Customer Retention Methods in Automated Self-Service Technologies

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Abstract: This study aims to systematize existing theoretical and empirical data on customer retention methods in SSTs, focusing on a range of factors (convenience, trust, technological readiness, control, customer-to-customer interactions, and service recovery). Automated self-service technologies (SSTs) are becoming increasingly prevalent across various industries, yet ensuring long-term customer retention in these channels remains a significant challenge for businesses. The research was conducted as a systematic review of scholarly sources, including peer-reviewed articles indexed in international scientific databases. The analysis indicates that isolated measures (such as interface improvements or faster transaction speeds) rarely yield sustainable effects unless supported by mechanisms that foster trust, ensure security, and provide prompt compensation in the event of failures. The identified interdependence between convenience and trust underscores the need for a comprehensive approach to customer retention: even when convenience is high, users may abandon SST if they harbor doubts about the system's security. A novel and important contribution of this work is its detailed examination of the role of customer-to-customer interactions, wherein positive and negative feedback from other consumers significantly influences the behavior of potential users.

Practical implications include the opportunity for companies to optimally allocate resources: investing not only in technological upgrades but also in developing training programs, increasing transparency in data handling, and responding swiftly to disruptions. When the appropriate conditions are met, social outcomes include increased user satisfaction and engagement, though this also heightens demands for the accessibility

of digital services to diverse population groups. Consequently, this work contributes to confirming and detailing the multifaceted nature of customer retention in automated self-service environments while identifying factors that can enhance customer loyalty and trust in such technologies.

This article will be valuable to professionals and managers in the retail, banking, aviation, and hospitality sectors seeking to optimize self-service processes and increase customer loyalty by analyzing the impact of convenience, control, trust, technological readiness, and service recovery.

Keywords: automated self-service technologies, customer retention, trust, technological readiness, service recovery, customer-to-customer interactions, loyalty, automated service channels.

Introduction: In recent decades, there has been a steady increase in interest in self-service technologies (SSTs), which are being implemented across a variety of sectors, ranging from retail and banking to aviation and hospitality. The primary advantage of these technologies lies in their ability to automate routine operations, save time and resources, and enhance customer satisfaction by providing rapid access to services. However, one of the major challenges facing companies is not only attracting users to the new service format but also retaining them over the long term, ensuring loyalty to automated channels.

Existing research has suggested that a range of factors influence a customer's decision to continue using SSTs, including convenience, control, trust, technological readiness, as well as additional elements such as customer-to-customer interactions and recovery mechanisms after failures. Nevertheless, several studies note that the impact of each of these factors may vary depending on the specific industry and consumer category. There is also a hypothesis that the absence of one fundamental factor (such as security or a clear interface) can negate all other advantages of the technology.

The present study was conducted to consolidate and systematize existing theoretical and empirical data on customer retention methods in automated self-service environments, as well as to test the hypothesis of the dominant role of multiple factors (convenience, trust, technological readiness, and service recovery) in

fostering user loyalty. To achieve this goal, a systematic review of academic literature was undertaken, comparing findings from different researchers, identifying common trends, and analyzing the statistical contributions of individual variables to customer retention.

Thus, this introduction highlights the relevance of the topic and justifies the need for studying SSTs from the perspective of long-term loyalty development. The initial information provided demonstrates why interest in customer retention emerged and how the literature substantiates the importance of individual factors. Testing the aforementioned hypothesis (regarding the multifaceted nature of retention) and examining the synergistic effects of multiple variables formed the basis for further exploration of this topic in the study.

MATERIALS AND METHODS

In preparing this article, the works of various authors focusing on different aspects of the functioning of automated self-service technologies (SSTs) and the formation of customer loyalty to these technologies were utilized. For example, J. Collier and S. Kimes [1] as well as J. Collier and D. Sherrell [2] conducted a detailed analysis of how convenience and control influence SST evaluations, providing empirical data on how speed and simplicity affect customers' decisions to reuse the service. In turn, A. De Keyser et al. [3] highlighted the role of service robots and emphasized the importance of considering users' technological readiness when introducing innovative self-service formats. Research by S. Dimitradas and N. Kyrezis [4], along with that of J. Kim et al. [5], focused on issues of trust, transaction security, and the transparency of personal data usage—factors that are critically important when dealing with automated service channels. V. Liljander et al. [6] demonstrated that technological readiness correlates directly with SST usage intensity, while M. Meuter and colleagues [7] examined customer satisfaction in the context of self-service technology interactions, identifying key points that influence repeat usage. N. Robertson et al. [8] stressed the significance of customer-to-customer interactions, where reviews and recommendations from other users substantially impact potential clients' loyalty. Meanwhile, C. Wang et al. [9] explored long-term SST retention through the lens of technological readiness and an elaborate system of "rewards" for repeat use. Z. Zhu and colleagues [10]

devoted particular attention to loyalty recovery mechanisms following system failures, describing compensation practices and rapid customer feedback.

The article's methodology included a systematic search and selection of relevant publications in scientific databases (Scopus, Web of Science, EBSCO), comparative analysis of theoretical propositions, synthesis of statistical data from primary studies, and critical evaluation of the obtained results. In the first stage, scientific articles addressing issues of convenience, control, trust, technological readiness, and service recovery in SSTs were collected. After a detailed examination, the selected sources underwent content analysis to identify key customer retention factors and strategies that enhance loyalty to automated channels. In the final stage, the information was integrated into a unified framework, allowing the systematic presentation of approaches to user retention described in the literature and the identification of the most promising directions for further research in SSTs.

Analysis of the selected sources [1-10] revealed that all of these studies in some form address the use of automated self-service systems (SSTs) and the factors influencing satisfaction, loyalty, and repeated use of such services. Most authors focus on issues such as convenience, control, technological readiness, trust, intercustomer interactions, and service recovery mechanisms for SST failures. Since maintaining and strengthening long-term relationships with customers is a crucial goal for any business, these studies provide empirical and conceptual evidence that a comprehensive approach aimed at supporting these factors is directly tied to successful SST user retention.

The analysis identified several key factors that recur across various studies and influence the extent to which customers remain loyal to automated service channels. For clarity, these factors are summarized in Table 1, which provides a brief description of each factor along with the sources in which they are most thoroughly discussed:

RESULTS

Table 1 – Summary of Key Customer Retention Factors and Relevant Sources (source: compiled by the author based on [1; 2; 4; 5; 6; 7; 8; 9; 10])

Factor	Brief Description	Main Sources
Convenience	Simplicity and speed of completing transactions in SST	[1], [2]
Control	The customer's ability to independently manage the self-service process and select interaction methods	[2]
Technological Readiness	Users' willingness to accept and adopt innovations, as well as their skills and psychological preparedness	[6], [9]
Trust	Confidence in the technology's security, privacy, and reliability	[4], [5]
Intercustomer Interactions	The influence of other SST users' behavior on satisfaction and loyalty	[8]
Service Recovery	Mechanisms for addressing errors and compensating for inconveniences during SST failures	[7], [10]

This table illustrates that the development of effective retention methods requires attention to multiple factors

simultaneously. For example, convenience is most frequently mentioned in the context of reducing wait

times and simplifying the user interface [1; 2; 6; 7; 9]. In the studies [2] and others, control is understood as the ability of the customer to set the pace of service, input data independently, and manage personal account settings. Technological readiness, as a collective concept, encompasses both the customer's technical skills and their overall openness to innovation [6; 9]. Trust in the system, according to [4; 5], is built through transparent security policies, data protection, and the stable performance of the service. Intercustomer interactions, as noted in [8], are increasingly discussed in the context of sharing reviews and recommendations, where the experience of other users can either increase or decrease trust in SST. Finally, recovery is examined in [7; 10] as a critical mechanism that helps compensate for negative user experiences and prevent churn to competitors.

The next step in the material's systematization was to determine how frequently different factors are mentioned in the sources. The goal was to identify which aspects of SST are of the greatest interest to researchers in the context of customer retention. Each article was reviewed for mentions of these factors, and the final results are presented in Table 2. Some studies [3] discuss the introduction of service robots, which partly address issues related to technological readiness and intercustomer interactions.

Table 2 – Frequency of Retention Factors Mentioned in the Reviewed Studies (source: compiled by the author based on [1-10])

Factor	Number of Mentions*	Sources
Convenience	5	[1], [2], [6], [7], [9]
Control	3	[2], [7], [8]
Technological readiness	3	[6], [9], [3]**
Trust	4	[4], [5], [6], [9]
Intercustomer interactions	2	[8], [3]**
Recovery	3	[7], [9], [10]

* Multiple factors could be mentioned in a single article.
** De Keyser and coauthors [3] examine service robots but also address technological readiness and intercustomer interactions.

Table 2 indicates that convenience is the most frequently mentioned factor (five mentions), highlighting its critical importance for customer retention. At the same time, control, technological readiness, trust, intercustomer interactions, and recovery appear with varying frequencies, but their interplay is also considered significant. In particular, convenience cannot be viewed in isolation from trust (if a customer does not feel the system is secure, they are unlikely to continue using it even if the interface is very convenient), and technological readiness correlates with user satisfaction and the likelihood of returning to SST [6; 9].

In addition to identifying factors, a comparative analysis of methods proposed by the authors to increase loyalty and retain customers at automated self-service points was conducted. Broadly, these practices are grouped under the same six factors, as each method targets strengthening one or more aspects of user interaction with SST. For instance, in improving convenience, the focus is on reducing wait times, simplifying the interface, and providing round-the-clock access [1; 2]. To build trust, the emphasis is on transparent use of personal data, heightened security, and targeted communication

with the customer [4; 5]. Research [6; 9] notes that low technological readiness can be mitigated through educational materials, a demo version of the service, and incentive programs encouraging customers to use SST more frequently. All the studies stress that a single factor is rarely sufficient; retaining customers requires a holistic approach that harmoniously combines convenience and trust while ensuring effective system recovery in case of failures.

Some of the reviewed works [1; 6; 9] include statistical data confirming a positive relationship between these factors and customer retention. Table 3 below presents examples of correlations and regression coefficients (r and β) reported by the authors. These numerical values illustrate how factors like convenience, trust, and technological readiness may impact retention rates. However, each study employed its analytical methods (regression models, surveys, satisfaction scales), so the figures provided in the columns reflect only a general trend and do not claim universality.

Table 3 – Examples of Statistical Relationships Between Factors and Customer Retention (Based on Author Data) (Source: compiled by the author based on [1; 6; 9])

Source and Indicator	Convenience	Trust	Technological Readiness	Retention
Collier & Kimes [1]: r	0.42	0.25	–	0.50
Liljander et al. [6]: β	–	–	0.33	0.39
Wang et al. [9]: β	0.29	0.22	0.35	0.44

Here, the "–" symbol indicates that the given metric was not analyzed or reported by the authors. Whether the correlations (r) or standardized regression weights (β) are shown, the general trend is clear: convenience, trust, and technological readiness have a statistically significant positive effect on customer retention. For example, in [9], the combined influence of these three factors in the regression model can be expressed as:

Retention = 0.29 × Convenience + 0.35 × Technological Readiness + 0.22 × Trust + ε,

where ε is the random error term. All coefficients in this model have a positive sign, indicating a direct relationship between these factors and retention. Similar patterns were noted by other authors [1; 6], suggesting that comprehensive support of these aspects contributes to increased user loyalty.

A closer examination of individual aspects highlighted in the reviewed works reveals three significant additions. First, [3] draws attention to the integration of service robots, which appears to be a logical progression in the evolution of SST. However, their study indicates that without adequate customer technological readiness and an established trust framework, such solutions may prove ineffective. Second, [8] closely examined the impact of intercustomer interactions, noting that while positive reviews and recommendations enhance engagement, the spread of negative comments can lead to a sudden user exodus. Third, [10] and [7] both emphasize the importance of swift responses to disruptions; when a service promptly compensates for inconveniences (e.g., through bonus points or discounts) and provides clear instructions for problem resolution, customer loyalty is retained even after significant technical failures.

Synthesizing all these findings, it can be concluded that customer retention in automated self-service points is inherently multifaceted. Each factor—convenience, control, trust, technological readiness, intercustomer interactions, and recovery mechanisms—contributes to the user's ultimate decision to continue or discontinue using SST. Convenience is the most frequently cited factor in the literature [1; 2; 6; 7; 9], but researchers emphasize that its role is closely tied to trust in the technology and customers' readiness to engage with automated services. While intercustomer interactions are mentioned less frequently [8; 3], their significance grows as digital communications expand and real-time reviews and recommendations become more prevalent. Additionally, the issues of security (privacy, data

protection), repeatedly emphasized in [9; 4; 5], directly influence trust and repeat usage. Meanwhile, rapid and well-considered recovery measures, highlighted by [7; 10], are identified as key tools for mitigating potential customer attrition.

Based on the statistical data presented in Table 3 and the methodological recommendations (some of which are noted in [1; 6; 9]), it is evident that the most effective strategies simultaneously address multiple parameters. For example, simplifying the SST interface should be paired with a clear security policy and educational initiatives that bolster technological readiness. In the event of disruptions, the service must have a well-established compensation and support system to ensure that customers do not equate a single negative experience with the overall failure of the technology. Several authors [3; 8] suggest that shortly, all these factors may gain additional importance as robotic solutions become more popular and the "digital ecosystem" expands, where customers themselves help shape the reputation and reliability of services.

Thus, the results of the systematization demonstrate that retaining customers at automated self-service points critically depends on a comprehensive approach that integrates convenience, control, technological readiness, trust, inter customer interactions, and well-planned recovery processes. The relative significance of each factor may vary depending on the market specifics or customer categories, yet together, they form the "user perception" that directly influences repeat visits to SST and long-term loyalty. The data and descriptions presented in Tables 1–3 reflect the theoretical and empirical aspects of how these factors affect retention. The methodologies proposed by the authors—from simplifying interfaces to introducing innovative robots and error compensation systems—offer a broad range of tools that companies can employ to develop their loyalty strategies. All the statistical results presented (correlation coefficients and regression weights) confirm the existence of meaningful positive relationships between these parameters and client behavior. However, a detailed interpretation and critical analysis of these results in specific contexts falls outside the scope of the "Results" section and is traditionally included in the "Discussion."

DISCUSSION

The results of the systematic review (see the "Results" section) indicated that customer retention in automated self-service points is influenced by a combination of factors, most commonly including convenience, control, technological readiness, trust, inter customer interactions, and recovery mechanisms. This multifactorial nature is confirmed by numerous authors (e.g., [1; 2; 9]), who emphasize that isolated measures (e.g., merely simplifying the interface or only enhancing security) rarely achieve long-term effects. Instead, the best results are obtained through a combination of multiple tools. The systematization revealed that convenience is indeed the most frequently mentioned factor, but convenience alone does not guarantee user loyalty if trust in the system and channel reliability are not ensured. This finding aligns with studies [4; 5] that highlight the importance of data security and transaction transparency.

The trends identified in the review are generally consistent with studies conducted in the context of retail networks and banking services (e.g., [2; 6]). For instance, recent research on self-service in retail (particularly in the grocery sector) notes that simplifying the interface, promptly responding to errors, and providing well-planned customer support increase the likelihood of repeat customer interactions with an electronic kiosk rather than a staffed checkout. This is also reflected in findings related to technological readiness, showing that customers with even minimal technical skills are more confident using SST if the system offers clear instructional content [6]. Regarding recovery from failures, the findings align with studies [7; 10], which claim that timely compensation (discounts, bonuses) and 24/7 support substantially reduce the risk of immediate churn in the event of technical disruptions.

The review highlights that positive feedback from other users can not only increase trust in the self-service system but also encourage new customers to try SST. Conversely, negative feedback—especially detailed accounts of system failures—can lead to a rapid loss of a significant portion of the audience. This conclusion is consistent with studies that consider online intercustomer communication as a key factor in shaping the reputation of automated systems [3].

The practical value and significance of these findings lie in their potential application by companies developing or implementing SST to create more targeted retention strategies. The multi-component structure of factors

(convenience, trust, readiness, inter customer interaction, control, and service recovery) suggests that effective retention efforts require not only technical improvements (such as faster terminal performance) but also enhanced "human" elements like communication, feedback, and security transparency. This supports the theory of loyalty as a complex phenomenon, where satisfaction with the transactional process is only one part, while emotional perception, trust, and social influence also play substantial roles [1]. The results generally aligned with initial expectations, as previous research has repeatedly highlighted the importance of convenience, trust, and user readiness for technology [4; 9]. However, clearer data structuring revealed that trust and convenience are more closely interconnected than initially assumed: it was expected that trust would be secondary to the functional features of SST, but several studies indicate that even a highly convenient system is not perceived as reliable if users have doubts about its security. Thus, if a company does not invest in measures to build trust, improvements in interface design and speed may have limited impact. This shift in emphasis may reflect growing consumer awareness of information security issues and heightened demands for data protection [6].

The consistency of these findings with established principles on the multifaceted nature of loyalty (see [2; 5]) indicates that traditional theories of user behavior in the self-service context—relying on technological readiness and perceived risk—remain relevant. Empirical results demonstrate a statistically positive relationship between convenience, trust, technological readiness, and overall retention rates. Additionally, the importance of service recovery as a tool for "rehabilitating" customers after service disruptions support the concept that the quality of post-incident support directly influences subsequent user behavior [7; 10].

This interpretation of the collected and analyzed data underscores that customer retention strategies for automated self-service points must consider multiple interconnected factors. The findings are applicable across various industries (retail, banking, services, aviation, and others), as the underlying principles (comfort, security, rapid incident response) are broadly relevant to most consumer segments. However, the question remains as to how retention factors vary among specific target groups (for example, customers

with low technological readiness or advanced users seeking high-tech features). Future studies could focus on identifying the distinct characteristics of different customer types and developing personalized retention strategies accordingly.

CONCLUSION

The results of the systematic review and their interpretation allow for several conclusions regarding the mechanisms and tools that contribute to customer retention in automated self-service points. The analysis of literature sources confirmed that the multifactorial nature of retention plays a key role: convenience, trust in the technology, technological readiness, control over the process, inter customer interaction, and service recovery from failures collectively create a positive user experience and encourage repeated use of SST.

The primary contribution of this study to the body of research is that the conducted systematization not only reaffirmed the existing approaches in the literature for identifying retention factors but also highlighted their interdependence. It was found that companies focusing solely on simplifying the interface and accelerating transactions may face insufficient loyalty levels if they do not simultaneously address trust and security (such as data protection). Furthermore, it was established that proper service recovery can significantly mitigate negative experiences caused by technical failures and prevent customer churn.

From an economic standpoint, the obtained results are important as they enable optimization of SST development costs. Businesses that consider the complexity of the underlying causes of loyalty can allocate resources more effectively, focusing not only on the technological modernization of devices and applications but also on programs to build trust, educate users, and respond quickly to incidents. This contributes to more sustainable customer retention, reduced operating costs for traditional service channels, and increased company competitiveness.

In conclusion, the study demonstrates that customer retention methods in automated self-service points are of significant scientific and practical value, requiring further interdisciplinary research and refinement of loyalty management approaches. Their implementation and the correct combination of factors can provide companies with additional advantages in the

increasingly digitalized market environment.

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