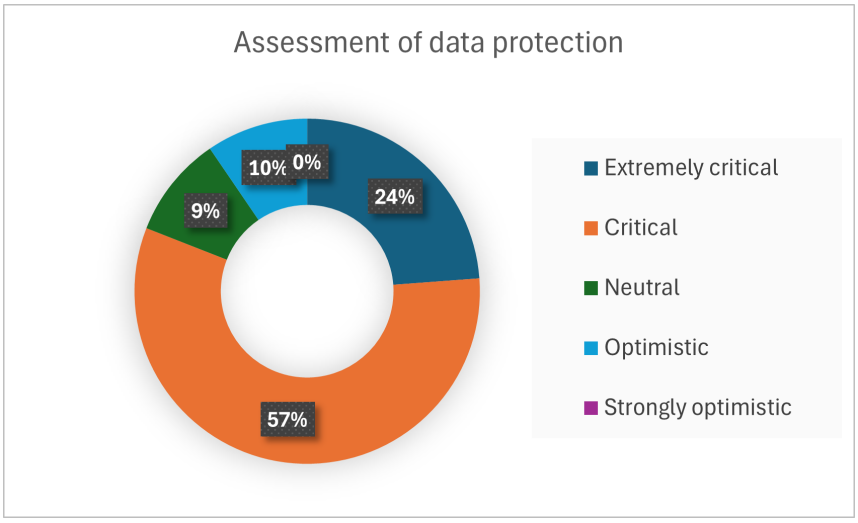

Figure 6: Assessment of data protection (Source: own data)

Concerns or reasons for not having concerns about data protection were also collected.

Concerns about the data collected being passed on to third parties or published were mentioned very often. Leaks, hacking attacks or the resale of data were listed as

examples of this. In addition to the fear of who can view the data, there were also concerns about what the data will be used for, especially for purposes that were not originally consented to. Data sharing was perceived as a potential encroachment on personal rights. The non-transparent and unwanted recording of emotions, for example through facial recordings, was also referred to.

Individual respondents raised the concern that data about an ethnic group could be collected and controlled in autocracies, for example. In addition, there were concerns about too few control bodies and the easy possibility to steal other people's ideas and pass them off as one's own. The use of espionage-controlled AI was also considered, especially as so much personal data is revealed.

Nevertheless, there were also assessments that there must be trust for every internet-enabled device, that personal data has already been sold and therefore there is no difference with ER, and another person generally expressed little concern about data transfer and processing. Yet another person emphasised the importance of active consent to the collection of emotions and the data protection regulations.

Privacy (Single Choice): Aspects of privacy were assessed in the context of ER technology. 2 people are extremely critical, 14 critical. Only 3 people are neutral and two are optimistic (see figure 7).

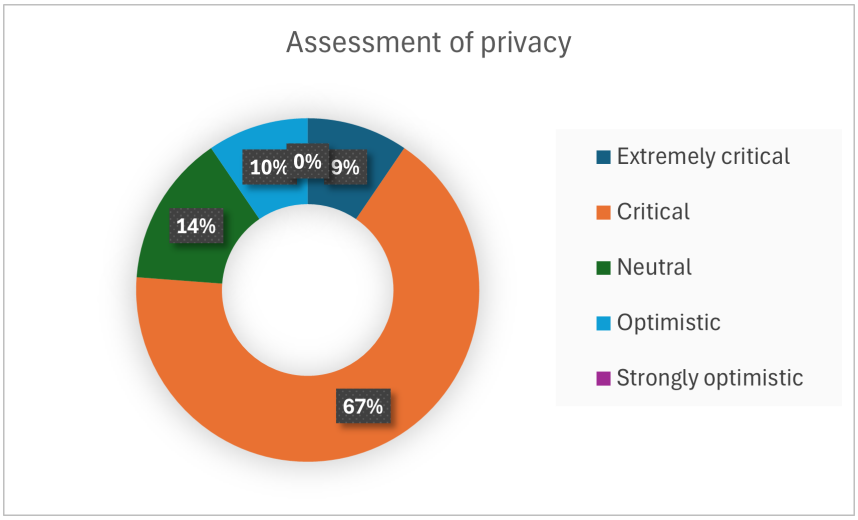

Figure 7: Assessment of privacy (Source: own data)

Similar to data protection, privacy concerns were often raised about data being passed on to third parties, published or misused, which would constitute an encroachment on personal rights. It was also questioned what the data is used for and what conclusions can be drawn about the person. The permanent observation by AI and

surveillance as well as the invasion of privacy were also discussed. For several people, the question of whether it is possible to determine when and how exactly you are being monitored and whether you can object to this was a key issue. There were also doubts about the lack of a monitoring instance and whether completely anonymous data collection was even possible.

In contrast, there were also opinions that people already share all their data these days or that they determine for themselves what they share. Likewise, one person spontaneously identified no violation of privacy.

The previous questions provide information on which aspects are perceived as relevant or critical in the context of ER. In addition, the next results show how exactly companies' communication needs to be adapted in order to increase customer acceptance. It also shows to what extent the adaptation of communication is perceived as relevant at all from the customer's perspective. The aspects mentioned are essential for answering H2, that the specific adaptation of communication to a customer group increases ER acceptance, and RQ2, how exactly communication must be adapted for greater acceptance. Differences in perception can also be identified for RQ1.

Mitigation of concerns (Single Choice): The following measures were ranked according to relevance in order to mitigate personal or general concerns.

Communication between company and customers was perceived as relevant 6 times and as highly relevant 3 times, overall the votes were relatively balanced. 8 people rated the relevance of communication as neutral and 4 people as not very relevant (see figure 8).

Transparency and prior information about the technology was largely perceived as relevant and highly relevant, as 9 demonstrates (see figure 9).

In particular, the guidelines for the development and use of the technology were considered important. There were only 2 neutral votes and otherwise 9 relevant and 10 highly relevant votes (see figure 10).

From a consumer perspective, several advantages were perceived when their own emotions or those of other people can be captured by AI for marketing purposes. The fact that people are no longer bored by advertising but are entertained by a personalised marketing measure and that the experience on a platform is enhanced was mentioned particularly often. This leads to a better experience with the product

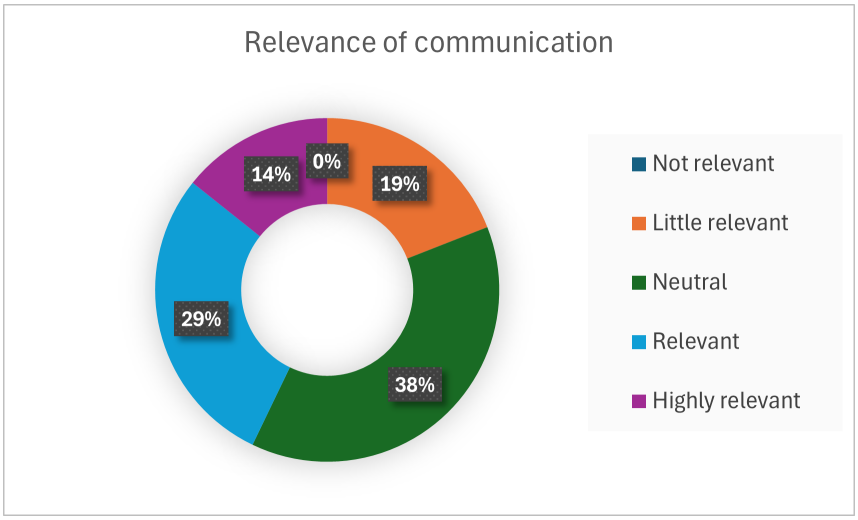

Figure 8: Relevance of communication (Source: own data)

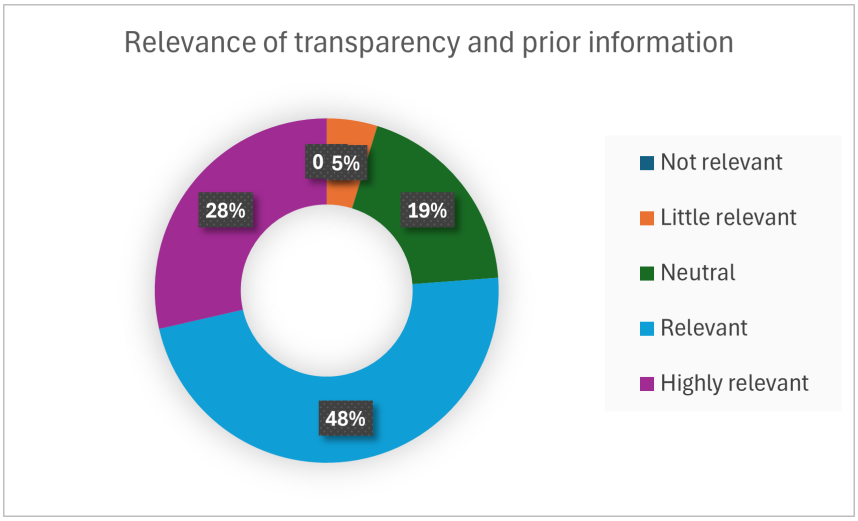

Figure 9: Relevance of transparency and prior information (Source: own data)

and increases customer care. One person also recognised the potential to see a suitable product based on their current emotional mood. However, another person questioned the relevance of personalisation and many people stated that they did not see any advantages or that these were not worth the disadvantages. These include the invasion of privacy and the fact that the personalisation of advertising means that a person no longer has the opportunity to see and evaluate all products.

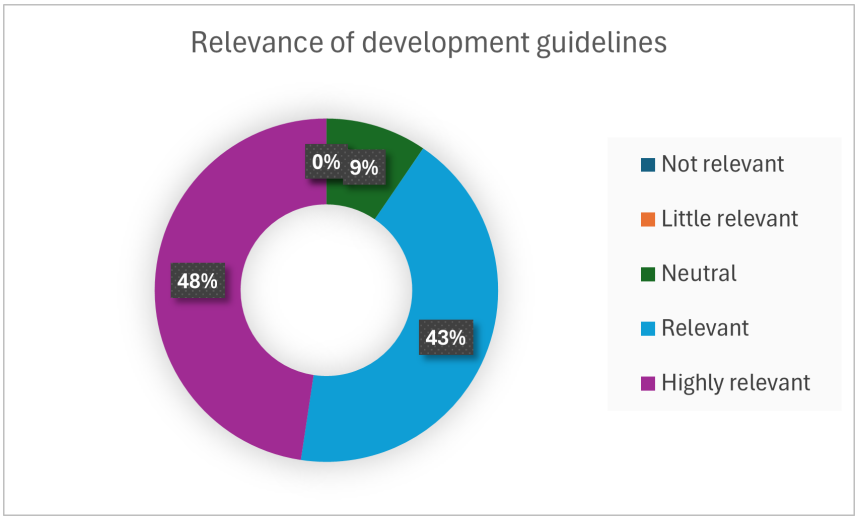

Figure 10: Relevance of development guidelines (Source: own data)

Evaluation (Slide bar): The option in each case that applies best regarding AI-based ER should be selected. The slider from 1 for no to 101 for yes was used to display the most suitable view in each case (see figure 11).
Ethical issues stop me from using the technology (average value): 51
Data protection issues prevent me from using the technology (average value): 65
Privacy issues prevent me from using the technology (average value): 69
A lack of transparency as to why companies use the technology and what benefits it offers them prevents me from using the technology (average value): 79
A lack of communication about the benefits that arise from using it leads to a lack of willingness to use it (average value): 67
I am ready to use the technology (average value): 45
I am convinced that I as a customer will benefit from using the technology (average value): 46

Most of the values were rated as about average, but especially with regard to the lack of transparency and privacy issues, it can be seen that several people have a more negative view of ER. In general, there were very extreme opinions in all categories, with numerous choices between 1 and 101.

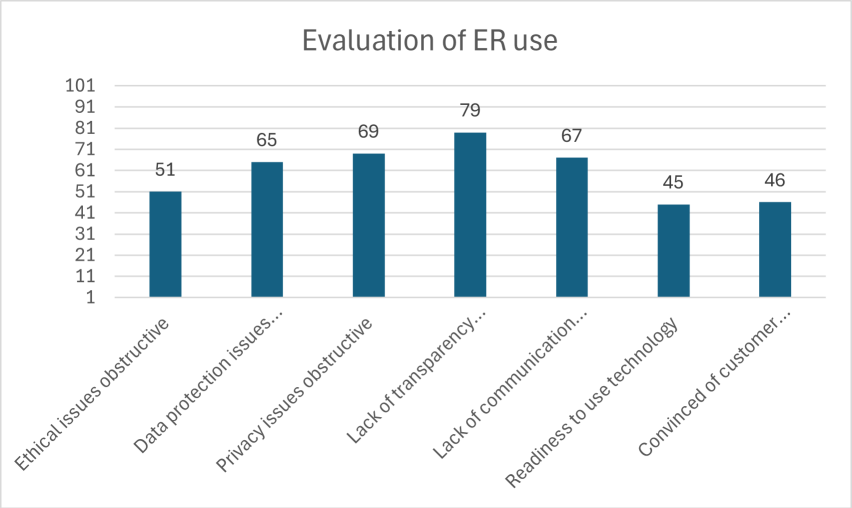

Figure 11: Evaluation of ER use with average values (Source: own data)

Communication (Single Choice): It was assessed to what extent adapting communication from the company side has an impact on consumer's willingness to use ER in a marketind context. All opinions were represented, mostly neutral with 7 and relevant with 8 ratings (see figure 12).

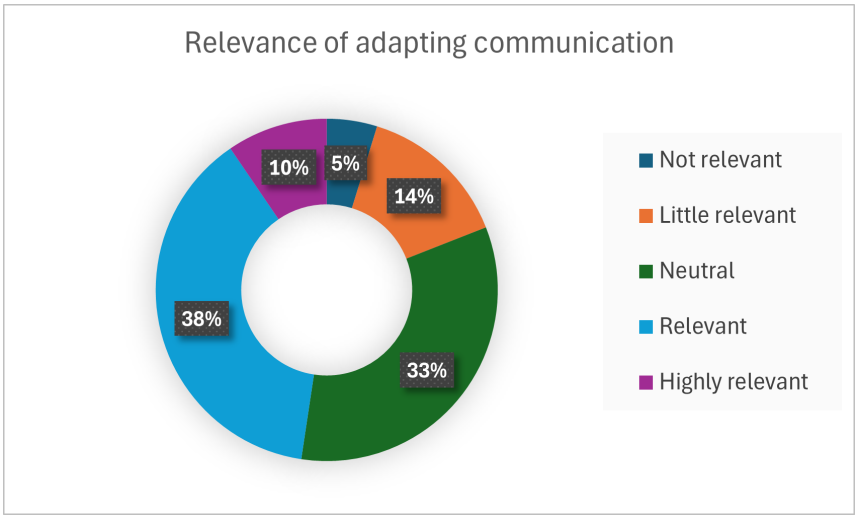

Figure 12: Relevance of adapting communication (Source: own data)

There were numerous suggestions as to how exactly companies should adapt their communication in order to increase consumer readiness for ER in marketing.
The most frequently mentioned suggestion was that companies should act transparently, for example with regard to the company's objectives and how, which and to what extent technologies are used and how data is used and stored. There were also calls for communication to be clear and for consumers to be given more information about potential problems. In this context, active consumer consent should also be

obtained. The advantages and disadvantages should also be clearly demonstrated, especially the benefits that ER brings to the customer. There is also a desire for more customer-orientation.

4.2 Qualitative data

4.2.1 Analysis process according to Mayring

The qualitative data was analysed according to Mayring's qualitative content analysis. Five interviews on attitudes towards emotion extraction through AI in marketing were the object of investigation. These were recorded and then transcribed with MAXQDA. The interviews are also intended to shed light on the hypotheses and answer the RQs. Accordingly, the attitude of the interviewees towards the technology was determined and conclusions were drawn as to how companies should adapt their communication based on this.
This was based on previous research surveys and the resulting research gaps.
Structuring content analysis was chosen as the analysis technique. The following coding guide defines how to analyse the interviews. [34]–[36].

- Unit of analysis: The interviews are analysed in chronological order according to when they were conducted. Each interview represents a unit of analysis.
- Coding unit: At least one word must be used for a code.
- Context unit: The text section to be coded must not exceed two paragraphs.

The codes were developed inductively and from the texts. As the interviews were conducted in German, the interview extracts were translated into English. After the first code review session of all interviews, the category system was adjusted and all interviews were analysed again and partly assigned more categories.

4.2.2 Category system

Table 1 shows the final categories with a definition and an example extract from a suitable interview.

Category	Definition	Exemplary interview excerpt
Gender: male	Person who identifies with the male gender	male (interview 2, item 4)

Continued on next page

Table 1 – continued from previous page

Category	Definition	Exemplary Interview excerpt
Gender: female	Person who identifies with the female gender	female (interview 1, item 5)
Age: 16 - 35	Age range 16 - 35	26 (interview 1, item 5)
Age: 46 - 65	Age range 46 - 65	62 years (interview 2, item 2)
Academic	Currently studying or completed studies	Student and highest degree Bachelor of Science (interview 1, item. 5)
Non-academic	Person with no academic degree	Secondary school leaving certificate (interview 2, item 4)
Marketing expert	Person who has an education or profession in the marketing sector	Content in a marketing agency (interview 5, item 2)
Affinity with AI	Person who is familiar in dealing with AI	We use AI in our everyday work, so I am very familiar with it in daily use (interview 5, item 6)
Affinity with digital technologies	Familiarity with digital technologies at work or privately	Every day, actually. Either for my studies or for work (interview 1, item 11)
No affinity with digital technologies	No familiarity with digital technologies at work or privately	Not really at all (interview 2, item 6)

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Table 1 – continued from previous page

Category	Definition	Exemplary Interview excerpt
Dystopian AI image	Image that AI will take over the world has been conveyed by the media	So it's always rather bad from the media. So, it's a threat and at some point it will be smarter than us and then take over the world. You always get things like that from the media somehow (interview 4, item 8)
Neutral AI image	A neutral image of AI has been conveyed by the media	Neither positive nor negative. I think the reporting on this innovation is neutral. There are certainly media, probably depending on what you want to read and what you want to watch. There are certainly media that report both positively and negatively on one side and the other (interview 3, item 10)

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Category	Definition	Exemplary Interview excerpt
AI perceived as helpful	AI is perceived as helpful by introducing new ideas, facilitating work or avoiding human mistakes	If you can't find an answer to a question and can't find anything on Google, then this simply gives you a pretty good answer. It's so short and to the point and it's great (interview 4, item 6)
Association Chat GPT	One of the first associations with AI is Chat GPT	So when I think of AI, I think of things like GPT (interview 4, item 6)
Negative AI associations	AI is associated negatively and with uncertainty	But of course there is also a bit of uncertainty as to which direction it will take in the future, how strong this whole thing will be, whether it will really be a positive development in the future. Uncertainty too (interview 3, item 6)
AI replaces jobs	Fear that AI will replace humans' jobs	I am concerned about whether potential jobs for people might then be lost (interview 4, item 10)

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Table 1 – continued from previous page

Category	Definition	Exemplary Interview excerpt
Image: Potential AI	Potential of AI conveyed by the media	That AI can do everything or will be able to do everything. Both logical and creative work (interview 5, item 8)
Ambivalent assessment of ER	Ambivalent assessment of the advantages and disadvantages of ER	So I think that AI is generally seen too much as sugar, as a panacea, as the big thing that can do everything, which it is not in practical application. And like everything else, it can be used for both positive and negative purposes (interview 5, item 11)

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Table 1 – continued from previous page

Category	Definition	Exemplary Interview excerpt
ER benefits companies	ER facilitates work for companies	Yes, very much so. The big advantage, of course, is that it becomes measurable what my campaign brings or how my campaign affects people. If I now look at our case with social media, where I don't have clear figures to be able to tell a customer that the campaign has achieved the following value, i.e. for the customer or the following goal, which is not possible if I only have pure figures and play out adverts. I can only ever make assumptions and by doing something like this I can at least describe the emotions of people who see the campaign more clearly on a random basis and don't have to resort to test groups, but can go to real customers (interview 5, item 18)

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Category	Definition	Exemplary Interview excerpt
Conversation not replaceable	AI is not perceived as a substitute for conversations with humans	The greatest joy is actually working with people. And during the corona period [...] it also shows time and again that presence and collaboration and face-to-face are actually irreplaceable. I can imagine that something will be lost with AI. Just the human touch. A lot of things can work, a lot of things can perhaps be recorded and analysed, but the human being and the conversation are somewhere at the top of the list. And if you want to evaluate a product now, then perhaps not everything can be answered with yes or no or perhaps a few other questions, but rather through dialogue. And that's why I believe that there are areas where AI reaches its limits. It might be great for some things, but humans are still needed for others (interview 3, item 30)

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Category	Definition	Exemplary Interview excerpt
ER as support	Potential of ER recognised when technology is used only to support humans instead of replacing them	But I think that if you simply use AI as support, that people work together with technology, then I think that's really great. I also believe that you can make incredibly good and great progress with technology, because it has much more information and knowledge than humans (interview 4, item 10)
Offer customization	Personalised product recommendations perceived as an advantage when ER was applied	Because I don't think that my reaction is very different from those who would somehow buy a product that I buy, for example. And if the AI could filter something like that out, then that could also be an advantage for me, because I could then see Ah, other people have reacted to it with anger, sadness, disgust, so that's not good for me either. Um, and then I only get recommended products that have really been well received by other customers (interview 4, item 20)

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Category	Definition	Exemplary Interview excerpt
Emphasising safety	Communication that ER causes no damage increases customer willingness	If this is explained in principle or that it does not cause any harm, then of course yes (interview 2, item 32)
ER unbiased technology	ER has potential because, unlike people, technology is unbiased and non-judgemental	The positive thing is that you don't have to tell anyone. You can speak freely and give free rein to your emotions. You don't have to make a false effort to be friendly. Which of course you do to people, and that's perhaps why such analyses are more honest (interview 3, item 32)

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Category	Definition	Exemplary Interview excerpt
Data abuse	Concerns about data protection and cybercrime with the data collected	This brings us back to data protection. It does indeed raise questions. [...] It's being recorded. What? What happens to this data? Where does it go? How is it ensured that it is absolutely secure. But then I think of things like cybercrime. (...) Yes, maybe that's where people fall short again. You learn from your mistakes and cyber criminals are always one step ahead. Yes, it's a difficult topic. Data protection would be a problem for me (interview 3, item 36)

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Category	Definition	Exemplary Interview excerpt
Copyright infringement	Copyright is infringed, too little knowledge about data processing	From this perspective, I think it is ethically questionable that you can generate content and then sell it as your work. Although you use the technology too superficially, too easily, without knowing what the basis of the data is that the technology works with (interview 5, item 14)
Recognition of relevance	No exact concerns provided that critical aspects of ER are considered in development (interview 3, item 16)	I have no concerns as long as you take a closer look. Where can I be used? There are certainly points that need to be reconsidered. You would probably have to take a more sceptical view. (interview 3, item 16)

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Category	Definition	Exemplary Interview excerpt
Lack of knowledge	Critical aspects of ER or company-customer communication cannot be answered and no opinion is shaped due to a lack of knowledge, according to the individual's own statement	I couldn't say yet how far that was. I don't know enough about it (interview 2, item 27)
No ethical concerns	No ethical concerns about ER	I have no fundamental ethical concerns (interview 3, item 16)
Unknowing data collection	Unknowing data collection violates data protection and privacy and increases concerns	If you are unknowingly filmed, then I think that, regardless of artificial intelligence, it already violates data protection. If you know you're being recorded or filmed and it's then analysed? I don't think it's a bad thing (interview 1, item 39)

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Category	Definition	Exemplary Interview excerpt
Application dependency	Concerns about ER depending on the application or use case	It always depends on what goes into the AI. So go with what the AI is trained with. How the trained AI is then used is the same as with any technology today. So let's move on to facial recognition and emotion recognition. It's not just in the last two years that China has been using this to track people, to read people. And now? That's just the next step. So what we currently call AI compared to what was called AI ten years ago. The only difference is how this technology evolves and learns. But that is always a matter of application. Yes (interview 5, item 16)
Disclosing procedure	Disclosure of how data is collected and used counteracts concerns	That you simply say, we're really only going to use this for our products, for our study, whatever research you do (interview 4, item 24)

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Category	Definition	Exemplary Interview excerpt
Communication of benefits	If customers are informed of the advantages of ER for them and these are emphasised, the customer commitment increases	Point out the positive aspects, what are the advantages of testing it in advance with the customer? (interview 1, item 57)
Customer manipulation	Customers are afraid of being sussed out by ER and influenced when buying. Manipulation as a disadvantage of ER	Too much subliminal influence, which the person is then unaware of. If, for example, the person is then approached by targeted marketing measures and the person does not even make the connection and is then tempted to make a purchase more quickly than they would without the procedure (interview 1, item 45)
Anonymity and deletion of data	Anonymity and deletion of data minimise concerns about the use of ER and increase willingness	It is something else if it is guaranteed that it is used anonymously, that I am recorded, but not as a person, or not as an individual, but simply as an anonymous person (interview 5, item 29)

Table 1: Coding of interviews according to Mayring (Source: own data)

4.2.3 Assessment of categories

Figure 13 shows how often the individual codes were mentioned in total. In the following step, the individual codes were categorised into thematically appropriate groups (see table 2) and then analysed in detail.

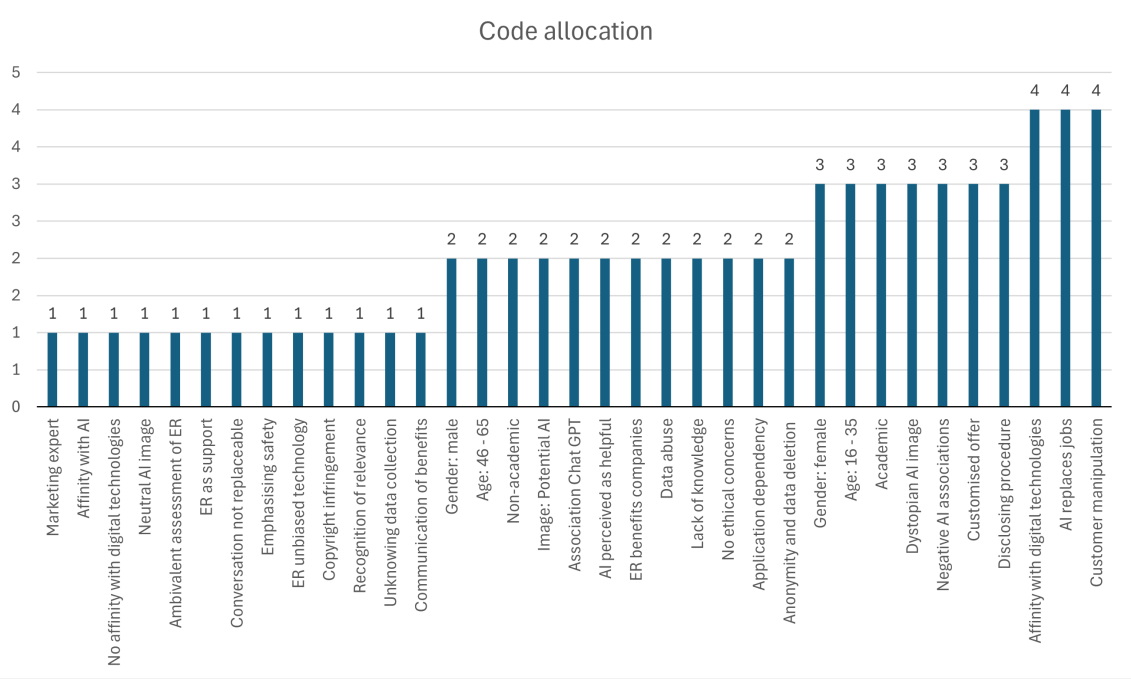

Figure 13: Code allocation (Source: own data)

Code grouping	Code components
AI perception	AI replaces jobs, Negative AI associations, AI perceived as helpful, Association Chat GPT, Image: Potential AI, Neutral AI image, Dystopian AI image
ER perception	Recognition of relevance, Application dependency, Lack of knowledge, ER as support, Ambivalent assessment of ER
Communication	Emphasising safety, Disclosing procedure, Communication of benefits

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Table 2 – continued from previous page

Code grouping	Code components
Perceived Ease of Use (TAM)	Unknowing data collection, No ethical concerns, Data abuse, Copyright infringement, Conversation not replaceable, Customer manipulation, Anonymity and data deletion
Perceived Usefulness (TAM)	ER benefits companies, ER unbiased technology, Offer customization
Prior knowledge	No affinity with digital technologies, Affinity with digital technologies, Affinity with AI, Marketing expert
Socio-demography	Non-academic, Academic, Age: 46 - 65, Age: 16 - 35, Gender: female, Gender: male

Table 2: Code sets and components (Source: own data)

The individual code groups are analysed in more detail below. It is essential to consider how often the individual codes were mentioned and whether they were mentioned by several different interviewees or, for example, by the same person several times. The following tables reflect this aspect.

AI perception comprises all codes that cover the basic perception of AI technology. In this context, four of the five interviewees frequently mentioned the fear that AI will take over people's jobs and replace them as workers (see figure 14). One person mentioned both logical and creative activities as examples of this. In addition, negative associations were also expressed concerning fear or scepticism about the future role and development of AI. The fear that AI could dominate humanity in the future was also expressed more frequently. On the other hand, AI was frequently associated with chat GPT and the potential to easily create desired content and ideas. The potential for human error sources to be avoided through the use of AI was also recognised. Overall, the respondents perceived both negative, positive and balanced media coverage of AI.

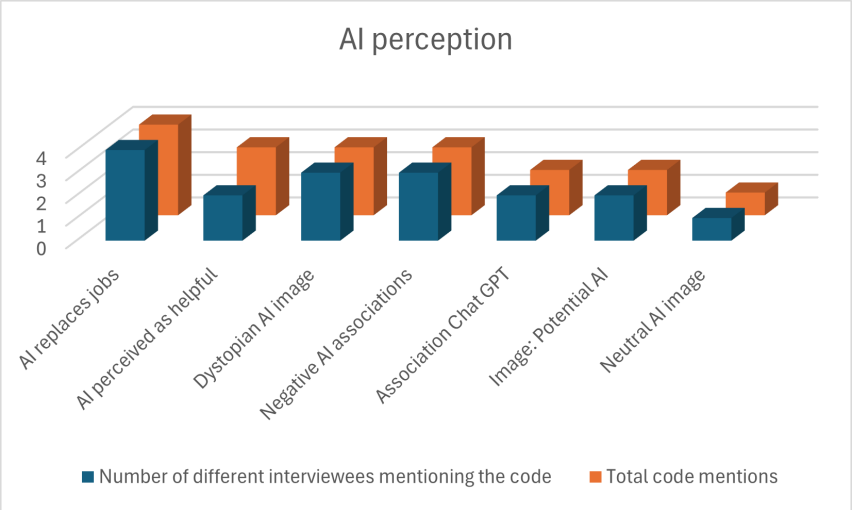

Figure 14: Codes AI perception (Source: own data)

ER perception specifically summarises all codes that describe the perception of ER. Assessments of data protection and privacy, for example, depend on the context in which the ER is used. If the person concerned were aware that their emotions were being recorded and then analysed, this would pose less of a problem than, for example, unknowingly recording their emotions through videos. One person also noted that the data used to train an AI is also decisive for this.

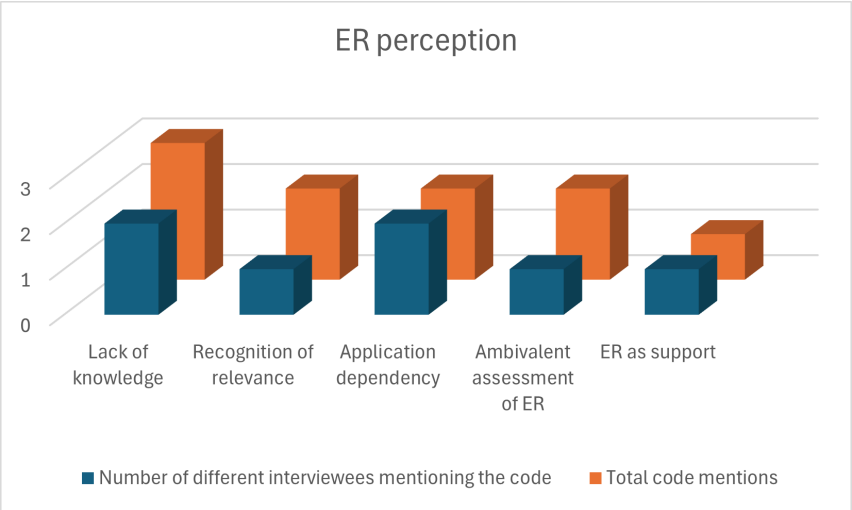

Figure 15: Codes ER perception (Source: own data)

One person recognised the fundamental relevance of the need to take a closer look at issues such as ethics and data protection when developing technologies such as ER. Other participants stated that they had too little knowledge in these areas to provide information on their personal opinion on data protection or ethics.
Contradictory to this, there was also an ambivalent assessment from a person who is

very familiar with both marketing and AI. This person stated that AI is generally seen too strongly as a solution to all problems but can ultimately be used for both positive and negative purposes. A consideration must therefore be made, from the customer's point of view, for example, as to whether they want to receive appropriate advertising but give up anonymity and data in return. In this case, however, customers would benefit from being suggested the products they really need instead of being convinced by unsuitable advertising.
One person once again referred to the concern that ER could replace human jobs and suggested that ER should only be used as a support for collaboration with humans (see figure 15). The statements from AI perception and ER perception help to identify the perceived advantages and disadvantages of the technologies and are therefore being incorporated into RQ1.

Communication of the company to consumers or potential users of ER can have a positive effect on the attitude and willingness of customers to use ER, according to interviews. It is important to emphasise that the technology is secure and causes no harm and that customer benefits are highlighted. It was mentioned several times that the disclosure of the procedure, meaning how exactly and for what purpose ER is used, is particularly important (see figure 16). In addition, the demand was expressed that one should be recorded as an anonymous person and not as an individual.
Which aspects customers would like to see in communication helps to answer RQ2 and validate or falsify H2.

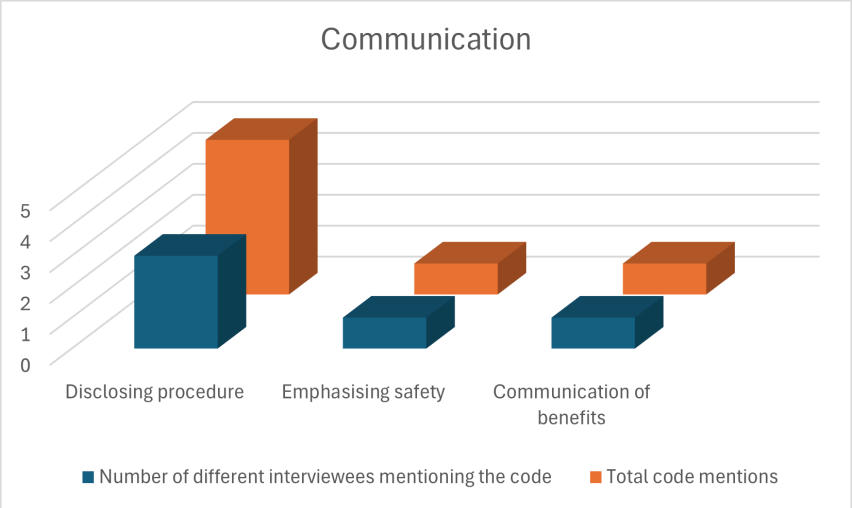

Figure 16: Codes communication (Source: own data)

Prior knowledge of the interviewees is important in order to explore possible correlations between the interviewee's level of knowledge and attitudes. One interviewee has particularly good knowledge of AI and marketing due to their professional

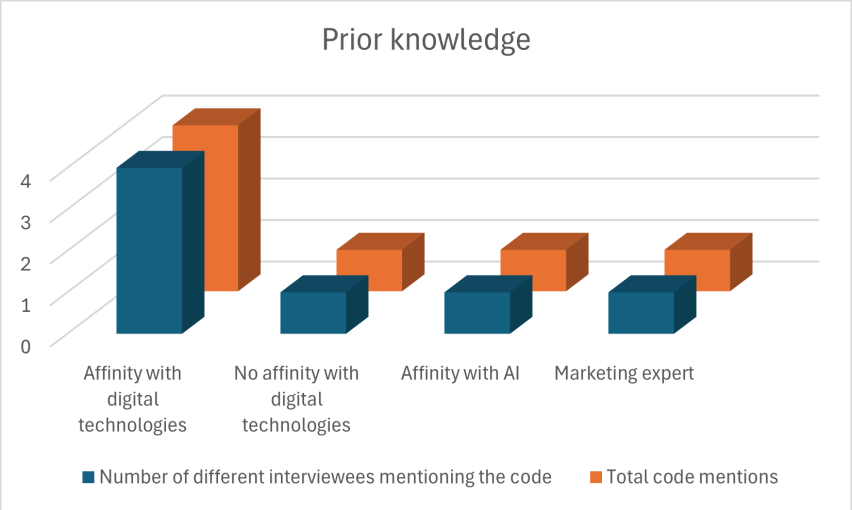

Figure 17: Codes prior knowledge (Source: own data)

skills. Four people use digital technologies in their professional lives and are familiar with them. Only one person stated that they do not use digital technologies either professionally or privately (see figure 17). These statements can be used to determine how familiar people are with the topic and, in combination with questions on the perception of the technology, conclusions can be drawn about H1.

Socio-demography also provides information about the backgrounds of the interviewees. The interviewees included three academics and two non-academics. The two non-academics, male and female, fall into the age range of 46 - 65 years. The three academics are 16 - 35 years old. Three people are female and two are male (see figure 18). Depending on their relevance, socio-gemographic characteristics can help with the segmentation of customer groups in RQ1.

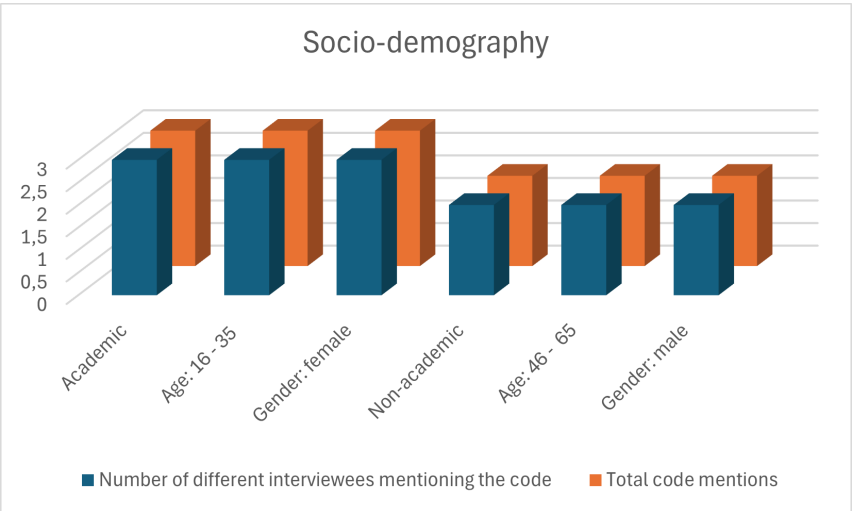

Figure 18: Codes Socio-demography (Source: own data)

Perceived Ease of Use (TAM) describes how user-friendly a technology is being perceived. In the interviews, numerous concerns were mentioned that lead to poorer user-friendliness, as they are associated with worries and concerns, or even prevent use. The uncertainty as to whether emotions are being recorded unknowingly created some concerns in the area of data protection and privacy and had a negative impact on willingness to use the technology. There was also a concern that data could be misused, for example through identity theft, cybercrime or that the collected emotions could be used to create fake videos of a person. In addition, four of the five people mentioned the concern that they would be manipulated by the ER when making a purchase (see figure 19). For example, people can be subliminally tempted to buy a product because the offer has been customised to them by the ER, without them even realising that the product has been targeted at them. There was also the fear that customers will be completely misled. Another concern mentioned was that the ER data collection would identify a target group to which certain products would be targeted. However, if a certain person belongs to a niche and is still perceived as part of this group, they would be influenced to buy products that they do not actually need or want.

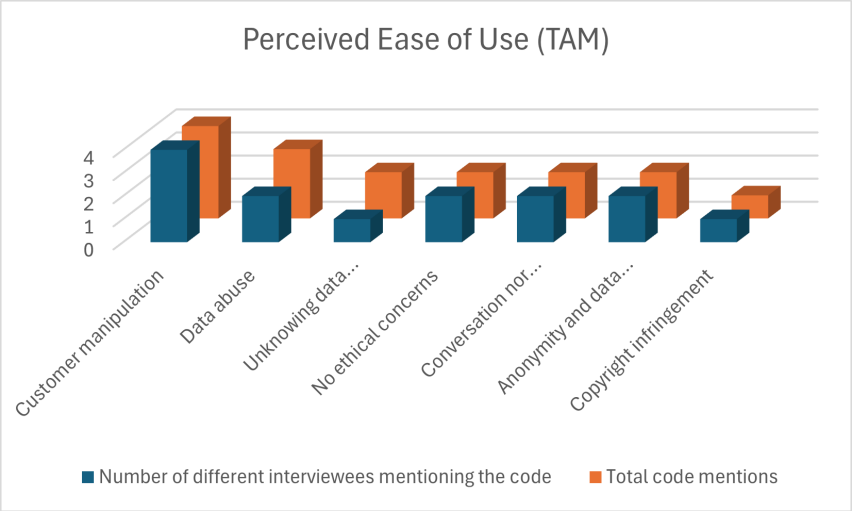

Figure 19: Codes Perceived Ease of Use (TAM) (Source: own data)

Another hurdle is that ER or an AI was not seen as a substitute for a person who deals with the customer personally. A human is preferred as a dialogue partner when problems arise. It was doubted that AI has sufficient skills for such tasks. In addition, collaboration and communication between people is valued, which technology cannot completely replace.

One ethical point that was criticised was that people use the technology without knowing the basis of the data on which the technology works. Claiming the results as one's own can lead to problems with copyright. Nevertheless, there were also

people who did not perceive any ethical concerns. One aspect that, according to the interviewees, would dispel concerns and thus increase the user-friendliness of ER would be to ensure that ER is used anonymously, that data is collected anonymously and, if possible, deleted again afterwards.

Perceived Usefulness (TAM) describes the specific benefits people perceive when using a technology. In the case of ER, three people identified the fact that suitable products are suggested and displayed as an advantage (see figure 20). People would not be convinced to buy something, but would buy something because it is suitable.

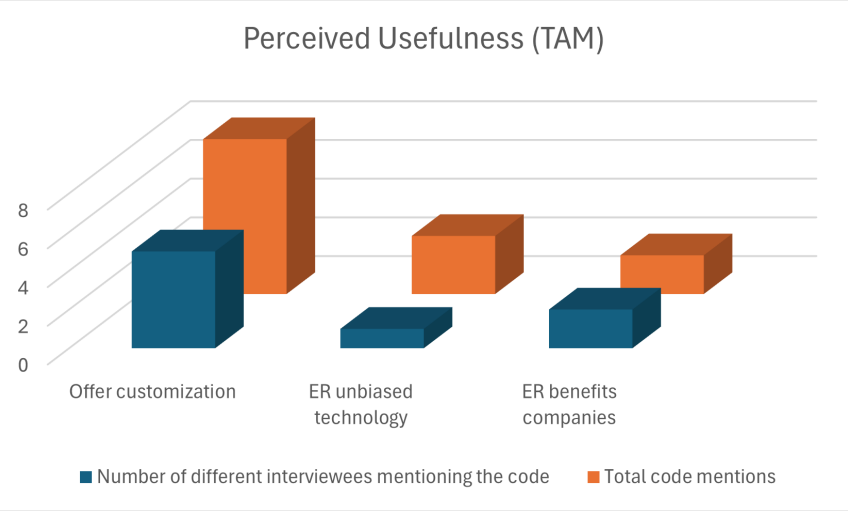

Figure 20: Codes Perceived Usefulness (TAM) (Source: own data)

AI was also seen as a value-free, neutral authority. It was hoped that this would result in more honest and accurate analyses. Moreover, customers feel no need to hide if they don't like a product. When dealing with another person, one would rather endeavour to be friendly and hide negative reactions.

Finally, an advantage was identified not only for potential customers but also for the companies using ER. ER makes it possible to measure the success of campaigns. This means that adverts are not displayed randomly, but in a targeted manner. This also helps, for example, if there are co-operations with other business customers and these, for example in the case of a marketing agency, are to be reported on the success and achieved goals of a campaign.

Perceived Ease of Use (TAM) and Perceived Usefulness (TAM) provide further insights into the advantages, disadvantages and hurdles that are perceived when using ER and therefore prove to be extremely relevant for answering RQ1 and RQ2.

5 Discussion

5.1 Results

H1 claims that the more familiar a consumer is with the topic of AI, the more they are positive about ER in a marketing context. The person in the second interview represents an extremum in this question, as they have no affinity with digital technologies or specifically AI and ER. In addition, the person initially associates a negative image with AI, namely that AI could take over humanity. According to the person, they were also unable to give an opinion on many questions, for example about ethics and AI, due to a lack of or too little knowledge on the subject. Only disadvantages for the customer or benefits for the company using ER were perceived. In addition, there was a fear of being manipulated and scolded by ER. To summarise, the person is distrustful and completely unfamiliar with the topic of AI, which would confirm H1.

Contradictory data is also found, however, which partly refutes H1. The person in interview five has a particular affinity with digital technologies and AI in the marketing environment due to their profession. This comprehensive knowledge of the topics results in an ambivalent assessment of ER, as both potential and risks were taken into consideration. The interviewee with the number 54 in the questionnaire has a high level of understanding of digital technologies, but is extremely critical of ER in some cases. Number 50 is just as well informed, but in contrast is absolutely willing to use the technology and is convinced of the benefits for customers.

This shows that H1 cannot be answered in general terms. There are people who have developed a negative attitude towards ER due to a lack of knowledge, as predicted by H1. However, there is also contrary data, from which it can be concluded that attitudes towards ER are not solely dependent on the previous level of knowledge about comparable technologies.

H2 describes the assumption that the better companies adapt their communication to a specific target group, the more willing these customers will be to use the technology. The question in the questionnaire about the extent to which adapting the company's communication is relevant to the willingness to use ER provides a high degree of insight into this assumption. 19 per cent of respondents rated the question as not relevant and little relevant. 33 per cent were neutral. With a high majority of 48 per cent, a large proportion of respondents rated the adaptation of communication as relevant and highly relevant, which speaks in favour of verifying H2. In addition, in the questionnaire, the relevance of communication between companies and customers was rated as 3 and transparency and prior information as 4. In this

context, a score of 1 represents not relevant and a score of 5 highly relevant. This demonstrates a tendency towards the relevance of communication. The summary of the "Communication" code group from the interviews also reveals that people are more willing to use ER depending on how the communication is organised by the company. In this context, great importance is placed on the technology being secure and that transparency on the part of the company is crucial.
Based on these findings, it can be determined that a majority of respondents perceive communication as a decisive factor in their willingness to use ER, which confirms H2.

As part of a research on material and experiential product recommendations by AI, it was concluded that marketing communication should be adapted to the wishes and goals of the respective customers and, in this context, should stand out from the competition [37].

RQ1 deals with the question, what differences in the acceptance of emotion extraction in the marketing context among different customer groups exist. As H1 already indicates, a generalised grouping of consumers is not feasible based on individual factors such as knowledge of AI and digital technologies. Nevertheless, it is possible to identify opinions of individuals from the interviews that can definitely be seen as an extreme in an attitude towards ER in marketing and in this sense represent a customer segment. Based on the results from H1, interviewee number two represents a group that has no knowledge of ER and digital technologies and is very mistrustful of it. This group attaches great importance to being informed in advance about the technology used and that it is clear that the technology will not cause any harm to users. In contrast to this, interviewee number five represents a group of particularly well-informed and affine people in the field of AI and marketing. Due to their extensive knowledge, they have an ambivalent assessment of ER. As they no longer need any new information from the company about the functionality of ER or digital technology, they are increasingly focussing on the disclosure of the procedure, benefits for consumers and the protection of consumers, for example through anonymity and the subsequent deletion of data.

The evaluation of willingness to use ER in the questionnaire also allows two groups to be identified. The first, with the slider in a range of 1, which equals no, and 50, is not willing to use ER. The other group between 51 and 101, which equals yes, would use ER. The first group of 11 people who are not willing to use ER has the following characteristics. The group consists mainly of young people, 72 per cent are between 16 - 25 years old. 63 per cent work in the field of engineering, technology and IT. No one indicated a lack of understanding of digital technologies. When evaluating

whether aspects relating to ethics, data protection, privacy, lack of transparency on the part of the company and a lack of communication of the benefits of using ER prevent people from using it, a median value of 80 was calculated for all questions. In addition, the score for the question of whether customers benefit from using ER was only 29. Overall, this group is characterised by high concerns and a low belief in benefits for them.

The second group of 10 people who would use ER has the following characteristics. 30 per cent work in the field of engineering, technology and IT. 1 person stated a lack of understanding of digital technologies. No one in the group uses digital technologies only rarely. 60 percent are in the age range of 16 - 25 years, 20 percent are 16 - 25 years old, 10 percent are 36 - 45 years and the remaining 10 percent are 56 - 65 years old. When evaluating whether aspects relating to ethics, data protection, privacy, a lack of transparency on the part of the company and a failure to communicate the benefits of using ER prevent customers from using ER, a mean value of 51 was calculated for all questions. The conviction that customers benefit from using ER is 65 on average. This shows that this group is less concerned about ethics and their data, for example, and perceives higher benefits on average. Although both groups compared have strong differences of opinion on ER and the factors that influence it, data such as age or knowledge of technology are relatively similar. Therefore, attitudes towards ethics, data protection, privacy, transparency and user benefits are more likely to be decisive and clearly assignable. For example, the person in interview 2 is 62 years old and very dismissive of ER. Number 72 in the questionnaire is 56 - 65 years old and therefore of a similar age, but has a completely different opinion due to the high willingness to use ER.

In a study on AI in the service sector, younger people were identified as being more willing to use robo-advisors [31]. The difference in results could be explained by differences in the subject matter, namely robo-advisors instead of ER, or a different composition of study participants.
In a study by Chen et al. it was reported that customer acceptance of AI in marketing is influenced by social norms, attitudes, media, disclosure of AI involvement in chatbots and antromorphism [14]. Interview 2 also confirmed that the influence of media and images conveyed can be decisive for the acceptance of AI.
Chen et al. also found that consumers' perceptions of AI in marketing strongly depend on their understanding of AI and similar technologies [14]. However, the results of H1 show that this factor alone does not shape the entire attitude towards AI or ER. Another study conducted in 2021 revealed, contrary to the results of previous studies, that people who are overwhelmed by technology tend to use analyt-

ical AI, as AI saves them from needing to do more work and deal with technology [31].

Due to ambiguous conclusions from several studies and partly contradictory study results, it can be assumed that attitudes towards ER cannot be attributed with complete certainty to socio-demographic characteristics or level of knowledge, for example. It is also possible that more test participants and data are needed to possibly identify clear customer segments in this regard and create reliable generalisable groups. However, there are extreme views of ER that can be categorised as a customer segment in terms of attitude, perceived potential and concerns. It is therefore rather important for companies to find out the basic attitude of customers towards technology in order to know what specific concerns and needs a person has. Data from this survey can then be used to choose a suitable approach to the customer. This answers RQ1, as there are clear differences in acceptance among groups and extremes that can be recognised. Crucial aspects were identified and descriptively linked to customer profiles.

RQ2 addresses how companies can communicate the benefits and concerns from the customer's perspective to increase their acceptance and dispel concerns. There are numerous suggestions from the research participants on this RQ, which are discussed below. Some of these are confirmed or disproved with regard to recommendations from other publications as relevant for communication.

The research participants expressed a strong desire for transparency on the part of the company as to what exactly ER is used for and how, and which of the company's objectives it should serve. In this context, guidelines on the development and use of ER are also desired. This information should be available to potential consumers for prior information and comprehensible clarification. Consumers also want prior active consent to the collection of their information, rather than unwitting ER.

For example, the scenario of a person standing in front of a display with facial recognition that chooses suitable advertising for other social media platforms depending on the person's reaction on the advertisement [24] or a camera in shopping centres that processes the emotions of all visitors [26] must be evaluated critically from this perspective.

A study conducted in 2021 on the risks of ER applications came to a similar conclusion and recommends that users should always be informed about the purpose and limitations of ER. In order to meet ethical aspects, responsible and transparent communication should take place and voluntary consent to ER use should be obtained

[6]. Transparency, also with regard to ethics and privacy, is seen as a way to increase customer trust in a study on AI in marketing [38].

Concerns that data could be sold on or passed on to third parties, that data could be used for other purposes or even misused for political or ideological purposes were mentioned particularly frequently. The use of espionage AI was also discussed in this context. The lack of a supervisory authority for ER by companies was equally criticised.

A study from 2023 on AI in marketing identified identity and data theft, data transfer to third parties and the possibility of creating programmable weapons as issues that could reduce customer trust [38]. Transparent communication with regard to data processing and control measures could mitigate or dispel concerns. As there are concerns about data being made public through leaks or hacking attacks, data security must take priority and this must be communicated to potential customers.

Test participants feared that AI could replace humans and threaten to take away jobs. This fear was partly fuelled by a dystopian image of AI in the media. In addition, AI or ER is not seen as an equivalent replacement for a human to whom one can turn in the event of problems or with whom one can work together. AI is seen as having fewer skills than human employees. One respondent noted that AI could only support humans rather than replace them and that this would be very acceptable.

In other research, it was suggested that AI can take on repetitive tasks in marketing and obtain information, which supports marketing staff and increases efficiency. For customers, AI support through personalisation means a greater connection with the brand and higher purchase satisfaction with the product [14]. A study from 2023 also found that people trust AI recommendations for experiental products more if AI only provides support and does not carry out the entire recommendation independently instead of a human [37]. A study from 2021 considers it important to further incorporate the views of consumers in the context of AI in marketing in the future. It is also recommended to promote AI devices as an effective and trustworthy device [14]. Other research has shown that although algorithms are perceived as more objective, they are also perceived as less authentic than humans when it comes to product recommendations [37]. Another study from 2021 also came to the conclusion that the people surveyed trust AI less emotionally and cognitively than humans [14]. This is consistent with the findings from the interviews that AI cannot replace humans as a dialogue partner, for example, and that AI is more accepted when it only assists humans. Consequently, it is particularly important to emphasise that AI

only supports people and that this ultimately also benefits the consumer through a better experience on a platform or with a product.

AI was perceived as neutral and unbiased in an interview. For example, it is seen as an advantage that, unlike with a human dialogue partner, people don't have to hide negative emotions or reactions when dealing with AI this perceived advantage. Nevertheless, the opinion that AI is a neutral entity can be refuted by studies. In a study from 2022, the bias in algorithms was examined in more detail. If there is a bias in the training data, this can lead to different groups being disadvantaged. For example, face recognition works better for men than for women [21], and the analysis of faces works worse with darker skin tones. If certain groups of people are not sufficiently represented in the original data set, this can lead to an underrepresentation of these groups and the formation of stereotypes. As emotions have different meanings depending on culture and society, a universally accurate evaluation of user expectations is also difficult [6]. Accordingly, this aspect cannot always be advertised as an advantage of using ER or AI, as the neutrality ultimately depends on the training data of the technology.

The use of ER particularly benefits the identified advantage of a better social media or shopping experience. Consumers hope that they will no longer be bored by adverts and will only be suggested products that exactly match their needs. This also avoids purchases of unsuitable products due to non-personalised advertising. Customer orientation and the advantages for customers must therefore be particularly emphasised.

There is also a desire to be informed about possible disadvantages for consumers. There are many concerns in the area of data protection and privacy. Consumers want ER to take place as anonymously as possible and without drawing conclusions about their own person, which should be communicated when it is implemented. If possible, data should also be deleted promptly.

Another study pointed out that many of their study participants felt uncomfortable with ER technology due to concerns about privacy, harm or consent to ER [39]. According to Chen et al., although users perceive privacy concerns caused by the technologies, they still choose the benefits of the AI devices [14]. In particular, the consideration of whether personal data should be traded for an improved user experience was mentioned frequently in the interviews and questionnaire. Many people stated that the disadvantages and possible risks were not worth the use of ER and customer benefits.

A publication from 2024 showed that avatars in chatbots that are more similar

to humans evoke higher emotional expectations in the user and raise hopes of greater efficiency [40], [41]. The only factor that was not raised in the interviews or in the questionnaire was the extent to which any resemblance between the AI and humans is decisive. One factor for this could be that the interviewees were influenced by the questions or points of reference and by not addressing this issue in the survey questions or interview guideline, this aspect was never mentioned by the participants.

In conclusion, there are numerous specific recommendations for action on RQ2, some of which have been confirmed by external research. As they were also mentioned by many different participants with a broad variety of socio-demographic and knowledge characteristics and thus high representation of possible consumers in interviews and questionnaires applies, the answers to RQ2 can be regarded as reproducible and generalisable. As other publications show, some of the points mentioned are not recommended in corporate customer communication. RQ2 confirms the validity of H2 all the more through the specific recommendations.

5.2 Innovative Framework

A summary of all the factors that should be considered when using ER and communicating to consumers are presented in the form of an innovative framework. This also includes the identified customer segments and serves as a guide for companies that already use or want to use ER. The focus is on increasing customers' willingness to use ER and taking safety measures, ethical aspects, data protection and privacy aspects into account, which consequently benefits the consumers and the companies using ER.

Communication must be tailored as well as possible to the respective customer or customer segment. Some consumers or potential consumers have a very extreme attitude towards ER. It is therefore important to identify these people and adapt the communication in a constructive way.

- Segment 1: Persons that have no knowledge of ER and digital technologies and are very mistrustful of it. This group attaches great importance to being informed in advance about the technology used. Furthermore, they need to be assured that the technology will not cause any harm to users.

- Segment 2: This segment is characterised by persons who are particularly well-informed and affine in the field of AI and marketing. Due to their extensive knowledge, they have an ambivalent assessment of ER. As they no longer need any new information from the company about the functionality of ER or digital technology, they are increasingly focussing on the disclosure of the procedure,

benefits for consumers and the protection of consumers, for example through anonymity and the subsequent deletion of data.

In addition, there are further decisive aspects that must be generally considered and communicated:

- Companies must act transparently and disclose the way in which ER is used and the objectives pursued.
- Guidelines on the development and use of ER are desirable and should also be available to users in advance for information purposes.
- Users want to be informed about possible disadvantages resulting from use.
- Communication should not only be transparent, but also easy to understand for everyone.
- There should be active consent for ER use before emotions are captured.
- Data must be protected against hacking and leaks. The transfer or resale of data to third parties and the misuse of data must also be prevented. Data must not be misused for political or ideological purposes. In this context, an unbiased supervisory authority would be desirable in order to increase security and strengthen consumer confidence when this is communicated.
- It must be communicated that AI only serves as support and does not replace humans as a labour force. This increases trust in the results of ER and at the same time reduces concerns that AI could take over humanity.
- It must be ensured that the training data for the AI does not create a bias and that certain groups of people are not subsequently disadvantaged.
- Benefits for the customer such as a better and more exciting experience on a platform or with a product, higher satisfaction through personalised advertising and increased customer orientation must be emphasised.
- ER should be used as anonymously as possible and without drawing any further conclusions about the individual. Collected data should also be deleted promptly.

5.3 TAM Evaluation

The TAM is divided into several phases, which can be used to determine whether a technology is accepted or rejected on the basis of positive or negative answers.

In the case of acceptance, the following 5 aspects knowledge, persuasion, descision, implementation and confirmation must all apply positively [42].

- **Knowledge:** Information about AI and specifically ER is provided in the interview or questionnaire.
- **Persuasion:** In questions about ER in general, ethics, data protection and other topics, a positive or negative opinion is formed or previously established opinions are reflected.
- **Decision:** The answers can be used to determine whether ER is adopted or rejected.
- **Implementation:** Implementation of a technology does not take place as part of this research, as only opinions on ER are recorded and analysed.
- **Confirmation:** In this case, it is also not possible to determine whether the technology has been accepted after implementation in the case of satisfaction or rejected in the case of dissatisfaction.

Implementation and confirmation are hypothetical in this work and cannot be dealt with. Only the opinions of research participants were recorded, without using the technology itself in an experiment. After knowledge and persuasion have taken place in the data collection, the assessment of decision is highly relevant.

To this end, the factors of the TAMs are summarised below.
Perceived Usefulness and Perceived Ease of Use affect the attitude towards ER use. This forms the Behavioural Intention to Use and would influence Actual System Use [32].
External variables influence Perceived Usefulness and Perceived Ease of Use [32] and were measured, for example, in the form of socio-demographic data such as age, gender, profession, education or technical understanding. Attitude and Behavioural Intention to Use were queried and thus provide concrete information on the decision in the TAM. For example, the questionnaire evaluated how ER is perceived, whether one would use ER with regard to data protection, ethics or privacy and finally asked whether one would be willing to use ER.

Summarising the questionnaire and interviews, the respondents' data reflects the following picture of external variables. The research included people between the ages of 16 and 65, with both men and women taking part, covering all levels of education from school-leaving qualifications, apprenticeships and university studies.

A wide range of professional fields were covered, including marketing and IT. There were also people with no to particularly good technical understanding.
Perceived Ease of Use and Perceived Usefulness make up the attitude and present the following results.

Perceived Ease of Use:

- Uncertainty as to whether emotions are being recorded unknowingly.
- Concerns in the area of data protection and privacy with a negative impact on willingness to use the technology.
- Concerns that data could be misused, for example through identity theft, cybercrime.
- Concern that users could be manipulated by the ER when making a purchase.
- Another hurdle is that ER or an AI was not seen as a substitute for a person who deals with the customer personally.
- One ethical point that was criticised was that people use the technology without knowing the basis of the data on which the technology works and copyright issues.
- There were also people who did not perceive any ethical concerns.
- One aspect that, according to the interviewees, would dispel concerns and thus increase the user-friendliness of ER would be to ensure that ER is used anonymously, that data is collected anonymously and, if possible, deleted again afterwards.

Perceived Usefulness:

- Suitable products are suggested and improve satisfaction with a product or on a platform. Therefore, purchases only take place with products that are actually required.
- AI was also seen as a value-free, neutral authority with high accuracy.
- ER makes it possible for companies to measure the success of campaigns.

Overall, many concerns about hypothetical use of ER or concerns that discourage use exist. External studies show that, despite being aware of numerous risks, users often accept these risks for a better, more personalised experience. But in the questionnaire

in particular, it was often said that the disadvantages were not worth using ER.

The Behavioural Intention to Use can be determined in the questionnaire by evaluating whether users are willing to use ER using the mean values. A slider from 1, no, to 101, yes, was set for this. Results from 1 - 50 were categorised as no and results from 51 - 101 as yes. This question represented a final evaluation, which likely was influenced by factors such as ethics, data protection, privacy, transparency and communication. The result can therefore be seen as a final answer for the descision phase of the TAM, after knowledge and persuasion took place beforehand.
In the evaluation, 10 people were willing to use the technology. 11 people denied a willingness to use ER. Although the result is almost neutral, the acceptance of the TAM must therefore be rejected. This illustrates the relevance of the handling and communication recommendations for companies in the innovative framework in order to increase user acceptance of ER in the future.

5.4 Quality criteria according to Mayring

The implementation of a qualitative content analysis according to Mayring in the interviews also includes compliance with and testing of the quality criteria. This is divided into validity, with the aspects of semantical validity, sampling validity, correlational validity, predictive validity, construct validity, and reliability with reproducibility, stability and accuracy [34]–[36], [43].

Validity: What is to be found out is measured [34]–[36].

- Semantical validity (data orientated): Similar statements are given their own category to which they are assigned. Categories are also defined transparently and each category is assigned an interview excerpt as an example. The semantic validity is checked and verified once again by summarising several categories in parent groups.

- Sampling validity (data orientated): The total number of participants and the evaluation quantity were defined at the beginning. With five interviews, these data alone is not representative, but offers deep insights into the marteria and complements the data from the questionnaire.

- Correlational validity (product orientated): There are several studies with similar part-results on AI in marketing. These can be found in particular in the area of general communication with AI. Nevertheless, there are also contradictory results with several studies, for example on the impact of socio-demographic characteristics on attitudes towards AI, which indicates a need

for more in-depth research in these aspects in the future.

- Predictive validity (product orientated): Predictions can be made about the general attitude of customers in the area of communication. However, predictions as to which socio-demographic groups belong to which customer segment are not reliable.
- Construct validity (process orientated): Is only used for deductive procedures and is not relevant here.

Reliability: Performing the analysis again leads to the same results [34]–[36].

- Reproducibility: The qualitative content analysis according to Mayring leads to the developed categories and results even when carried out again.
- Stability: Is only used in deductive procedures and is therefore not relevant.
- Accuracy: Categories were clearly defined, making the code assignment reliable. There are simply different opinions from a variety of people, which are organised into a larger group depending on the topic.

In addition to these eight criteria, the following three approaches should also be considered: intersubjective comprehensibility, communicative or collegial validation and triangulation [34]–[36].

Intersubjective comprehensibility: The intersubjective comprehensibility was fulfilled, as the entire deduction of RQs, data collection and evaluation were described transparently, partly based on research by independent scientists and compared with their results.

Communicative or collegial validation: Due to the fact that only one person was involved in this research work and no expert interviews or similar were conducted after the data analysis, no peer validation took place.

Triangulation: In addition to the Mayring method, the qualitative data was also analysed and evaluated with regard to the TAM. The different evaluation methods thus combine several strengths of the respective methods and lead to higher quality results.

6 Limitations and future recommendations

Based on the analysis of the quality criteria for the interviews, some aspects become clear that show weaknesses in the work carried out. For example, the sampling validity could be optimised by interviewing more people and making the data collection more representative. This could possibly have an influence on the predictive validity. It is possible that with more data, a more accurate picture of the interference of socio-demographic characteristics and attitudes towards ER could emerge, allowing more accurate predictions to be made. Further, the fulfilment of collegial validation could provide a critical view of the execution of the work and conclusions and allow for new ideas. Validation by other researchers who participate in the work or check it before publication would therefore be desirable.

Another weakness identified in the first interview was that the scenario in the interview was not specific enough for some participants. There was a desire for a more concrete scenario in which ER is used in order to be able to evaluate factors such as data protection more accurately in this context. On the other hand, a general question allows a more comprehensive view of ER applications and also shows how participants would evaluate ER in different scenarios. In future, several individual surveys could be conducted with specific scenarios and the results could be compared.

A further limitation is that the most recent applicable educational qualification should be stated at the beginning of the questionnaire. For people who are in their last semester of study, for example, this means that they may still report their school-leaving qualification because their studies have not yet been completed. This question should therefore be formulated more specifically and also include current degrees that have not yet been completed.

The results showed that similar statements and opinions were sometimes made by very different groups of people, regarding knowledge and socio-demographic characteristics. This could possibly be due to the fact that the participants were too strongly guided and influenced by the questions. To check this, questions should be asked more openly in further research and fewer predefined keywords such as data protection should be used as a starting point. This could lead to further insights into which factors are decisive for the opinion on ER.

In general, more people should be included in the survey in order to enable a statistical analysis and to make the results even more representative. For example, more people over the age of 50 could be included.

7 Conclusion

The research conducted using interviews and an online survey revealed that a potential user's positive attitude towards ER in marketing is not solely dependent on how familiar they are with AI and digital technologies. Further data is also required to segment user groups. Analysing socio-demographic characteristics such as age, gender, occupation, level of education and use and knowledge of digital technologies leads to the conclusion that these characteristics are not the only decisive factors for opinions towards ER. Opinions on ethics, data protection, privacy, perceived advantages and disadvantages for customers and transparency in company-customer communication were found to be crucial in forming opinions. In addition, one extremum was identified as a customer segment, namely people with no knowledge of digital technologies or ER, with a negative opinion and the fear of being manipulated by ER. In this case, value is placed on prior information and reassurance that the technology will not cause any harm. The other extreme is represented by experts in the field of AI and marketing, who have an ambivalent view of ER due to their extensive knowledge. They value the protection of their data, anonymity and the disclosure of ER processes by companies. This answers the RQ of what differences exist in the acceptance of ER in marketing between different customer segments. Nevertheless, it is advisable to conduct surveys with far more participants to see whether structures on the role of socio-demographic data can be recognised with more participants and a statistical analysis of the data.

The adaptation of communication to a specific group has proven to be a positive factor in terms of willingness to use ER. When companies communicate with users, users attach great importance to the emphasis on user benefits, as well as anonymous ER execution, protection of the personal data collected and active consent to the capture of emotions. In addition, companies should provide transparent information in advance about when and how ER takes place and what goals are being pursued. It must also be emphasised that ER only serves as support and does not replace people. This also answers RQ2 of how communication must take place in order to increase user acceptance and minimise doubts.

The acceptance of ER was also evaluated with the TAM. Although the positive and negative opinions on to readiness to use ER are almost equal, the negative voices outweigh the positive ones, indicating that the acceptance of ER whould be rejected based on the opinions of the surveys. This emphasises the high relevance of the communication and action recommendations set out in the innovative framework.

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