



PERSONALIZATION, TRUST AND PATIENT-CENTRIC DIGITAL MARKETING: AN EMPIRICAL INVESTIGATION OF ONLINE HEALTHCARE SERVICES

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Abstract

The rapid digital transformation of healthcare has altered the patient-provider relationship, and one of the crucial factors in patient satisfaction is now personalised online marketing. Personalization, relevance and trust play an important role in the satisfaction of online health services. The research takes a sample of 400 healthcare companies and individual patient responses which are examined through quantitative methods such as regression and structural equation modelling to examine direct and indirect effects. The results indicate that personalization can significantly enhance the perceived relevance and trust, which in turn boosts patient satisfaction. The findings underline the importance of ethical data handling and managerial implications of healthcare firms that are interested in patient-centric marketing. The paper will add to the theoretical debate on digital marketing in the healthcare sector, as it will include the main concepts of personalization, trust and relevance in theories such as Technology Acceptance Model and Commitment-Trust Theory.

Keywords: Healthcare, Patient Satisfaction, Digital Transformation, Personalization, Trust, Relevance.

INTRODUCTION

The application of digital technologies that change clinical practice and relations between healthcare professionals and patients is also a radical change to the global healthcare systems. Organizations have also opened new opportunities to work with patients through one-on-one communication, targeted advertising, and AI-based recommendations with the advent of online healthcare (Kotler and Keller, 2016; Chaffey and Ellis-Chadwick, 2019). Unlike the traditional mass-based marketing methods, digital marketing with personalization works with patient-specific data to deliver tailored messages, thereby enhancing relevance and developing trust (Chen et al., 2020; Bucher, 2023).

The patient satisfaction has become a key outcome variable in healthcare, which has an impact on loyalty, clinical, and organizational success (Oliver, 1997; Anderson and Sullivan, 1993). Individualized marketing programs adapt healthcare services to the needs of each patient, enhancing its accessibility, effectiveness, and perceived worth (Parasuraman et al., 1988; Mayasari and Rachmat, 2025). In addition, the mistrust of digital platforms is also crucial, and patients should be sure that their personal health information is handled in a way that does not violate ethical standards but is safe (Gefen, 2000; Kim and Park, 2020).

The empirical data that will be discussed in the present paper comprises the answers of 400 healthcare companies that differ in terms of their sizes, types of ownership, and the range of geographic locations. Personalized communication, targeted advertisements, AI recommendations, perceived relevancy, trust in platform, and satisfaction levels were measured using five-point Likert scale to determine their variables. An initial correlation analysis shows that there are strong relationships between personalization and satisfaction through the mediation of trust and relevance. As an example, companies scoring higher in AI suggestions and individualized communication also indicated a high level of patient trust and satisfaction.



The research is based on the previous literature by supporting the intermediation effects of trust and relevance in the personalization-satisfaction relationship using empirical evidence. Although the conceptual relationship between these constructs has been previously established in previous studies, limited studies have examined them with the use of large-scale quantitative data (Gefen et al., 2003; Pappas, 2018). Also, there is a lack of research focusing on ethical issues of data privacy, even though they are vital in healthcare marketing (Kaplan and Haenlein, 2010; Liang and Turban, 2011).

The advent of AI-based personalization in healthcare marketing is both a chance and a challenge. On the one hand, AI algorithms have the ability to interpret patient actions to provide very relevant recommendations, thus achieving greater satisfaction (Wang et al., 2019; Luo et al., 2020). Alternatively, sensitive patient data undermine the concept of privacy, consent, and transparency as per ethical concerns (Berry, 2015; Zhang and Prybutok, 2005). Healthcare organizations must therefore balance out personalization and robust privacy settings so as to keep the patient confidence.

The Theoretical Models that will be used in the theoretical foundation of this study are Technology Acceptance Model (Davis, 1989), Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003) and the commitment-trust Theory (Morgan and Hunt, 1994). The models underline the perceived usefulness, relevance, and trust as determinants of satisfaction and loyalty. In this research, there is a subtle understanding of how patient behaviour can be affected by digital marketing efforts in the context of the healthcare sector by integrating personalization into the structures.

The objectives of the study are four-fold: to examine the direct role of personalized digital marketing on patient satisfaction, to examine the mediation of perceived relevance, to examine the mediation of trust, and to examine ethical and privacy concerns that surround personalization. The questions of the research are what will be the effect of personalization on satisfaction, relevance and trust mediate the relationship and how the implementation of patient-centric marketing can be strategically made by healthcare organizations without compromising on privacy.

The research paper has an influence on the academic work and practice in management. It also empirically validates the mediating effects of trust and relevance thereby extending the existing theories. As a management instrument, it is offering viable ideas to healthcare institutions that wish to enhance patient satisfaction, and individualized marketing. These findings prove that it is important to invest in AI-based personalization technologies and invest in ethical practices in relation to data, simultaneously.

It is a digital transformation of healthcare that requires reconsideration of marketing strategies. Ethical and effective personalized digital marketing can greatly improve patient satisfaction. However, such strategies are effective only when they are combined with the personalization, relevance, and trust. This study provides empirical findings to support this interaction, which has both theoretical and practical implications of the future of the digital marketing of healthcare.

REVIEW OF LITERATURE

Digital healthcare marketing has developed under the influence of the general changes in marketing science, patient-centred care, and the technological revolution. The initial marketing approaches were based on the mass communication and standardized outreach, yet the emergence of digital technologies made it possible to switch to individualized engagement,



relevance, and trust (Kotler and Keller, 2016; Rust and Huang, 2014). Healthcare is another area where personalization is especially important due to the heterogeneity, sensitivity and close relationship to trust and confidentiality of patient needs (Gefen, 2000; Davis, 1989). Personalized digital marketing is thus a paradigm shift in terms of transactional communication to relational interaction where patient satisfaction is not just a determinant of service quality but also a determinant of loyalty and clinical outcome (Oliver, 1997; Anderson and Sullivan, 1993).

Personalized marketing is the personalization of messages, services, and suggestions to target consumers depending on their preferences, behaviours, and demographics (Chaffey and Ellis-Chadwick, 2019; Payne and Frow, 2017). This practice has become popular in the healthcare sector as more and more focus is placed on patient-centred care and more digital solutions are used (Smith, 2017; Verhoef et al., 2021). The empirical data show that personalization has a positive impact on patient involvement and satisfaction through the provision of timely and relevant information (Hapsari and Asaari, 2024; Bucher, 2023). Suggestions offered by AI and personalized communication have proven to have a positive impact on patient experiences by delivering meaningful, context-sensitive healthcare messages (Chen et al., 2020; Wang et al., 2019).

Digital marketing healthcare is not just a marketing instrument but a system of enhancing communication, access, and the quality of services (Parasuraman et al., 1988; Zeithaml, 1988). The quality of digital interactions and personalization of services is becoming more crucial in terms of patient satisfaction and loyalty (Mayasari and Rachmat, 2025; BMC Health Services Research, 2025). Online communication leads to patient satisfaction and loyalty, as well as improved patient experience (Lemon and Verhoef, 2016; Kumar and Reinartz, 2016). This type of relationship approach highlights the significance of personalization as a motivator of long-term patient-provider relationships.

The combination of data analytics and artificial intelligence has greatly broadened the possibilities of the personalized healthcare marketing. The systems powered by AI will be able to process the information about a patient and offer a personalized recommendation, thus increasing engagement and satisfaction levels (Chen et al., 2020; Luo et al., 2020). It is demonstrated that AI and IoT technologies can be used in healthcare services and enhance their efficiency and patient outcomes (Taimoor and Rehman, 2022; Deepu and Ravi, 2021). The analytics of big data also helps healthcare institutions to determine trends in patient behaviour and act proactively and target individuals (Wedel and Kannan, 2016; Shankar et al., 2021). These technological innovations underscore the possibility of personalization to revolutionize the process of healthcare delivery by matching services to those of patients.

In the connection between personalization and satisfaction, trust is a key factor. The commitment-trust theory holds that the quality of relationships and the loyalty depend on the basis of trust (Morgan and Hunt, 1994). Trust is essential especially in digital healthcare since patients need to be convinced that their personal information is safe and addressed in an ethical way (Kim and Park, 2020; Bhattacharjee, 2001). Empirical research proves the effectiveness of personalization to increase satisfaction directly and indirectly with trust (Gefen et al., 2003; Pappas, 2018). The mediating role of trust between personalization and satisfaction is facilitating the trustworthiness of digital platforms to patients to build on the loyalty and long-term engagement. Perceived relevance mediates the correlation between personalization and satisfaction as well. When patients feel the services are relevant to them, they will be more likely to interact with them and can result in increased levels of satisfaction (Ajzen, 1991; Venkatesh et al., 2003). Relevance creates trust through the satisfaction that providers are aware



of the needs of patients which in turn creates satisfaction (Oliver, 1997; Anderson and Sullivan, 1993). The mediating effect of relevance in the healthcare marketing is supported by the Technology Acceptance Model (Davis, 1989) and Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003) which consider perceived usefulness and relevance as important factors in user satisfaction.

Nonetheless, there are considerable challenges even though there are benefits of personalization. The crucial challenges associated with the digital healthcare marketing include the data privacy, ethical issues, and information security (Kaplan and Haenlein, 2010; Liang and Turban, 2011). The fact that sensitive patient data are used to market the product makes the aspect of confidentiality and trust questionable, which may damage the satisfaction without the appropriate reaction (Berry, 2015; Zhang and Prybutok, 2005). Ethical guidelines and legal conformities are thus necessary to make sure that personalization improves and not degrades patient satisfaction (Rogers, 2003; Bandura, 1986).

The digital healthcare patient satisfaction has theoretical models that give excellent insights. The Technology Acceptance Model emphasizes on the usefulness and ease of use as predictors of adoption (Davis, 1989). The Unified Theory of Acceptance and Use of Technology focus on the performance expectancy, effort expectancy, and social influence (Venkatesh et al., 2003). The dimensions of quality of service that are addressed by the SERVQUAL model are reliability, responsiveness and empathy (Parasuraman et al., 1988). All these models present the significance of personalization, relevance, and trust in patient satisfaction development (Hair et al., 2019; Kline, 2015).

Personalization has been shown to have a positive effect on patient satisfaction based on empirical research. Research indicates that individualized communication, personalized advertising and AI suggestions are highly effective in promoting patient engagement and satisfaction (Chen et al., 2020; Wang et al., 2019). Correlation tests indicate that there are significant positive correlations between personalization, trust and satisfaction and support the mediating roles of trust and relevance (Gefen et al., 2003; Morgan and Hunt, 1994). The outcomes of regression prove that personalization has a direct impact on satisfaction as well as it influences the relevance and trust, which in turn positively influence satisfaction (Parasuraman et al., 1988; Lemon and Verhoef, 2016).

There are however still gaps in the literature. A significant part of the current literature focuses on the theoretical work or case studies, and little empirical research has been verified over time (Rust, 2020; Kumar, 2018). Investigations are frequently oriented at developed nations, which restrict the applicability of the obtained results to the emerging markets with other infrastructural and cultural backgrounds (Luo et al., 2020; Barta et al., 2023). Trust and relevance have been recognized as conceptual mediating variables, but have seldom been tested empirically (Gefen, 2000; Ajzen, 1991). These are ethical concerns and privacy of the data, which are known but not well studied in empirical studies (Kaplan and Haenlein, 2010; Liang and Turban, 2011). The use of cross-sectional designs and methodological constraints, including the inability to capture longitudinal dynamics, further reduce the potential to capture longitudinal dynamics (Hair et al., 2019; Kline, 2015).

Finally, the literature indicates that patient satisfaction has a positive impact on personalized digital marketing, through the mediation of trust and relevance. Personalization increases engagements, perceived usefulness, and loyalty, and trust provides the patients with a feeling of security and value. However, issues of ethics and privacy have to be resolved to continue patient satisfaction in electronic healthcare. Further studies need to be conducted on empirical



validation, new market environment, mediating variables and longitudinal studies to offer a deeper insight into personalization in healthcare marketing.

RESEARCH METHODOLOGY

The research design of this paper was to critically investigate the effects of customized online marketing on patient satisfaction in online medical care. As patient engagement is a complicated process, and digital marketing is a multidimensional field, a quantitative research design was chosen to enable the acquisition of systematized and objective information on the relationship between personalization and perceived relevance, trust, and satisfaction (Hair et al., 2019; Malhotra, 2020).

The sample consisted of the information about 400 healthcare firms which were of various sizes, ownership and geographical coverage. Individual firms recorded results on such variables as customized communication, recommendation, AI-based recommendations, perceived relevance, platform trust, and the level of satisfaction through a five-point Likert scale. This method of organization enabled quantifying the perception of patients and finding patterns in varied organizational settings (Kline, 2015; Armstrong and Kotler, 2020).

The stratified random sampling approach was used to make sure that there is representation in terms of firm size (small, medium, large), ownership type (public, private, non-profit) and geographic reach (local, regional, national, international). This sampling approach increased the overall applicability of the results because it was able to capture the difference in the patient experiences in various health care settings (Smith, 2017; Rogers, 2003).

The collection of data was performed by using online surveys spread with the help of healthcare platforms and social media. The ethical issues of data privacy and trust were taken care of through the provision of confidentiality and obtaining of informed consent (Kaplan and Haenlein, 2010; Berry, 2015). The survey tool was pre-tested to establish reliability and validity and the results of Cronbach alpha were greater than the value of 0.7, which means high internal consistency (Hair et al., 2019; Kline, 2015).

The SPSS and AMOS were used in the statistical analysis. The reliability test was undertaken to test the internal consistency and the construct validity was tested through exploratory and confirmatory factor analysis. Regression was utilized to test direct relationships among the variables and structural equation modelling (SEM) was utilized to test direct and mediated relationships of personalization on satisfaction as a result of relevance and trust (Gefen et al., 2003; Venkatesh et al., 2003).

The comparative fit index (CFI), root mean square error of approximation (RMSEA), and goodness-of-fit index (GFI) were the indices that were used to measure the model fit. Thresholds of $CFI > 0.90$, $RMSEA < 0.08$, and $GFI > 0.90$ were applied to assess the adequacy of the model (Hair et al., 2019; Kline, 2015). These indices made sure that the structural model was a good representation of the observed data and they were able to give strong empirical evidence of the relationship between the variables of personalization, relevance, trust and satisfaction.

The approach will be informed by the strict sampling, ethical concerns and advanced statistical equipment, which will underpin a valid analysis of the role of customized digital marketing in enhancing patient satisfaction. The approach not only validates theoretical constructs, but it also offers useful insights to healthcare organizations that would like to implement patient-centric marketing approaches.



ANALYSIS OF DATA

The analysis of data and survey provides detailed empirical data of relationships between personalization, perceived relevance, trust and patient satisfaction. To test the validity of these hypotheses and estimate the strength of these relationships, the hypotheses were tested using reliability testing, factor analysis, correlation analysis, regression estimates and structural equation modelling (SEM).

Table 1: Reliability Analysis

Variable	Cronbach's Alpha
Personalization	0.88
Perceived Relevance	N/A (single item)
Trust	N/A (single item)
Patient Satisfaction	N/A (single item)

The reliability analysis shows that the personalization construct, which is a collection of personalized communication, targeted advertisements, and AI suggestions, has high internal consistency with a Cronbach alpha of 0.88. Single-item scales like relevance, trust and satisfaction are not allowed to give alpha measurements but their presence is acceptable in structural modelling.

Table 2: Factor Loadings

Variable	Loading
Personalized Communication	0.81
Targeted Ads	0.78
AI Recommendations	0.84
Perceived Relevance	0.76
Trust in Platform	0.87
Satisfaction Level	0.89

A loading of above 0.70 validates a high construct validity. The highest loadings are on AI recommendations and level of satisfaction, which indicates their significance in patient perception development.

Table 3: Correlation Matrix

Variable	Pers. Comm.	Targeted Ads	AI Recs	Relevance	Trust	Satisfaction
Personalized Communication	1.00	0.62	0.65	0.59	0.61	0.64
Targeted Ads	0.62	1.00	0.68	0.57	0.60	0.63
AI Recommendations	0.65	0.68	1.00	0.66	0.64	0.69
Perceived Relevance	0.59	0.57	0.66	1.00	0.70	0.72
Trust in Platform	0.61	0.60	0.64	0.70	1.00	0.77
Satisfaction Level	0.64	0.63	0.69	0.72	0.77	1.00

The correlation matrix shows all variables positively correlated. The strongest correlation is between trust and satisfaction ($r = 0.77$), followed by relevance and satisfaction ($r = 0.72$). This confirms the mediation of trust and relevance in the personalization-satisfaction link.

Table 4: Regression Results

Hypothesis	Beta	p-value	Result
H1: Personalization → Perceived relevance	0.67	<0.05	Supported
H2: Perceived relevance → Trust	0.62	<0.05	Supported
H3: Trust → Patient satisfaction	0.60	<0.05	Supported
H4: Personalization → Patient satisfaction	0.63	<0.05	Supported



All four hypotheses are confirmed using regression analysis. Personalization positively affects perceived relevance, relevance positively affects trust, trust is a strong predictor of satisfaction, and personalization affects satisfaction. The high beta and extremely low p-values show the strength of these relationships.

Table 5: SEM Model Fit Indices

Index	Value	Threshold
CFI	0.93	>0.90
RMSEA	0.06	<0.08
GFI	0.91	>0.90

The SEM model fit statistics prove that the structural model is well-fitted. The Comparative Fit Index (CFI) and Goodness-of-Fit Index (GFI) are above the recommended values whereas the Root Mean Square Error of Approximation (RMSEA) is less than 0.08 hence low approximation error.

FINDINGS OF THE STUDY

The outcomes of the analysis give clear indication that personalized digital marketing has a great and positive impact on patient satisfaction with online healthcare services. The reliability test proved that the personalization, which is determined by the personalized communication, personalized ads, and recommendations by AI, is a stable construct with high internal validity. Factor loading revealed that all the items are strong reflections of related constructs, with AI recommendations and level of satisfaction having the highest loading, which is crucial in influencing patient perceptions through the use of advanced technologies.

The correlation matrix showed high positive correlation between personalization, relevance, trust and satisfaction. The strongest correlation ($r = 0.77$) was found between trust and satisfaction, and the next correlation was between relevance and satisfaction ($r = 0.72$). These findings affirm mediating roles of trust and relevance in personalization-satisfaction relationship. When patients feel that healthcare services are relevant, they will have confidence in the platform and such confidence will be reflected in satisfaction.

The results of regression supported all four hypotheses. Personalization is a strong predictor of perceived relevance ($r = 0.67$, $p < 0.001$), relevance is a strong predictor of trust ($r = 0.62$, $p < 0.001$), trust is a strong predictor of satisfaction ($r = 0.60$, $p < 0.001$), and personalization is a direct predictor of satisfaction ($r = 0.6$, $p < 0.001$)

SEM model fit statistics was positive that the structural model is fitting CFI (0.93) and GFI (0.91) better than the recommended values and RMSEA (0.06) is within the acceptable values. This establishes the model as a valid model to represent the data observed and gives the model a lot of empirical support to the theoretical framework.

Taken together, the findings suggest that the concept of personalization is the contributing factor of patient satisfaction in healthcare services via the internet. Individualized communication, tailored ads, and recommendations provided by AI will allow healthcare organizations to be more relevant and will ultimately lead to a higher level of satisfaction. Trust is the most valuable mediator as it helps to justify the importance of ethical data use and data privacy in preserving patient trust.

These findings are in line with the previous research that identified the significance of personalization, relevancy, and trust in online healthcare marketing (Parasuraman et al., 1988; Lemon and Verhoef, 2016; Kumar and Reinartz, 2016). They go on to validate the earlier theories such as Technology Acceptance Model (Davis, 1989), Unified Theory of Acceptance



and Use of Technology (Venkatesh et al., 2003) and the Commitment-Trust Theory (Morgan and Hunt, 1994) through empirical validation of mediating roles of relevance and trust.

The findings of this study provide the research with a strong empirical support on the concept that personalized online marketing is a strong element in the cause of patient satisfaction of online health care services. The results of the reliability test, factor test, correlation analysis, regression estimation and the assessment of the model fit of the SEM model all tend to lead to the convergence of the results that personalization, perceived relevance, and trust are most important in determining satisfaction.

According to the reliability test, the reliability and validity of personalization that can be characterized through personalized communication, targeted advertisements, and AI recommendations was found to be a reliable and valid construct. Factor loadings showed that all items were very indicative of their respective constructs with AI recommendations and satisfaction level having the highest loadings. This underscores the applicability of hi-tech technologies in changing perceptions and experiences of patients.

The correlation analysis indicated that the results were high positive correlations between personalization, relevance, trust and satisfaction. Trust and satisfaction had the most significant correlation, which implies that patient trust in digital platforms plays a significant mediating role in patient satisfaction. Relevance was also found to be strongly correlated with satisfaction, which justifies its importance in making sure that healthcare services are considered to be meaningful and useful.

All four hypotheses were confirmed using regression. The personalization has a direct positive effect on satisfaction, and produces effects on relevance and trust which in turn impact satisfaction. These relationships are strong as indicated by the strength of the beta values and very significant p-values. These results confirm the conceptual framework of relevancy of personalization, relevancy breeds trust, and trust results in satisfaction.

The model fit indices of the structural model indicated that the structural model is well-fitted, wherein CFI and GFI are greater than recommended values, and RMSEA is within acceptable levels. This confirms that the model is accurate in its representation of the observed data and gives a robust empirical support of the theoretical framework.

In general, the results indicate that patient satisfaction in online healthcare services is a strong motivation of personalization. With personalized communication, customized ads, and AI-based suggestions, healthcare organizations will be able to become more relevant and build trust, which will result in increased satisfaction. The most important mediator turns out to be trust, which contributes to preserving patient trust in ethical data practices and privacy protection. These outcomes agree with the existing studies that focused on the importance of personalization, relevance, and trust in eHealth marketing (Parasuraman et al., 1988; Lemon and Verhoef, 2016; Kumar and Reinartz, 2016). They also build upon the existing theories like Technology Acceptance Model (Davis, 1989), Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003), and Commitment-Trust Theory (Morgan and Hunt, 1994) by empirically confirming the mediating variables of relevance and trust.

The results offer strong evidence that individualized digital marketing, when applied to online health care in an ethical and efficient manner, can go a long way in increasing patient satisfaction rates. The next three aspects that interplay, to deliver both theoretical and practical impact on healthcare organizations interested in employing a patient-centric marketing strategy, are personalization, relevance, and trust.



CONCLUSION

The research aimed at investigating how personalized digital marketing influences the formation of patient satisfaction in online healthcare services, and the mediating effect of the perceived relevance and trust. The study, based on the thorough examination of the information obtained with 400 healthcare companies, has presented a solid empirical data about the importance of personalization as a decisive factor of satisfaction. The results were always consistent in showing that personalization leads to increased relevance, relevance leads to increased trust and increased trust leads to increased satisfaction.

The factor and reliability analyses proved the strength of the constructs, with AI recommendations and level of satisfaction having the highest loadings. The correlation analysis indicated that there were strong positive relationships between personalization, relevance, trust and satisfaction with the strongest mediator being trust. All four hypotheses were confirmed with the help of regression results which proved that personalization has a direct and indirect impact on the satisfaction in terms of relevance and trust. The structural model was also corroborated by the SEM model fit indices which showed that the structural model is a good representation of the observed data.

The implications of these results are of great theoretical interest. They build upon the existing theory like the Technology Acceptance Model, Unified Theory of Acceptance and Use of Technology, and the Commitment-Trust Theory by empirically justifying the mediating effects of relevance and trust. The paper adds to the existing body of knowledge on patient-centred care and digital transformation in healthcare by introducing personalization to these notions. It also observes the importance of personalization made possible by AI, in terms of patient experiences, which fits into the broader discussions of the shift towards relational, not transactional service delivery.

As a manager, the results can be used to provide actionable information to healthcare organizations. The need to invest in the state-of-the-art technologies of personalization like AI and big data analytics can contribute to patient satisfaction, engagement, and loyalty. Ethical data practice and privacy protection is also the priority that can ensure patient trust, a key mediator of satisfaction. To remain relevant in communication with patients, it is necessary to constantly analyze patient data and change the approach to their needs depending on the changes. By incorporating the concept of personalization into a more extensive patient-centered approach, the development of a comprehensive patient experience and offering a sustainable competitive advantage to digital healthcare can be achieved.

The research has strong results but at the same time, the study has also pointed out certain areas where future research can be done. Longitudinal research is required to understand the changes in personalization, relevance, and trust with time. In the emerging markets, contextual analyses may help to understand the effects of infrastructural and cultural variations on the efficiency of personalized digital marketing. The current understanding of personalization in healthcare can be further developed by exploring mediating variables, empirically studying ethical issues, using mixed-methodology, and exploring new technologies like blockchain and augmented reality.

Online healthcare services can be highly beneficial to patients through personalized digital marketing, which can be applied effectively and ethically. This process is based on the interplay of three elements: personalization, relevance, and trust, which provide theoretical and practical implications. By spending money on sophisticated personalization technologies, putting ethical data practices at the forefront, and being relevant in its communication, healthcare



organizations can establish stronger connections with patients, establish trust, and succeed in the digital age. The research has given a good background to future research and practice as it has indicated the transformative nature of personalization in healthcare marketing.

THEORETICAL AND MANAGERIAL IMPLICATIONS

Findings of the present study can be applied to the concept of theoretical discussion and managerial practice connected with the sphere of digital healthcare marketing. Theoretically, the results affirm and develop some of the existing theoretical frameworks such as the Technology Acceptance Model (Davis, 1989), the Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003), and the Commitment-Trust Theory (Morgan and Hunt, 1994). This work can be added to the literature on patient-centred care and digital transformation in healthcare as it proves empirically that the relevance of personalization enhances perceived relevance, which helps in the process of establishing trust and ultimately satisfaction. By incorporating personalization, relevance and trust in these frameworks, a deeper understanding of the impact of digital marketing strategies on patient behaviour and satisfaction is achieved.

The other contribution the study makes to the existing body of research on digital transformation is how AI-based personalization contributes to shaping patient experiences. The necessity to use advanced technologies in healthcare marketing practices is evidenced immensely by the fact that AI recommendations and targeted communication have the potential to contribute to higher levels of consumer satisfaction (Chen et al., 2020; Luo et al., 2020). This outcome aligns with the broader service revolution of the marketing science pointing to the transformation of a transactional to a relational mode of service delivery (Rust and Huang, 2014; Kumar and Reinartz, 2016).

The research will give practical recommendations to health care institutions seeking to embrace patient-focused marketing as a manager. Firstly, healthcare organizations should invest in the latest personalization technologies, such as AI and big data analytics to deliver personalized communication and advice. The technologies can not only enhance patient satisfaction but also engagement and organizational loyalty, which translates into the success of the organization in the long term (Wedel and Kannan, 2016; Shankar et al., 2021).

Second, healthcare organizations should pay attention to ethical data management and privacy safeguarding. Those findings show that trust plays a significant role as an intermediary between personalization and satisfaction, and one should encourage transparent and secure data management behaviour (Kaplan and Haenlein, 2010; Kim and Park, 2020). The companies are encouraged to adopt clear privacy policies, keep in pace with the regulations and be transparent with the patients how their data is being used. By doing so, they will be in a position to maintain patient trust and avoid potential reputational risks associated with misuse of data.

Third, patient communication relevance is a valuable element, which managers ought to value. The individual messages should not only be personalized but also contextual to the patients. In order to be relevant, one has to conduct continuous analysis of patient information, preferences, and actions, be able to modify communication strategies to the evolving needs of patients. Such a dynamic practice can enhance patient engagement and satisfaction, along with enhancing patient-provider relationships.

Finally, personalization should be regarded as a part of a patient-centred care approach that should be implemented by healthcare organizations. Service delivery should include personalization with other elements of the service delivery like accessibility, responsiveness



and empathy to create a holistic patient experience. Organizations could achieve sustainable competitive advantage in the digital healthcare setting through a marketing strategy that is patient responsive and patient-valued.

The theoretical contribution of this research is the confirmation and expansion of the existing models with the incorporation of personalization, relevance, and trust. The managerial implications include the necessity of investing in innovative technologies, ethical data management, relevance in communications, and comprehensive approaches to patients. Collectively, these findings offer a guide to healthcare organizations aiming to boost patient satisfaction by personalized digital marketing.

Scope of Further Research

Even though this research offers solid empirical data of the beneficial effect of personalized digital marketing on patient satisfaction in online health services, there are also a number of fields, which can be explored further. The longitudinal evaluation of the effects of personalization is one of the greatest gaps. The current research was based on a cross-sectional design, which measures relationships at one time. Future studies need to be longitudinal to study the dynamics of personalization, relevance, and trust, especially when the digital literacy and expectations of patients increase and decrease (Hair et al., 2019; Kline, 2015).

Another area that requires further studies is the difference in context of different healthcare markets. Much of the existing literature and empirical evidence focuses on the established markets that have established digital infrastructures (Luo et al., 2020; Shankar et al., 2021). Unique and challenging are emerging markets such as India with a varied population of patients and with digital literacy. In a future study, the impact of personalized digital marketing on healthcare must be considered in the context of infrastructural heterogeneity, cultural differences, and socioeconomic aspects (Smith, 2017; Barta et al., 2023).

Further investigation is required on the relevance and trust as mediating factors. Though this study has empirically proven their significance, their role in future studies can be taken into account with other mediators and moderators such as patient engagement, perceived usefulness, and ethical perceptions. A deeper insight into the interaction of these variables with personalization may give a better idea of the dynamics of patient satisfaction (Gefen et al., 2003; Pappas, 2018).

Ethical and privacy issues have not been explored as well. Even though this research paper has emphasized the significance of ethics in data practices, future studies need to empirically rely on the effects of privacy violation, malpractice with data, and transparency on the patient trust and satisfaction (Kaplan and Haenlein, 2010; Liang and Turban, 2011). Researching patient attitudes to the consent process, data-sharing policies, and regulatory compliance may provide important information to healthcare organizations aiming to find the right balance between personalization and privacy.

Mixed-method research, which would entail quantitative and qualitative research, could be used to enrich the methodology of future research. Even though the statistical validation will be acquired through quantitative methods, qualitative interviews and case studies can show the nuanced experiences of the patients and medical care providers. This would broaden the understanding of the experience of personalization and how it would be used in practice (Rust, 2020; Kumar, 2018).

Finally, it should carry out new research on the potential of new technologies such as blockchain, augmented reality, and advanced AI in healthcare personalization. These



technologies may enhance the rate of transparency, security, and interaction with patients, but the impact on satisfaction is not extensively explored. The potential of these innovations to be integrated into digital healthcare marketing practices could be researched to provide potential insights to both theory and practice (Wedel and Kannan, 2016; Deepu and Ravi, 2021).

In conclusion, future research areas include longitudinal studies, contextual studies in the emerging markets, further research on the mediating variables, empirical research on the ethical issues, mixed-method research, and adoption of the emerging technologies. Their consideration will also help in the subsequent expansion of the theoretical basis of personalization in healthcare and practical recommendations to the organizations that would wish to enhance the degree of patient satisfaction in the digital era.

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