

MARKETING COMMUNICATION AS A TOOL SUPPORTING ARTIFICIAL INTELLIGENCE ACCEPTANCE IN MEDICAL SERVICES

Marta CHOLEWA-WIKTOR^{1*}, Edward KOZŁOWSKI², Tomasz JAŁOWIEC³

¹ Lublin University of Technology; m.cholewa@pollub.pl, ORCID: 0000-0001-8457-472X

² Lublin University of Technology; e.kozlovski@pollub.pl, ORCID: 0000-0002-7147-4903

³ Warsaw University of Life Sciences, tomasz_jalowiec@sggw.edu.pl, ORCID: 0000-0002-6974-090X

* Correspondence author

Purpose: The research aimed to identify marketing communication determinants affecting AI's positive image in medicine and to identify factors that may enhance or undermine this technology's acceptance.

Design/methodology/approach: The research was based on a self-developed survey questionnaire that examined respondents' beliefs about artificial intelligence in healthcare and the relevance of selected elements of marketing communications. The survey was conducted on 1,000 adults living in Poland.

Findings: Nearly 70% of respondents believe AI can improve the health services' quality, but prefer to remain with health services provided traditionally. 69% of the respondents indicate a deficiency of information related to AI in medicine, with the following considered the best sources of information in this regard: scientific publications, medical institution websites, doctors' recommendations, and medical services. The biggest concerns regarding AI's use in medicine are the lack of legal liability, the risk of misdiagnosis, and the inability to ask further questions. The research results indicate that communication regarding AI use in medicine should be conducted in an educational rather than an advertising campaign format. It is also good practice to support the message with certificates from health institutions and case studies on patient stories.

Research limitations/implications: Respondents' answers in the survey were declarative and concerned selected aspects of marketing communications. In the next research stage, it is worthwhile to make an in-depth analysis of the various marketing messages for AI promotion in healthcare.

Practical implications: The research results obtained can be used by campaign creators to promote artificial intelligence use in healthcare. Identified factors can contribute to medical messages' value in raising acceptance of proposed solutions.

Originality/value: The research verified the influence of demographic characteristics on artificial intelligence perceptions in healthcare and the impact of these characteristics on selected message elements. The research identified marketing communication factors influencing the increased acceptance of artificial intelligence in healthcare.

Keywords: Artificial intelligence in healthcare, AI acceptance.

Category of the paper: Research paper.

1. Introduction

In recent years, artificial intelligence has changed the functioning of almost all industries, including the medical industry. Therefore, healthcare is transforming the traditional medical relationship from human-doctor interaction to healthcare enriched with another variable, new technology. Artificial intelligence (AI) development in the field of health services constantly offers new perspectives, but it also continues to raise huge concerns. Despite the high usage potential, patients remain skeptical about AI and prefer doctors over such technology (Wang, Siou, 2018). Therefore, the acceptance of new technologies in medicine (Ochnik et al., 2024) and trust in AI by both patients and healthcare professionals is a crucial aspect of implementing such solutions. Trust is essential for acceptance, and users must have confidence in the accuracy and complementary role of artificial intelligence over clinical judgment (Nash et al., 2023).

Building trust in AI in medicine begins with the acceptance of such solutions by doctors, whose authority can increase the systems' credibility (Asan et al., 2020). From the patient's perspective, there is a need to better understand and explain how AI works, making information fusion a crucial activity (Albahri et al., 2023). Numerous studies explain the trust phenomenon in AI in healthcare by identifying factors affecting it. Key factors identified that influence healthcare professionals' confidence in medical AI and enhance clinician-machine collaboration include: explainability, transparency, interpretability, usability, and education (Tucci et al., 2021). For patients, accountability, risk perception, facilitating conditions and social impact are important (Wang et al., 2023). Researchers also indicate the user and system characteristics that play an important role in trusting artificial intelligence in healthcare. Both groups of users, including doctors and patients, are influenced by human factors such as knowledge, expectations, mental models, self-efficacy, user type, age, and gender (Jermetus et al., 2022), as well as technology knowledge and education level (Zhang et al., 2020). Additionally, it was indicated that psychosocial factors, including perceived ease of use and usability, are important to both healthcare professionals and patients (Khanijahani et al., 2022). AI acceptance in healthcare is also influenced by systemic factors such as data privacy and security (Jermetus et al., 2022), organizational infrastructure, and stakeholder perspectives (Sides et al., 2023). According to Zang and Zang, ethical issues, including data quality, algorithmic bias and responsibility attribution, also play an important role in this process (Zhang, Zhang, 2023). Based on the literature, confidence in artificial intelligence is generally lower than in doctors, especially for high-risk diagnoses (Juravle et al., 2020). Interestingly, confidence in AI does not increase when people are informed that AI is superior to the human doctor (Juravle et al., 2020). These results emphasize the need for targeted promotional efforts to increase confidence in artificial intelligence in healthcare.

The literature indicates that marketing communication channels significantly influence the perceived usefulness and ease of use of technological innovations. The technology acceptance model assumes that perceived usefulness and ease of use are key determinants of solutions adopted by users (Wang et al., 2008). Therefore, effective marketing communications can also influence AI acceptance in medicine while requiring a proactive attitude and open communication between developers, users, and the general public (Wind et al., 2019). Sebastian's research indicates that effective communication strategies include the use of rhetorical approaches - ethos, pathos, and logos in promotional materials (Sebastian et al., 2023). The authors indicate that promoting AI products to patients through rhetoric-based advertising can help overcome factors hindering AI adoption by mitigating users' concerns about using a new AI agent in the care process (Sebastian et al., 2023). Using the message on the following strategies can increase AI acceptance in medicine (Sebastian et al., 2023):

- Ethos - strategy using credibility and ethics to persuade, mitigate the perceived risks of using AI. In addition, supporting the message with a known, trusted person increases consumer confidence in the product, thereby increasing adoption (Hutchesson et al., 2013);
- Pathos - a strategy that uses emotion and persuasion, mitigate concerns about using AI. It is based on the premise that if someone similar to us recommends a product with a happy emotion, it improves the consumer's innate innovativeness (Skin et al., 2016);
- Logos - a strategy that uses logical reasoning and evidence based on facts and historical data to mitigate perceived risks. Basing the message on facts and historical data.

When creating a communication strategy, it is also necessary to adapt the message to the target audience because, due to knowledge asymmetry, the needs of medical personnel and patients will be different. From the medical personnel's perspective, messages based on AI knowledge and gaining practical experience among healthcare professionals are crucial (Chen et al., 2022). Conversely, patients continue to have concerns about data privacy, ethical use and security (Aggarwal et al., 2020). Marketing communications should emphasize building trust through assurances about data security, educating patients on how to protect their privacy, and being transparent about system use of medical data. Regardless of the target audience, the primary marketing communications role for AI use in medicine remains education to mitigate concerns about new technology change and adoption. Education allows for a better understanding of AI's capabilities and limitations, and increased access to knowledge and information can be achieved through educational meetings with committed local leaders and educational promotional materials (Chen et al., 2022).

2. Methodology

The research aimed to identify the determinants of marketing communications affecting the positive image of AI in medicine and to identify factors that may enhance or undermine this technology's acceptance. Acceptance is defined as the intention or willingness to use, purchase, or try a good or service (Kelly et al., 2023).

In developing the stated goal, the following research questions were formulated:

1. Do and how do demographic characteristics differentiate the preferred marketing communications elements for AI use in medicine?
2. What concerns do patients have about AI use in healthcare?
3. What measures can enhance patients' comfort with AI in medical services?
4. What marketing communication channels are preferred for getting the information about AI in health care?

The research verified the influence of demographic characteristics on the answers to the questions posed in the questionnaire. The χ^2 independence test was used to analyze the relationship between qualitative characteristics. Let $(\Omega, \mathcal{F}, P)$ be a probability space and random variables $X: \Omega \rightarrow S_X = \{a_1, \dots, a_k\}$, $Y: \Omega \rightarrow S_Y = \{b_1, \dots, b_m\}$. At the significance level α , $0 < \alpha < 1$ a working hypothesis:

H_0 : no relationship between features X and Y (features are independent), i.e. for any

$$a \in S_X, b \in S_Y \\ P(X = a, Y = b) = P(X = a)P(Y = b) \quad (2.1)$$

and the alternative hypothesis

H_1 : there is a relationship between the features X and Y , i.e. for any $a \in S_X, b \in S_Y$

$$P(X = a, Y = b) \neq P(X = a)P(Y = b) \quad (2.2)$$

were formulated.

Let $\{(x_i, y_i)\}_{1 \leq i \leq n}$ denote the sequence of realizations of features X and Y . The numbers $n_{ij} = \#\{s: 1 \leq s \leq n, x_s = a_i, y_s = b_j\}$ are determined where $\#$ (cardinality) means the power of the set, $1 \leq i \leq k, 1 \leq j \leq m$. In addition, the marginal numbers $n_{i.} = \sum_{j=1}^m n_{ij}$ and $n_{.j} = \sum_{i=1}^k n_{ij}$ were determine where $\sum_{j=1}^m n_{.j} = \sum_{i=1}^k n_{i.} = n$. Test statistic (Hastie, 2009).

$$\chi^2 = \sum_{i=1}^k \sum_{j=1}^m \frac{(n_{ij} - \hat{n}_{ij})^2}{\hat{n}_{ij}}, \quad (2.3)$$

where $\hat{n}_{ij} = \frac{n_{i.}n_{.j}}{n}$, has an χ^2 distribution with $(k - 1)(m - 1)$ degrees of freedom. Therefore, the test probability $p_{val} = P(\chi^2 \geq \chi^2)$. If $p_{val} \leq \alpha$, then at the significance level α the working hypothesis is rejected in favor of the alternative hypothesis, so there is a relationship between the characteristics X and Y .

The magnitude of the χ^2 statistic does not show the strength of the relationship between the X and Y variables. To estimate the strength of the relationship (correlation) between these variables, we determine the V-Cramer coefficient.

$$V_{Cramer} = \sqrt{\frac{\chi^2}{n(\min(k,m)-1)}} \quad (2.4)$$

The conventional interpretation of the relationship strength between features is as follows:

- $V_{Cramer} \in [0,0.3)$ - weak relationship between features X and Y ;
- $V_{Cramer} \in [0.3,0.5)$ - moderate relationship between features X and Y ;
- $V_{Cramer} \in [0.5,1]$ - strong relationship between features X and Y .

The research was conducted using a self-developed survey questionnaire with questions grouped into 7 thematic areas and a metric. A Likert scale was used in questions examining respondents' beliefs about the relevance of each component of communication messages. To assess the survey questionnaire's reliability, an internal consistency analysis was conducted using Cronbach's alpha coefficient (Table 1). Cronbach's alpha coefficient values were above 0.78, indicating the research tool's high reliability.

Table 1.

Assessment of the survey questionnaire's reliability

Indicators	set 2	set 3	set 4	set 5	set 6	set 7
Cronbach's alpha	0.8145365	0.7836866	0.8335960	0.9201844	0.9184653	0.8713789
Guttman' lambda	0.8073954	0.8166592	0.8281923	0.9328445	0.9380662	0.8721875
McDonald's omega	0.8573208	0.8735700	0.8641502	0.9389612	0.9419952	0.9016609

Source: own elaboration based on survey results.

The study encompassed a sample of 1000 adult Poles, participants of the online research panel *Badanie Opinii*. This criterion was necessary due to the selected sampling frame. The sample included a representative distribution by age and gender based on data from Statistics Poland (GUS), derived from the 2021 National Census, updated as of December 7, 2023.

To determine the weighting factors enabling representative estimates for the population of online panel users, the proportion of individuals using the Internet (defined as using the Internet at least once a week) by age and gender was taken into account. These weights were then used to adjust the population figures, multiplying the number of individuals in each age and gender group by the corresponding weighting factor:

- Ages 18-24: 0,98 for women, 1,00 for men,
- Ages 25-34: 1,00 for women, 0,99 for men,
- Ages 35-44: 0,96 for women, 0,96 for men,
- Ages 45-54: 0,88 for women, 0,85 for men,
- Ages 55-64: 0,69 for women, 0,64 for men
- Aged 65 and over: 0,36 for women, 0,52 for men.

3. Results

The sample size was 1000 participants and was representative of Poland. All participants signed a written consent and were eligible for the study (over 18 years old). No responses were omitted. The surveyed group included people from all the distinguished age ranges. Only 3 respondents indicated a different gender, the rest declared that they were female or male. Women slightly outnumbered men (50,3%). The largest age group was respondents aged 35-44 (24.8%), living in large cities (over 200,000 inhabitants). Respondents were also asked whether they were professionally involved in the medical or related profession and whether they were professionally involved in AI. Only 12.3% of the sample is in the medical profession, and 10.40% is professionally related to the AI sector. The research sample's characteristics are presented in Table 2.

Table 2.
Research sample characteristics

Variable		n	%
Gender	Women	503	50.30%
	Men	494	49.40%
	Other	3	0.30%
Age	Up to 24 years	103	10.30%
	More than 25 to 34 years	194	19.40%
	More than 35 to 44 years	248	24.80%
	More than 45 to 54 years old	195	19.50%
	More than 55 to 64 years	126	12.60%
	Over 65 years	134	13.40%
Place of residence	Rural	205	20.50%
	City up to 10 thousand residents	43	4.30%
	City of more than 10 to 50 thousand residents	191	19.10%
	City of more than 50 to 100 thousand residents	126	12.60%
	City of more than 100 to 200 thousand residents	117	11.70%
	City of more than 200 thousand residents	318	31.80%
Medical or related profession	Yes	117	11.70%
	No	883	88.30%
Profession related to the AI sector	Yes	104	10.40%
	No	896	89.60%

Source: own elaboration based on survey results.

In the first part of the survey, respondents were asked about their attitudes toward AI use in healthcare. Respondents rated the truthfulness of the following statements on a four-point Likert scale:

1. Artificial intelligence can improve health service quality.
2. Artificial intelligence may replace doctors in the future.
3. I prefer traditional medical consultations without artificial intelligence involvement.
4. I would be willing to use AI diagnosis instead of visiting a doctor if it was faster and more affordable.
5. I prefer when the final medical decision belongs to the doctor, not to AI.

The respondents' evaluation results are presented in Table 3. The majority of respondents (69.5%) believe that AI can improve health services quality (answers “rather yes” and “yes”). Despite this belief, those surveyed prefer to stay with services provided traditionally, which means medical consultations without AI (84.7% of responses) and final decision-making by the doctor (89.5% of affirmative responses - “rather yes” and “yes”). Moreover, even in a situation where AI would provide faster and more affordable access to a medical service, 28% of respondents would certainly use it, while 37.10% would rather not use such an option. The majority of respondents (76.2%) do not see a threat for AI to replace doctors in the future (answers “no” and “rather no”). Performing statistical analysis of the relationship between responses to these questions and demographic variables, statistically significant relationships were observed for statements 1, 2, 4, and the variable gender, 3 and the variable age, and 2 and 4 and the variable profession related to AI (Table 4). Considering the gender variable, it was noticed that:

1. Men are far more likely to agree with the statement that AI can improve health services quality (50.40% “rather yes” and 23.48% “yes” responses) than women (48.71% “rather yes” and 16.5% “yes” responses).
2. Men are more likely to agree with the statement that AI could replace doctors in the future (18.22% “rather yes” and 10.93% “yes” responses) than women (13.92% “rather yes” and 4.77% “yes” responses).
3. Men would be more likely to use AI diagnosis if it were faster and more affordable (28.14% “rather yes” and 11.74% “yes” responses) than women (21.87% “rather yes” and 8.15% “yes” responses).

Considering respondents' age and preference for traditional medical consultations, it can be seen that the need for traditional consultations increases with age (“yes” answers in the group from 18-24 years 40.78%, from 55-64 years 53.17% and over 64 years 61.94%). Meanwhile, analyzing the dependencies regarding the AI occupation variable, it can be noted that:

1. AI professionals are significantly more likely to agree with the statement that AI could replace doctors in the future (28.85% “rather yes” and 15.38% “yes” responses) than others (14.51% “rather yes” and 6.92% “yes” responses);
2. AI professionals are more likely to use an AI diagnosis if it were more affordable and quicker compared to a traditional visit (36.54% “rather yes” and 19.23% “yes” responses) than others (23.66% “rather yes” and 8.82% “yes” responses).

Table 3.
Respondents' attitudes towards AI in healthcare

	No	Rather no	Rather yes	Yes	Total
Artificial intelligence can improve health service quality.	11.70%	18.80%	49.60%	19.90%	100.00%
Artificial intelligence may replace doctors in the future	40.30%	35.90%	16.00%	7.80%	100.00%
I prefer traditional medical consultations without artificial intelligence involvement	4.80%	12.30%	35.70%	47.20%	100.00%

Cont. table 3.

I would be willing to use AI diagnosis instead of visiting a doctor if it was faster and more affordable	28.00%	37.10%	25.00%	9.90%	100.00%
I prefer when the final medical decision belongs to the doctor, not to AI	4.50%	6.00%	28.40%	61.10%	100.00%

Source: own elaboration based on survey results.

Table 4.

Influence of gender, age, and AI-related profession characteristics on attitudes toward AI use in medicine

Dependencies	Statistics	p_val	Hyp.	Cramer_V
Gender				
1 - Artificial intelligence can improve health service quality.	13.964729	0.03003	H1	0.08356
2 - Artificial intelligence may replace doctors in the future.	29.058557	5.9304×10^{-5}	H1	0.12050
4 - I would be willing to use AI diagnosis instead of visiting a doctor if it was faster and more affordable.	21.037860	0.00181	H1	0.10260
Age				
3 - I prefer traditional medical consultations without artificial intelligence involvement.	35.558723	0.00205	H1	0.10890
AI-related profession/other				
2 - Artificial intelligence may replace doctors in the future.	26.9160576	6.1308×10^{-6}	H1	0.16410
5 - I prefer when the final medical decision belongs to the doctor, not to AI.	26.4048748	7.8458×10^{-6}	H1	0.16250

Source: own elaboration based on survey results.

Respondents were asked to rate the truthfulness of the statement “I feel I lack sufficient information on using AI in medicine” on a four-point Likert scale. 29.10% answered “yes”, 40.10% “rather yes”, 20% “rather no”, and 10.80% “no”. The results indicate that more than 69% of respondents feel, to varying degrees, a shortage of information regarding AI use in medicine. Respondents were also asked about communication channels and tools relevant to learning about AI in medicine. To achieve this, they evaluated the significance of the identified potential channels on a five-point scale, where 1 meant not very important, while 5 meant very important. The mean value and standard deviation were then calculated for the responses obtained (Table 5). The sources of information on AI in healthcare for respondents are not: advertisements (2.422), blogs (2.567), podcasts (2.72), radio (2.816), daily press (2.847), forums and discussion groups (2.878) and television (2.931). Meanwhile, respondents rated the following highest: scientific publications (3.83), medical facility websites (3,823), doctor recommendations (3,789), and medical websites (3,696). Analyzing the statistical relationship between the communication channels most highly rated by respondents and demographic variables, statistically significant relationships were observed for the medical facilities website vs. gender and age variable, physician recommendations vs. age variable, medical or allied health profession and AI-related profession, and scientific publications vs. age variable (Table 6). The following relationships were observed:

1. Medical facility websites - received higher ratings from women (average response of 3.93) compared to men (average response of 3.71), and older individuals (those over 64 years old) rated them even higher, with an average response of 4.32.
2. Doctors' recommendations - received the highest ratings from older respondents, with an average score of 4.172 from those over 64. Additionally, individuals not in the medical or allied health professions rated these recommendations (a mean score of 3.65, others 3.8). Furthermore, respondents who are not professionally engaged with AI gave an average rating of 3.8, and others gave 3.67;
3. Scientific publications - were rated highest by older respondents (average response for those over 64 years old 4.03).

Table 5.

Evaluation of communication channels/tools in acquiring knowledge about AI in medicine

Communication channels/tools	Average response value	Standard deviation
Government and health institution websites	3.693	1.216
Medical facility websites	3.823	1.188
Medical websites	3.696	1.158
Social media	2.812	1.303
Advertisements	2.422	1.278
Doctors' recommendations	3.789	1.179
Relatives' recommendations	3.485	1.159
Scientific publications	3.83	1.124
Daily press	2.847	1.198
Industry press	3.243	1.166
Radio	2.816	1.223
Television	2.931	1.256
Podcasts	2.72	1.283
Blogs	2.567	1.222
Forums and discussion groups	2.878	1.221
Medical conferences and events	3.6	1.162

Source: own elaboration based on survey results.

Table 6.

Influence of gender, age, AI-related profession and medical or related profession characteristics on evaluation of selected communication channels in acquiring knowledge about AI in medicine

Dependencies	Statistics	p_val	Hyp.	Cramer_V
Gender Medical facility websites	20.160702	0.00974	H1	0.10040
Age Medical facility websites	67.043930	5.4919×10^{-7}	H1	0.12950
Doctors' recommendations	49.355490	0.00027	H1	0.11110
Scientific publications	35.798743	0.01624	H1	0.09460
AI-related profession Doctors' recommendations	13.6433884	0.00852	H1	0.11680
Medical and related profession Doctors' recommendations	10.2246303	0.03681	H1	0.10110

Source: own elaboration based on survey results.

Another issue was potential concerns about AI use in healthcare. Respondents rated the importance of the identified potential risks on a five-point scale, where 1 meant not very important and 5 meant very important. The mean value and standard deviation were then calculated for the responses obtained (Table 7). For respondents, all of the points identified were important (mean response above 3.6), with the biggest concerns being lack of legal liability (4.13), risk of misdiagnosis (4.027), and inability to ask further questions (4.023). Analyzing the statistical relationship between AI concerns and demographic variables, statistically significant relationships were observed for the variables gender and age and risk of misdiagnosis, lack of legal liability and inability to ask further questions (Table 8).

The following relationships were observed:

1. Risk of misdiagnosis - concerns about the occurrence of this threat were, on average, rated higher by women (mean response of women 4.13, men 3.91) and those aged 55-64 (mean response of 4.18) and those aged over 64 (mean response of 4.09), while the lowest mean response was obtained by those aged 18-24 (mean response of 3.84).
2. Lack of legal liability - women had a higher average response value to this question (4.26 women, 3.99 men), and older respondents- over 64 years of age (average response value of 4.29, while for the group of the youngest respondents, 18- 24 years of age, the value was 3.75).
3. Inability to ask further questions - women had a higher average response value to this question (4.20 women, 3.85 men), and older respondents - over 64 years old (average response value of 4.36, while for the group of the youngest respondents 18-24 years old the value was 3.75).

Table 7.
Concerns about artificial intelligence in medicine

Threats	Average response value	Standard deviation
Lack of empathy and contact with the other person	3.745	1.273
Lack of intuition and human experience	3.992	1.059
Risk of misdiagnosis	4.027	1.014
Data security	3.787	1.176
Lack of legal liability	4.13	1.030
Fear of dependence on technology	3.649	1.197
Lack of consideration of non-standard/unique factors	3.897	1.059
Inability to ask further questions	4.023	1.032
Ambiguity of decisions	3.982	0.982

Source: own elaboration based on survey results.

Table 8.
Influence of gender and age characteristics on highest rated AI concerns

Dependencies	Statistics	p_val	Hyp.	Cramer_V
Gender				
Risk of misdiagnosis	22.132226	0.00468	H1	0.10520
Lack of legal liability	20.656098	0.00812	H1	0.10160
Inability to ask further questions	35.837439	1.8805×10^{-5}	H1	0.13390

Cont. table 8.

Age				
Risk of misdiagnosis	36.697322	0.01272	H1	0.09578
Lack of legal liability	34.718136	0.02166	H1	0.09316
Inability to ask further questions	39.766119	0.00535	H1	0.09971

Source: own elaboration based on survey results.

Considering the existing concerns, respondents were asked about actions they believe could enhance the comfort of using AI in healthcare. The respondents rated the importance of the identified potential actions on a five-point scale, where 1 indicated not very important and 5 indicated very important. The mean value and standard deviation were subsequently calculated for the obtained responses (Table 9). Assigning human traits to AI, like avatars or tones of voice, lacked meaningful purpose. Meanwhile, the most important measures according to respondents that could increase the comfort level with AI concern the following areas:

1. Opportunities to check AI diagnosis i.e.: additional consultation with a doctor - after AI diagnosis (4,177) and the possibility to compare AI diagnosis with a doctor's diagnosis (4,108).
2. Legal issues regulation i.e.: legal regulations related to personal data security (4.093) and legal regulations related to AI liability (4.092).

Statistical analysis of the highest rated responses and demographic variables revealed the following relationships (Table 10):

1. Ability to compare AI's diagnosis with the doctor's diagnosis - the average response of women 4.19, men 4.01. Furthermore, it was noted that with age the relevance of this activity increases for respondents. The average response for those over 64 years old was 4.5, while for those from 18-24 years old it was 3.88.
2. Ability to consult a doctor after AI analysis - the importance of this activity increases for respondents with age. The average response for those over 64 years old was 4.61, while for those from 18-24 years old it was 3.85.
3. Legal regulations related to liability - the importance of this activity increases for respondents with age. The average response for those over 64 was 4.36, while for those from 18-24 it was 3.74. Surprisingly, slightly higher importance was given to this activity for non-medical professionals (average response of 4.11, while for medical professionals the average response was 3.93).
4. Legal regulations related to data security - this activity was most important for the elderly - the average response for those over 64 was 4.39, while for those from 18-24 it was 3.82.

Table 9.*Activities that can increase the comfort level with AI in healthcare*

Activities	Average response value	Standard deviation
Doctors and medical facilities recommendation	3.425	1.176
Positive feedback from other patients	3.535	1.194
Scientific studies confirming AI's effectiveness	3.624	1.199
Clear explanation of the basis for AI's diagnosis	3.818	1.154
Ability to compare AI's diagnosis with the doctor's diagnosis	4.108	1.063
Access to the history of previous AI analyses and decisions	3.757	1.125
Ability to verify the sources from which AI draws its knowledge	3.866	1.149
AI certification by medical institutions	3.852	1.217
A well-known brand name for the AI solution	3.164	1.295
Ability to consult a doctor after AI analysis	4.177	1.034
Intuitive mobile app or website	3.439	1.179
Ability to use AI at any time (24/7)	3.698	1.211
Giving AI "human" characteristics, e.g. avatar, voice	2.995	1.293
Legal regulations related to AI liability	4.092	1.101
Legal regulations related to data security	4.093	1.112

Source: own elaboration based on survey results.

Table 10.*Influence of gender, age, and medical or related profession characteristics on highest-rated activities that can increase comfort in using AI in healthcare*

Dependencies	Statistics	p_val	Hyp.	Cramer_V
Gender Ability to compare AI's diagnosis with the doctor's diagnosis	17.617465	0.02428	H1	0.09385
Age Ability to compare AI's diagnosis with the doctor's diagnosis	48.594254	0.00035	H1	0.11020
Ability to consult a doctor after AI analysis	84.274050	7.3010×10^{-10}	H1	0.14510
Legal regulations related to AI liability	39.643500	0.00554	H1	0.09955
Legal regulations related to data security	43.471531	0.00177	H1	0.10420
Medical and related profession Legal regulations related to AI liability	16.9952416	0.00194	H1	0.13040

Source: own elaboration based on survey results.

The final group of issues concerned perceptions of selected marketing communications elements used to promote AI in medicine. In this case, a four-point Likert scale was also used to help assess perceptions of selected activities (Table 11). Respondents are convinced that communication about AI use in medicine should be conducted in an educational rather than advertising campaign format (39.5% "yes" and 40.5% "rather yes" responses). According to respondents, it is also good practice to support the message with certificates from health institutions (67.5% of respondents state that this can influence their AI decisions). Respondents also agree with statements that promotional materials should be prepared professionally (46.7% of responses "rather yes," and 18.10% "yes"), and that a good element of communication is a case study containing stories of patients using AI (40.9% of responses "rather yes," and 22.50% "yes"). Statistical evaluation revealed significant correlations between the need to promote AI educationally and the age variable (statist. 40.111626, p_val 0.00044,

Cramer V 0.11560). The oldest respondents - people over 64 years - see a greater need for educational campaigns; in this group, as many as 50.75% answered “yes” to this question and 41.04% “rather yes”.

Table 11.

Evaluating perceptions of selected marketing communication activities regarding AI use in healthcare

	No	Rather no	Rather yes	Yes	Total
Professionally prepared marketing materials (e.g., website, brochures) about AI solutions in medical services make me perceive these solutions as more professional and convincing	12.40%	22.80%	46.70%	18.10%	100.00%
AI in medicine should be promoted educationally, not just in an advertising way	7.10%	12.90%	40.50%	39.50%	100.00%
Certification and official AI approval by health institutions may influence my decision to try it	9.00%	18.50%	44.20%	28.30%	100.00%
I will be more willing to use AI if marketing communications include stories from patients who have benefited from it	11.80%	24.80%	40.90%	22.50%	100.00%

Source: own elaboration based on survey results.

4. Conclusion

New technologies like AI cause anxiety and fear of the unknown (Chen, 2025), therefore, they require an information campaign before they are accepted by users. The survey revealed that respondents are aware of AI development in the medical field. 69.5% of respondents indicate that AI can improve health services quality, results that are consistent with Gao's findings (Gao et al., 2020). Despite this awareness, they still do not fully accept the use of artificial intelligence in healthcare, as evidenced by the fact that respondents prefer to stay with services provided traditionally, which means medical consultations without AI and final decision-making by the doctor. This suggests that AI is best positioned as a complementary tool rather than a replacement for human decision-making (Almeida et al., 2025). Respondents' biggest concerns about AI in healthcare included: lack of legal accountability, risk of misdiagnosis, and inability to ask further questions whenever anything was unclear, with women and older respondents feeling these concerns to a greater extent. This result is consistent with previous scientific findings in this area. A study conducted by D. Khullar found that the majority of respondents were concerned about the unintended consequences of AI, including misdiagnosis (91.5%), privacy violations (70.8%), and less time spent with doctors (69.6%) (Khullar et al., 2022). Research results indicate that more than 69% of respondents feel, to varying degrees, information deficiency related to AI use in medicine, which may affect the acceptance level of these solutions (Robertson, 2023). The research also found that those

working in the AI sector are more accepting of AI's use in healthcare- they are more likely than other groups to say that AI could replace doctors in the future and are more likely to use AI diagnosis if it were more affordable and quicker compared to a traditional visit. This result may be due to greater knowledge of AI among this respondent group, which in turn may have an impact on the higher level of technology acceptance. One way to build acceptance of new technologies is through properly conducted marketing communications (Wind et al., 2019). The most preferred communication channels for AI in healthcare by respondents are: scientific publications, medical facility websites, doctor recommendations and medical websites. It is worth emphasizing that the indicated sources are rated higher by older people (over 64 years old), while recommendations by doctors were rated higher by those not in the medical or related professions and those not professionally involved in the AI sector. Respondents also identified activities that could increase the user experience with AI, thus influencing the technology's acceptance. The main areas concern: the ability to verify the AI diagnosis, i.e.: additional consultation with a doctor - after the AI diagnosis and the ability to compare the AI diagnosis with the doctor's diagnosis, and the legal regulation of legal issues, i.e.: legal regulations related to personal data security and legal regulations related to AI liability. Therefore, it seems reasonable to emphasize these aspects in AI communications. Research indicates that communication about AI use in medicine should be conducted in an educational rather than an advertising campaign format. It is also good practice to indicate in the message that AI technology is supported by certificates from health institutions and professionally prepared marketing materials like brochures. Complementing the message that contributes to AI's acceptance in healthcare, according to respondents, are materials containing stories of patients who have benefited from the use of artificial intelligence to treat diseases.

The results of the conducted research allow for the formulation of recommendations for the healthcare sector, including medical service providers, technology developers, and regulatory bodies. Given the numerous concerns surrounding the use of artificial intelligence (AI) in healthcare, it is essential to design communication campaigns grounded in education. For medical service providers, such as hospitals and physicians, marketing efforts should clarify that AI serves as a support tool rather than a replacement for the physician, explicitly emphasizing that the final decision always rests with a human. A good practice in this regard would be to involve healthcare professionals directly in marketing communication, where they could act as credible ambassadors. From the perspective of technology developers, communication strategies should be based on storytelling and include case studies that present real patient experiences. It is also recommended to employ human-centered metaphors—such as referring to AI as a “patient assistant” rather than an “algorithm” or “AI system”. To ensure comprehensive communication, regulatory authorities should also be actively involved, for example, by initiating nationwide educational campaigns about AI in healthcare, akin to those conducted for vaccinations. The coherence of messaging is crucial; thus, educational initiatives led by the government, healthcare providers, and technology

developers should not be contradictory but rather complementary, employing consistent terminology.

The content of communication should explain what AI is and highlight the benefits of its application in healthcare. It is recommended to develop diversified communication strategies that take into account patients' level of knowledge, age, gender, as well as their specific needs and concerns. Message framing may be based on emotional appeals that draw on empathy, safety, and hope. In such cases, messages can refer to care for the patient and the safety of their family. Furthermore, content creators should avoid using technological jargon, which may render the message incomprehensible to patients.

When constructing marketing messages related to AI in healthcare, it is essential to consider ethical aspects, particularly in relation to sensitive issues such as personal data protection and diagnostic errors. Transparency and communicative honesty must serve as the foundation of such efforts. Consequently, marketing communication should avoid portraying artificial intelligence in an overly optimistic light, instead presenting its actual capabilities alongside its limitations. Moreover, it must be acknowledged that health data are sensitive by nature and, as such, cannot be used for advertising profiling or shared without explicit and informed consent.

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