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Artificial Intelligence and Customer Satisfaction in Beautician Services: An Analytical Study

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Abstract
This paper examines the impact of traditional beauty services, such as those offered by aestheticians or beauty salons, on skin health and customer satisfaction. It also investigates the influence of artificial intelligence on these services. The study utilizes data from existing research, reviews, industry reports, and reputable news sources to analyse three key aspects: firstly, the significant role that beauticians play in preventing skin problems and ensuring customer satisfaction; secondly, the application of AI tools in skin analysis, the development of personalized treatments, product creation, and enhancement of the customer experience; and thirdly, the interaction or potential conflicts between human beauty services and AI tools. The technology is tailored to fit each individual's needs. AI contributes to more precise skin evaluations, the formulation of personalized treatments on a broader scale, and the enhancement of customer satisfaction. Nevertheless, challenges remain regarding regulations, the quality of evidence, and ethical considerations. The paper concludes with recommendations for beauty salons on the implementation of AI, identifies areas for future research, and outlines policies that should be taken into account.

Keywords - Beautician services, aesthetician, skin health, customer satisfaction, artificial intelligence, personalized skincare, secondary-data analysis

Introduction

This paper explores the effects of traditional beauty services, such as those provided by aestheticians or beauty salons, on skin health and customer satisfaction. It also examines the impact of artificial intelligence on these services. The study employs data from existing research, reviews, industry reports, and credible news sources to analyze three primary aspects: first, the crucial role that beauticians play in preventing skin issues and ensuring customer satisfaction; second, the use of AI tools in skin analysis, the creation of personalized treatments, product development, and the improvement of the customer experience; and third, the interaction or potential conflicts between human beauty services and AI tools. The technology is customized to meet each individual's requirements. AI aids in more accurate skin assessments, the formulation of personalized treatments on a larger scale, and the enhancement of customer satisfaction. However, challenges persist regarding regulations, the quality of evidence, and ethical considerations. The paper concludes with suggestions for beauty salons

on the adoption of AI, identifies areas for future research, and outlines policies that should be considered.

Methodology

This research is purely secondary a qualitative synthesis of published literature and reputable industry sources. Sources were selected for relevance and credibility and include peer-reviewed journal articles, systematic reviews and meta-analyses, technology evaluations, and high-quality industry reporting. Key sources include systematic reviews on AI in dermatology and cosmetic formulation, empirical evaluations of AI skin-analysis tools, and studies of customer satisfaction in beauty services. When possible, I prioritized recent (2020–2025) publications to capture rapid AI developments in beauty and dermatology. (Major sources used below include Wongvibulsin et al., 2024; Marri et al., 2024; Di Guardo et al., 2025; Cai et al., 2025; industry reports and credible news like Reuters and Times of India.)

Review of Literature (ROL) expanded (author, year, short summary)

- **Hash, M. G. (2025)** *Artificial Intelligence in the Evolution of Customized Skincare (literature review).* Summarizes recent advances enabling hyper-personalized regimens and the shift toward data-driven skincare solutions; highlights privacy and bias concerns.
- **Cai, Z. R., et al. (2025)** Systematic *review/meta-analysis of image-based AI models assessing skin disease severity.* A method focused review that evaluates diagnostic performance and points to variation across datasets, imbalanced classes, and the need for external validation.
- **Chakraborty, D. (2024)** AI-*powered AR/VR and consumer experiences in beauty.* Industry level review of AR/AI tools used for virtual try on, product personalization and customer engagement, reporting measurable gains in conversion rates and customer interest.
- **Industry reporting: Reuters (2024)** Amor Pacific AI beauty lab & AI-driven shade matching. Reports commercial deployments of AI for on-site product customization (foundation mixing) and industry uptake of AI personalization tools. Useful to link academic claims to industry practice. **Salon service & customer satisfaction studies (multiple; e.g., Khan; sciential reports, 2018–2021)** empirical studies show that staff approach, service quality, price, and environment significantly affect customer satisfaction in salons; satisfaction drives repeat patronage. (Representative examples from peer-reviewed and institutional reports.)
- **Walsh Buhi, E. R. (2025)** Aestheticians' role in identifying health-related skin symptoms. Highlights the community-health role of beauty professionals and suggests aestheticians frequently observe and sometimes advise on skin conditions, supporting the claim beauticians are important in early detection and client education. **Industry & market analyses (Vogue Business, Times of India, Approval etc., 2024–2025)** describe the landscape of AI tools (skin scanners, virtual advisors, personalization engines) being

integrated into beauty retail and services, and discuss consumer adoption barriers and privacy concerns.

- **Wongvibulsin, S., et al. (2024)** Current State of Dermatology Mobile Applications.A systematic evaluation reveals that numerous dermatology mobile applications lack sufficient clinical validation, involvement from clinicians, transparency in their algorithms, and regulatory approval; it concludes that caution should be exercised when utilizing these tools for diagnostic purposes.
- **Marri, S. S., et al. (2024)** Efficacy of an AI App (Aysa) in preliminary dermatologic assessment. The Aysa app was assessed in a semiurban environment; findings suggest that AI applications can serve as effective preliminary triage instruments, although their sensitivity and specificity may differ based on the conditions and the diversity of the dataset.
- **Di Guardo, A., et al. (2025)** Artificial Intelligence in Cosmetic Formulation: Predictive Modelling.This review examines how machine learning enhances personalized formulation and predictive outcomes (such as stability and sensory attributes) and discusses the various model types employed in cosmetic science. It indicates a significant potential for research and development as well as personalized product recommendations.
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Where AI and beauticians synergize examples from secondary sources

- **Augmented assessment + human validation:** AI provides a preliminary, objective assessment of visual skin features (e.g., dryness, pigmentation), which beauticians interpret within client context (history, allergies) and integrate into treatment plans. Studies of AI apps (e.g., Aysa) show utility as triage/preassessment tools when used
- **Faster personalization:** AI driven shade-matching and in-store mixing (Amor Pacific case) show how AI can enable personalized product solutions at point-of-service,

enhancing satisfaction for clients seeking precise matches. **Data-driven follow-up:** AI analytics on client records and photos can help beauticians track progress objectively and refine regimens over time, improving perceived outcomes and retention.

Risks, limitations and barriers (from the literature)

- **Validation & evidence gaps:** Many commercial AI apps lack peer-reviewed validation, clinician input, or regulatory clearance. Users and salons relying solely on unvalidated AI risk misclassification and poor recommendations. **Bias & dataset limits:** Algorithms trained on limited skin tones or device types underperform on underrepresented groups; this is critical in beauty where skin tone and type are central. Systematic reviews and meta-analyses note dataset bias as a major limitation. **Privacy & ethics:** Facial and skin imaging raises privacy concerns; apps often lack transparency about data use and storage. Regulatory frameworks are still evolving.

Discussion interpreted outcomes and implications

- **The blended model: human + AI delivers best outcomes**
  The literature indicates neither AI nor beauticians alone are sufficient in all domains: beauticians offer relationship-driven advice, manual procedures and clinical intuition that AI does not replicate; AI contributes objective measurement, personalization at scale and improved customer interfaces. When combined AI for assessment/recommendation plus human validation and tactile execution salons can potentially achieve better skin outcomes and higher customer satisfaction.

Practical implications for salon owners and beauticians

- **Adoption roadmap:** Salons should pilot validated AI tools (preferably those with clinician involvement or peer-reviewed evidence), use them for pre-assessment and customer education, and keep beauticians central to final decisions. Industry examples (e.g., AI shade-matching labs) show practical customer wins[i]**Staff training:** Beauticians require training to interpret AI outputs, communicate limitations to clients, and maintain privacy conscious practices.
- **Customer communication:** Transparent messaging about what AI does and doesn't do will preserve client trust.

Policy and research implications

- **Regulatory oversight:** Systematic reviews call for clearer standards and external validation for dermatology/skin apps; beauty-sector AI tools should adhere to similar transparency and safety expectations.
- **Future research:** Needed are randomized controlled trials (AI-assisted vs standard care), longitudinal outcome tracking, and equity-focused validation across skin tones and demographics.

Recommendations

- **For Beauticians and Salons:**

- Use AI as a decision-support tool, not a replacement. Validate vendor claims and choose tools with clinician oversight or published validation. Train staff to explain AI outputs to clients and to take corrective judgment when needed.

❖ **For AI Vendors:**

- Publish validation studies, make training datasets transparent (or describe composition), and create clear privacy/data-use policies. Focus on inclusive datasets to avoid skin-tone bias.

❖ **For Researchers and Policymakers:**

- Fund independent evaluations of AI tools in real-world salon settings and develop sector-specific guidance for safety and consumer protection.

Limitations of this paper

This study is exclusively secondary and relies on the availability and quality of published sources. While recent literature and reputable industry reports were used, the fast-evolving nature of AI in beauty means new products or studies may appear after the sources cited here. Several industry reports are descriptive rather than experimental, constraining causal inference.

Conclusion

Beautician services remain foundational for delivering skin-care treatments and building customer satisfaction through skill, trust and relationship. AI is emerging as a powerful augmenting technology improving the objectivity and scalability of skin assessment, enabling product personalization (e.g., foundation shade-matching), and enhancing customer engagement through AR and virtual advisors. The most promising model is a blended human + AI approach in which beauticians retain decision authority while leveraging AI for measurement and personalization. To fully realize this potential, the sector needs robust validation of AI tools, inclusive datasets, staff training, and clear privacy and regulatory frameworks.

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