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Assessing the Impact of Technological Advancement Strategies on Customer Loyalty in Selected Lifestyle Malls: Toward an Enhanced Strategic Framework

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Abstract

This mixed-methods study examined the impact of technological advancement strategies on customer loyalty in selected lifestyle malls in District 4 of the National Capital Region, Philippines. The research focused on commonly implemented digital tools, including contactless payments, mobile applications, QR codes, chatbots, and social media platforms, evaluating their perceived usefulness, ease of use, and influence on customer satisfaction and loyalty. Guided by the Technology Acceptance Model (TAM) and the Customer Loyalty Model, the study employed a concurrent triangulation design, incorporating 136 customer surveys and 10 in-depth interviews with tenant partners and mall owners. Quantitative data were analyzed using descriptive statistics and multiple regression analysis via JASP software, while qualitative data underwent thematic analysis. Findings indicated that all technological tools were rated highly in perceived usefulness, with social media platforms receiving the highest mean score ($M = 3.92$), followed by contactless payments ($M = 3.85$). Regression analysis revealed significant positive relationships between technological advancements and both customer satisfaction and loyalty ($p < 0.05$). Qualitative insights highlighted operational benefits such as enhanced customer engagement and marketing reach, alongside challenges including implementation costs, compatibility issues, and training requirements. The study concludes that a customer-focused, adaptive, and strategically integrated approach to technological adoption enhances the lifestyle mall experience, improves operational efficiency, and fosters long-term loyalty. A three-year evidence-based strategic framework is proposed to guide digital transformation efforts, ensuring a balanced approach between innovation, tenant support, and evolving customer expectations.

Keywords: Business Administration; Technological Advancement, Customer Loyalty; Mixed-Methods; Philippines

Introduction

Lifestyle malls have evolved beyond their original function as traditional retail hubs, transforming into integrated destinations that combine shopping, dining, leisure, entertainment, and community

experiences. This shift reflects a broader transformation in consumer behavior, where customers increasingly value convenience, engagement, and memorable experiences alongside the products or services they purchase. These spaces are now evaluated not just by the breadth of retail offerings but by their ability to create an immersive environment that fosters repeat visits, emotional connection, and brand loyalty.

In the Philippine context, particularly in NCR District 4, a key commercial cluster of lifestyle malls has embraced digital transformation as a strategic response to heightened competition and changing customer expectations. Technologies such as contactless payment systems, mobile applications, quick response (QR) codes, chatbots, and social media platforms have moved from being supplementary features to core operational tools. These innovations serve multiple functions: accelerating transactions, enabling data-driven marketing, personalizing the shopping experience, and facilitating real-time communication between customers and mall management.

Globally, the role of technology in enhancing customer loyalty is well-documented. However, most studies focus on single-brand retail or e-commerce settings, leaving a gap in understanding how these innovations operate in multi-tenant environments such as lifestyle malls. Unlike stand-alone retailers, lifestyle malls function as complex ecosystems involving mall management, individual tenant partners, and diverse customer segments. Each stakeholder brings different levels of technological readiness, operational priorities, and customer engagement strategies, making implementation more challenging yet potentially more impactful when executed effectively.

This study addresses that gap by examining the influence of technological advancements on both customer satisfaction and loyalty in selected lifestyle malls in NCR District 4. Importantly, it also incorporates operational insights from tenant partners and owners, recognizing that the success of digital tools depends not only on customer adoption but also on internal capability, integration, and consistent execution. For example, the presence of a sophisticated loyalty program is insufficient if it is not well-promoted by tenants or if system downtime erodes customer trust.

The research framework integrates the Technology Acceptance Model (TAM) and the Customer Loyalty Model. TAM explains how perceived usefulness and perceived ease of use influence technology adoption, while the Customer Loyalty Model captures the behavioral and attitudinal factors that drive repeat patronage. Together, these models provide a dual lens through which to analyze the role of technology in enhancing mall performance.

Through a combination of quantitative surveys involving 136 mall customers and qualitative interviews with 10 tenant partners and owners, this study generates a comprehensive understanding of the technological, operational, and experiential factors that influence loyalty in lifestyle malls. The findings inform the development of an enhanced strategic framework that aligns technological priorities with customer expectations, operational capacities, and tenant needs. In doing so, the study offers both academic value by contributing to the limited literature on Philippine lifestyle malls and practical value by providing evidence-based recommendations for sustaining competitiveness in an increasingly technology-driven retail environment.

Operational Framework

The operational framework in Figure 1 presents the proposed SMARTMALL Framework for Technology-Driven Lifestyle Malls. Anchored on the principles of strategic alignment, performance

measurement, stakeholder collaboration, and continuous innovation, the framework integrates the study's three-year strategic plan, the Balanced Scorecard perspectives, and the Technology Acceptance Model to enhance customer loyalty and operational resilience in lifestyle malls.

Figure 1: SMARTMALL Framework for Technology-Driven Lifestyle Malls

The framework begins with Strategy (S), where mall operators align technological initiatives with overarching business goals and customer loyalty objectives. This ensures that every digital adoption plan is rooted in the mall's long-term vision, market positioning, and brand promise.

The next stage, Metrics (M), involves the use of performance indicators (KPIs) to measure the impact of these initiatives on customer satisfaction, technology adoption, and operational efficiency. These metrics are aligned with the Balanced Scorecard's perspectives, Customer, Internal Processes, Learning & Growth, and Financial, to ensure that improvements are both measurable and strategically relevant.

In the Adoption (A) phase, tenants and customers are encouraged to embrace digital tools through targeted training, incentive programs, and intuitive design features. This stage ensures that technologies are not only implemented but are actively and effectively used.

Retention (R) focuses on strengthening customer loyalty through personalized experiences, gamified engagement, and seamless service touchpoints. By integrating feedback mechanisms, malls can refine offerings to meet evolving customer expectations.

The Technology (T) stage involves implementing and optimizing digital solutions such as mobile applications, interactive kiosks, automation systems, and contactless payment platforms. These tools are chosen for their scalability, integration potential, and ability to improve the customer journey.

Mall Alignment (M) ensures collaboration between mall management, tenant partners, and technology providers, creating a unified approach to execution. This alignment fosters shared objectives, resource pooling, and consistent service delivery across all mall touchpoints.

The Advancement (A) phase drives continuous innovation, encouraging the exploration of emerging technologies and the enhancement of operational processes based on data-driven insights and market trends.

Finally, Loyalty (L) focuses on cultivating long-term emotional and behavioral commitment from customers through meaningful engagement, community building, and consistent delivery of value-added experiences.

Furthermore, this operational framework functions as a continuous cycle. Strategic alignment informs metric selection; metrics guide adoption; adoption strengthens retention; technology enables alignment; advancement ensures sustained innovation; and loyalty outcomes feed back into strategy refinement. By institutionalizing this cycle, lifestyle malls can remain agile, customer-focused, and technologically competitive, ensuring sustained relevance, tenant satisfaction, and long-term profitability.

Objectives of the Study

The primary objective of this study is to assess the impact of technological advancement strategies on customer loyalty in selected lifestyle malls within NCR District 4, serving as the basis for proposing an enhanced strategic framework. Specifically, it seeks to determine the perceptions of customers toward technological advancements in terms of perceived usefulness and perceived ease of use, and to assess the level of customer satisfaction with these technologies, including contactless payment, personalized shopping, delivery service, chatbots, signage, social media, QR code, customer feedback, promotions, and reliable delivery. The study further aims to examine the relationship among technological advancements, customer satisfaction, and customer loyalty; to explore how tenant partners and owners perceive these technologies in their business operations; to identify the challenges they face in implementing such advancements; and ultimately, to propose recommendations that will enhance technological advancement strategies in lifestyle malls based on the insights gathered from both customers and tenant partners or owners.

Methodology

This study employed a concurrent triangulation mixed-method design, integrating both quantitative and qualitative approaches to capture a comprehensive and nuanced understanding of the relationship between technological advancement strategies and customer loyalty in lifestyle malls. This design was selected because it enables the simultaneous collection and analysis of numerical data and contextual insights, allowing the strengths of each method to complement and validate the other. By collecting both types of data during the same phase of the research process, the study ensured that quantitative trends could be directly examined alongside qualitative narratives, thereby enhancing the reliability and depth of the conclusions.

The quantitative phase involved a purposive sample of 136 mall customers who had direct and recent experience using at least one technological tool—such as contactless payment systems, mobile applications, QR codes, chatbots, or social media platforms, offered in lifestyle malls within NCR District 4. The purposive sampling method was chosen to ensure that all respondents possessed relevant exposure to the technologies being evaluated, thereby increasing the validity of their responses. Data were collected through a validated survey instrument adapted from Maryanto et al. (2022), which measured four primary constructs: perceived usefulness, ease of use, customer satisfaction, and customer loyalty. Each construct was assessed using a four-point Likert scale ranging from “Strongly Disagree” to “Strongly Agree,” intentionally excluding a neutral midpoint to encourage more decisive responses. During the thesis defense,

this choice was explained as a way to reduce central tendency bias and promote a clearer distinction between positive and negative perceptions of technological adoption.

The survey underwent a rigorous validation process with input from a panel of subject matter experts in retail management and technology adoption, ensuring both content and construct validity. Reliability testing for the final instrument produced a Cronbach's alpha of 0.904, indicating very high internal consistency across all items. Data collection was carried out in-person within mall premises and online via secure survey links, ensuring convenience for respondents and adherence to ethical research standards, including informed consent and voluntary participation.

The qualitative phase complemented the quantitative data by engaging 10 tenant partners and owners in semi-structured, face-to-face interviews. These participants were purposively selected based on three criteria: (1) their business's physical location within a participating lifestyle mall, (2) a minimum of one year of operational experience in that location, and (3) documented use or engagement with at least one of the mall's technological tools. The interview guide was developed in alignment with the study's Statement of the Problem and underwent validation by a panel of experts in retail operations and qualitative research. It achieved a Cronbach's alpha of 0.721, indicating acceptable reliability for open-ended questioning. The interviews were conducted in neutral, quiet spaces to minimize distractions, with each session lasting approximately 30–45 minutes. All interviews were audio-recorded (with consent) and later transcribed verbatim to ensure data accuracy.

For data analysis, quantitative responses were processed using descriptive statistics, specifically mean scores and standard deviations, to summarize customer perceptions of each technological tool. Multiple regression analysis was employed to test the hypothesized relationships between technological advancement variables, customer satisfaction, and loyalty, using a 0.05 level of significance to determine statistical validity. These analyses allowed the identification of the most influential predictors of loyalty among the measured constructs.

The qualitative responses were examined through thematic analysis, following Braun and Clarke's systematic approach of familiarization, coding, theme identification, theme review, and final refinement. This process facilitated the identification of recurring patterns, operational benefits, and persistent challenges in the implementation of technological tools from the perspective of tenant partners and owners. Emerging themes included operational efficiencies such as faster transactions and broader market reach, as well as barriers such as staff training gaps and low awareness of certain digital features.

The triangulation of both datasets provided a holistic understanding of the research problem. Quantitative findings revealed statistical relationships and ranked the influence of different factors, while qualitative insights added depth, context, and practical explanations for those patterns. This integration not only validated the robustness of the conclusions but also strengthened the applicability of the study's recommendations, ensuring they address both customer-facing concerns and operational realities within lifestyle malls.

Results and Discussion

The results of this study are presented in accordance with its primary objective is to assess the impact of technological advancement strategies on customer loyalty in selected lifestyle malls in NCR District 4 and its specific objectives. The presentation combines quantitative findings from customer surveys and

qualitative insights from tenant partner/owner interviews. Results are arranged to match each objective and are supplemented by related studies to strengthen interpretation.

1. Customers' Perceptions of Technological Tools

This part evaluates customers' perceptions of five technological tools, contactless payment systems, mobile applications, QR codes, chatbots, and social media platforms in terms of perceived usefulness and perceived ease of use. Perceptions were measured using a 4-point Likert scale, where higher numbers indicate stronger agreement.

Table 1
Perceived Usefulness of Technological Advancements in Selected Lifestyle Malls (n = 136)

Indicator	Mean	SD	Interpretation
Contactless Payment	3.676	0.57	Strongly Agree
Personalized Shopping	3.618	0.58	Strongly Agree
Chatbots	3.618	0.55	Strongly Agree
Mobile Apps	3.610	0.60	Strongly Agree
Social Media	3.588	0.60	Strongly Agree
Overall	**3.622**	**0.45**	**Strongly Agree**

Customers reported a *very high* level of perceived usefulness, with contactless payment as the most valued feature. This supports Raji et al. (2024), who found that cashless systems improve transaction efficiency and safety, boosting repeat patronage. Personalized shopping and chatbots are also highly rated, consistent with Poushneh (2020), who noted that AI-driven recommendations enhance perceived value and emotional brand connection.

High ratings for mobile apps and social media reaffirm findings by Ameen et al. (2021) and Chung et al. (2020), which emphasize that omnichannel tools enhance convenience and information access. Overall, results affirm Davis' (1989) TAM proposition that high perceived usefulness drives technology adoption and continued use.

It is important to note that this dimension focuses on how effortless customers find these technologies to operate, which significantly affects their willingness to adopt and use them regularly.

Table 2
Perceived Ease of Use of Technological Advancements in Selected Lifestyle Malls (n = 136)

Indicator	Mean	SD	Interpretation
On-Demand Delivery	3.632	0.54	Strongly Agree
Social Media	3.610	0.57	Strongly Agree
QR Code System	3.515	0.61	Strongly Agree
Chatbots	3.507	0.66	Strongly Agree
Overall	**3.545**	**0.48**	**Strongly Agree**

Ease of use was also rated very high, with on-demand delivery and social media ranking the highest. This supports the perspective of Venkatesh and Davis (2021), who emphasized that usability significantly influences technology adoption in retail environments. The slightly lower scores for QR codes and chatbots indicate opportunities for enhancing efficiency and responsiveness, ensuring that these tools meet user expectations and encourage sustained usage.

2. Customer Satisfaction with Technological Tools

This section measures how satisfied customers are with the technological advancements provided by lifestyle malls, using the same 4-point Likert scale. Higher means indicate greater satisfaction with the specific technology.

Table 3
Customer Satisfaction with Technological Advancements
(n = 136)

Indicator	Mean	SD	Interpretation
Contactless Payment	3.618	0.54	Strongly Agree
Personalized Shopping	3.574	0.56	Strongly Agree
Delivery Service	3.551	0.57	Strongly Agree
Customer Feedback	3.368	0.63	Agree
Chatbots	3.309	0.65	Agree
Overall	**3.471**	**0.52**	**Strongly Agree**

Satisfaction was highest for contactless payment and personalized shopping, confirming Lim et al. (2022) that secure and tailored services enhance repeat patronage. Delivery services also scored high, aligning with Singh et al. (2021) on convenience as a driver of satisfaction. Lower scores for customer feedback systems and chatbots echo Chen et al. (2020), who warned that delayed or impersonal responses can reduce trust. Addressing these weaknesses mirrors the "Check" phase of quality improvement, where ongoing review ensures continued effectiveness.

3. Relationship Between Technology, Satisfaction, and Loyalty

Table 4
Relationship Between Technology, Satisfaction, and Loyalty

Predictor Variable	Dependent Variable	Coefficient (β)	p-value	Interpretation
Perceived Usefulness	Customer Loyalty	0.652	<0.001	Strong Positive Relationship
Perceived Ease of Use	Customer Loyalty	0.471	<0.001	Positive Relationship
Customer Satisfaction	Customer Loyalty	0.589	<0.001	Strong Positive Relationship

This section examines the statistical relationships between customers' perceptions of technological tools, their satisfaction, and their loyalty to lifestyle malls. Multiple regression analysis was conducted to determine predictive relationships.

Perceived usefulness emerged as the strongest predictor of loyalty, followed by satisfaction and ease of use. This emphasizes the importance of functional value in strengthening customer commitment, as technologies that effectively address user needs directly support retention. The significant role of satisfaction further suggests that loyalty develops when customers repeatedly encounter positive and rewarding experiences with mall services and technological features.

4. Qualitative Insights from Tenant Partners and Owners

The thematic analysis of interviews with tenant partners and owners revealed a nuanced perspective on the implementation of technological innovations in lifestyle malls, underscoring both the opportunities they create and the challenges they entail. Tenant partners repeatedly emphasized the operational benefits of these tools, describing how mobile applications, contactless payment systems, and real-time inventory management platforms had transformed day-to-day transactions. Faster processing times reduced queues and customer frustration, while digital payment options improved convenience and minimized errors. Social media integration and targeted online campaigns extended the reach of their marketing efforts beyond the physical boundaries of the mall, attracting new customer segments and strengthening engagement with existing ones. Inventory management systems equipped with real-time monitoring allowed for more efficient stock control, reducing losses and enabling timely replenishment of high-demand products.

However, alongside these clear advantages, several persistent challenges were identified. Gaps in staff training emerged as one of the most significant barriers to maximizing technological tools. Some employees lacked the technical skills and confidence to operate systems efficiently, which often led to underutilization of available features. Operational disruptions, such as inconsistent software updates or occasional downtime during peak hours, directly affected sales performance and customer satisfaction. In some cases, both staff and customers were unaware of the full capabilities of certain innovations, such as chatbots or integrated loyalty programs, resulting in missed opportunities for engagement and retention.

These insights also revealed a strong demand for sustained support and improvement in system integration. Tenant partners expressed the need for continuous technical assistance that went beyond reactive troubleshooting to include proactive maintenance and periodic system evaluations. They also advocated for the integration of more advanced and personalized marketing tools, such as AI-driven product recommendations or automated customer segmentation, which could enhance competitiveness in an increasingly digital retail environment. Furthermore, tenants recognized the necessity of stronger mall-led campaigns to promote these digital services, believing that coordinated marketing efforts would significantly boost customer adoption and engagement.

Taken together, these findings illustrate that while technological innovations in lifestyle malls have the potential to drive efficiency, broaden market reach, and improve customer experience, their long-term success depends on addressing the human, technical, and promotional barriers that currently limit their effectiveness. A collaborative approach between mall management and tenant partners, one that combines consistent training, accessible technical support, and joint promotional strategies, is essential to ensuring that these tools are not only implemented effectively but also sustained and optimized over time. By fostering such an environment, lifestyle malls can create a culture of continuous improvement and innovation, ultimately delivering greater value to both tenants and customers.

5. Implications for a Strategic Framework

Findings from both the quantitative and qualitative phases indicated that lifestyle malls need to prioritize the adoption and optimization of high-value technological tools while addressing gaps in underperforming features through systematic improvements. The regression analysis confirmed a significant relationship between technological advancement and both customer satisfaction and loyalty, underscoring the importance of sustained investment in these tools. Beyond infrastructure upgrades, mall management must also ensure that tenant partners and owners are equipped to maximize these technologies through continuous training programs, hands-on demonstrations, and accessible support channels. Equally critical is the seamless integration of systems across platforms linking payment channels, customer engagement applications, loyalty program databases, and analytics dashboards to create a unified, data-driven operational environment.

Thematic analysis revealed that tenant partners and owners recognized clear operational benefits, including faster transactions, wider market reach, and improved inventory management. However, these advantages were tempered by persistent challenges such as training gaps, inconsistent updates, occasional downtime during peak hours, and limited awareness of available features among both employees and customers. Addressing these barriers requires continuous technical support, stronger integration of personalized marketing tools, and more proactive promotion of digital services to boost adoption and engagement rates.

An important consideration in designing the new framework was the identification of gaps in the previous strategic approach. These included the absence of phased implementation based on stakeholder readiness, insufficient feedback loops to refine tools after launch, and an overemphasis on infrastructure upgrades without parallel investment in user engagement. Additionally, the lack of robust performance metrics beyond basic financial indicators made it difficult to directly link technological investments to satisfaction and loyalty outcomes. These shortcomings highlighted the need for a more holistic, evidence-based approach that integrates both technological and human factors.

The proposed enhanced strategic framework was operationalized through a three-year plan that advanced in deliberate stages, allowing for gradual capacity-building while ensuring that each phase reinforced the next. The development of this plan was guided by the SMARTMALL Framework, which emphasizes Strategy by aligning technological initiatives with business goals and customer loyalty objectives; Metrics by using performance indicators (KPIs) to measure impact across customer satisfaction, technology adoption, and operational efficiency; Adoption by encouraging the uptake of digital tools among tenants and customers through training, incentives, and intuitive design; Retention by strengthening customer loyalty through personalized experiences, gamified engagement, and seamless service; Technology by implementing and optimizing digital solutions such as mobile apps, kiosks, automation, and contactless systems; Mall Alignment by fostering collaboration between mall management, tenants, and technology partners to ensure unified execution; Advancement by driving continuous innovation and improvement in mall operations and customer experience; and Loyalty by cultivating long-term emotional and behavioral commitment from customers through meaningful engagement.

In Year 1, the focus was on cost-free or low-cost but high-impact initiatives designed to strengthen the existing technological foundation. These included launching customer feedback forums to gather real-time insights, conducting targeted training workshops for tenants to enhance digital competencies, and improving existing processes to optimize current tools. The aim was to build awareness and readiness across

stakeholders before introducing major upgrades, addressing the earlier oversight of deploying tools without adequate preparatory engagement. In Year 2, the strategy shifted to moderate-cost enhancements focused on upgrading and integrating platforms. This stage improved underperforming tools such as chatbots and feedback systems, enhanced mobile applications with user-friendly features, and expanded digital advertising platforms for tenants. By refining these systems and ensuring interoperability, this phase resolved integration gaps from the previous plan, creating a seamless technological ecosystem capable of supporting more complex innovations. In Year 3, the plan progressed to resource-intensive, transformative innovations aimed at securing long-term competitive advantage. These included gamified promotions via interactive kiosks, advanced analytics for hyper-personalized marketing, and full integration of loyalty platforms with customer engagement systems. This stage addressed the lack of sustained innovation pathways in earlier strategies, ensuring technological growth continued beyond initial implementation.

To ensure the framework was actionable and measurable, Key Performance Indicators (KPIs) were embedded into each initiative using the Balanced Scorecard approach. This multi-dimensional system evaluated success from four perspectives: customer outcomes such as satisfaction levels, loyalty engagement, and repeat visits; operational efficiency such as transaction speed, system uptime, and platform integration; learning and growth such as staff training completion rates and digital proficiency improvements; and financial performance such as revenue growth from digital tools, cost savings from process improvements, and sales increases tied to technological adoption. This resolved the earlier weakness of relying on limited metrics by providing a comprehensive monitoring system that linked performance evaluation to both quantitative and qualitative outcomes.

By aligning technological priorities with customer expectations, operational capacities, and tenant needs and grounding them in the SMARTMALL Framework's structured principles, lifestyle malls can establish a more resilient, adaptive, and customer-focused ecosystem. This holistic approach strengthens collaboration between mall management and tenant partners, enhances competitive positioning, and fosters sustained customer loyalty alongside long-term business performance.

Conclusion

Based on the findings of this study, it can be concluded that technological advancement strategies play a decisive role in shaping customer loyalty in selected lifestyle malls within NCR District 4. Customers consistently rated tools such as contactless payment systems, mobile applications, QR codes, chatbots, and social media platforms as both highly useful and generally easy to use, aligning with technology adoption models that emphasize the joint influence of perceived usefulness and ease of use on behavioral intention. Among these tools, contactless payments and personalized shopping features emerged as the most valued, reflecting customer preference for technologies that enhance convenience, security, and tailored experiences.

Customer satisfaction levels were notably high for contactless payments, personalized shopping, and delivery services, underscoring that technologies that directly streamline transactions and personalize the retail journey deliver the most immediate and tangible value to mall customers. However, lower satisfaction with chatbots and customer feedback systems revealed a persistent gap in the effectiveness and responsiveness of certain digital services. These findings point to the need for improvements in areas such as chatbot accuracy, language flexibility, user interface design, and the speed of response in feedback

mechanisms—shortcomings that, if left unaddressed, could undermine overall perceptions of technological reliability.

The statistical analysis reinforced these customer perceptions by confirming that perceived usefulness, ease of use, and customer satisfaction each have a significant positive impact on customer loyalty. Among these, perceived usefulness emerged as the strongest predictor, followed by satisfaction and then ease of use. The finding also validates earlier studies in retail technology adoption, which show that customers are more likely to develop loyalty toward businesses whose innovations solve real problems and enhance the shopping experience in meaningful ways.

The qualitative insights from tenant partners and owners provided a complementary perspective, shedding light on the operational and organizational conditions that support or hinder successful technology adoption. These stakeholders acknowledged clear operational benefits from the current suite of technological tools, such as faster transaction processing, broader market reach, and more effective inventory management. However, they also emphasized persistent challenges, including staff readiness, inconsistent system updates, occasional technical downtime, and limited awareness of available digital features among both employees and customers. These factors indicate that technological adoption is not purely a matter of infrastructure deployment; it also depends heavily on the human and organizational capacity to integrate these tools into daily operations.

Taken together, these findings highlight that customer loyalty in lifestyle malls is a multifaceted outcome, shaped not only by the technologies themselves but also by the way they are implemented, maintained, and communicated to both customers and tenant partners. Successful strategies, therefore, require a dual focus: ensuring that technological tools remain relevant, reliable, and easy to use, while simultaneously investing in staff training, promotional campaigns, and consistent system updates. Addressing these dimensions can create a self-reinforcing cycle where customer satisfaction leads to loyalty, loyalty drives repeat engagement, and repeat engagement provides the feedback and revenue needed to sustain continuous technological improvement.

Furthermore, this study underscores the importance of aligning technological innovation with a long-term strategic vision. Lifestyle malls must treat digital transformation not as a one-time project but as an ongoing process that evolves alongside consumer behavior, market competition, and technological advancements. By integrating continuous evaluation, stakeholder collaboration, and adaptive strategies, mall operators can ensure that their investments remain future-proof. These insights directly informed the creation of the enhanced three-year strategic plan under the SMARTMALL Framework, translating empirical evidence into actionable steps for sustainable growth.

Recommendation

Lifestyle malls should sustain efforts to enhance high-value technological tools while addressing underperforming features such as chatbots and customer feedback systems through targeted improvements in functionality, responsiveness, and user experience. This includes refining chatbot algorithms for greater accuracy, expanding language options to cater to diverse customer groups, and streamlining feedback systems to ensure faster resolution of concerns. These targeted upgrades will not only improve perceived usefulness but also strengthen customer trust in mall technologies.

Management must institutionalize regular training programs for tenant partners and owners, complemented by easily accessible technical support channels. Such initiatives should go beyond one-time

sessions, evolving into continuous learning opportunities, whether through on-site workshops, e-learning modules, or peer-sharing forums. This ensures consistent and effective utilization of technological tools, reduces downtime caused by operational uncertainties, and fosters a culture of innovation across all stakeholders.

Strengthening customer awareness is equally essential. This can be achieved through targeted marketing campaigns, engaging in-mall activations, interactive kiosks, and coordinated social media promotions that highlight the benefits and ease of use of available digital services. Incentivizing technology adoption through loyalty rewards, gamified experiences, or exclusive promotions for digital users can further encourage repeat engagement and create memorable brand interactions.

The implementation of systematic and multi-channel feedback mechanisms, such as real-time surveys via mobile apps, analytics dashboards for tracking behavioral patterns, and regular focus group discussions with both customers and tenants, will enable continuous evaluation of technology performance. Data gathered should be actively reviewed and acted upon, ensuring timely adjustments that keep tools relevant, competitive, and aligned with evolving customer expectations.

In addition to these measures, lifestyle malls should proactively explore emerging technologies such as augmented reality (AR) for immersive store navigation, artificial intelligence (AI) for predictive analytics, and Internet of Things (IoT) devices for real-time facility management. Early-stage pilot programs for such innovations can position malls ahead of competitors and allow them to adapt solutions based on user feedback before full-scale deployment.

Equally important is fostering strong engagement among all stakeholders, including mall operators, tenants, technology vendors, and even local government units, to ensure that digital transformation efforts align with broader economic development initiatives and consumer protection standards. Strategic partnerships with academic institutions and industry associations can also provide access to research, training resources, and emerging best practices, further strengthening implementation capabilities.

Finally, mall policies and technological roadmaps should be reviewed annually to ensure alignment with evolving market trends, data privacy regulations, and sustainability goals. Incorporating green technologies such as energy-efficient digital signage, paperless transaction systems, and sensor-based lighting can position lifestyle malls as leaders in sustainable retail innovation. By embedding adaptability into both operational and strategic layers, lifestyle malls can ensure that their technological ecosystem remains relevant, resilient, and customer-centered. This forward-looking, collaborative, and adaptive approach will not only safeguard current market position but also pave the way for sustained growth and innovation over the coming decade.

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