



Self-Service Aversion: correlations between Experience Design and rejection of bank ATMs by some users

Aversão ao Autoatendimento: correlações entre o Design de Experiência e a rejeição de caixas eletrônicos bancários por alguns usuários

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Abstract

This study addresses people's resistance to using self-service terminals, especially bank ATMs. Many bank customers prefer seeking assistance from other people or auxiliary professionals when using an ATM. It was observed that this rejection or difficulty of use is not always directly related to bad interface designs of these self-service systems. An in-depth research was conducted, involving observation and a survey on-site at three bank branches in Brazil using the Contextual Inquiry method. The research used the contingency coefficient as a statistical method to determine the magnitude of the correlation between psychological and behavioral factors and ATM aversion. The results verified the existence of Self-service Aversion, which is the tendency of some to prefer human service instead of automated service, and is built upon four main constructs: sense of uncertainty, environment, sense of accountability, and user interface design. It was concluded that user experience is influenced by psychological and behavioral factors, such as expectations, cognition, emotion, motivation, and social context, impacting effectiveness and usability.

Keywords: Self-service, human factors, emotional design, human experience design.

Resumo

Este estudo aborda a resistência das pessoas ao uso de terminais de autoatendimento, especialmente caixas eletrônicos bancários. Muitos clientes bancários preferem buscar ajuda de outras pessoas ou profissionais auxiliares quando optam por usar um caixa eletrônico. Observou-se que essa rejeição ou dificuldade de uso nem sempre está diretamente relacionada com os designs ruins de interface desses sistemas de autoatendimento. Foi realizada uma pesquisa aprofundada, envolvendo observação seguida de um questionário conduzida em três agências bancárias no Brasil, usando o método de Investigação Contextual. A pesquisa utilizou o coeficiente de contingência como método estatístico para determinar a magnitude da correlação entre os fatores psicológicos e comportamentais e a aversão aos caixas eletrônicos. Os resultados verificaram a existência de uma Aversão ao Autoatendimento, que é a tendência de algumas pessoas preferirem o atendimento humano em vez do atendimento automatizado, e que é construída a partir de cinco principais construtos: senso de incerteza, ambiente, senso de responsabilidade e design de interface do usuário. Concluiu-se que a experiência do usuário é influenciada por fatores psicológicos e comportamentais, como expectativas, cognição, emoção, motivação e contexto social, impactando a eficácia e usabilidade.

Palavras-chave: Autoatendimento, fatores humanos, design emocional, design de experiência humana





1. Introduction

The implementation of self-service technologies has been increasing across diverse sectors, from banks and fast-food restaurants to airports and police stations¹. The Brazilian restaurant franchise Bob's started implementing them in 2014 with the promise of reducing long queues². In Brazil, McDonald's launched restaurants with self-ordering kiosks in mid-2017, providing customers with autonomy when assembling their orders³. In the car rental segment, the Unidas chain (Brazil) also implemented self-service kiosks in dozens of stores, working similarly to self-check-in kiosks in airports⁴. In the banking industry, ATMs were introduced decades earlier in Brazil. In January 1970, the first automatic teller machine was opened in Rio de Janeiro⁵, but it was from 1980 onwards when almost all Brazilian banks invested in automation and ATM services became popular⁶. In that decade, there was a large investment in the computerization of banking services with a focus on customer experience (HENRIQUE, 2001). All with the same main goal: to shorten service time and provide greater convenience.

For the banking services industry, ATMs mean having a greater competitive advantage and the possibility of obtaining the maximum potential of its staff, avoiding trivial tasks that can be performed by self-service machines (RP e CARDOSO, 2002). For Costa Filho (1996), banking automation provides advantages such as convenience for users, greater availability of services, low cost for banks, and high standardization across the entire bank network. However, it loses out on close relationships with customers, cordiality, personal trust, and psychological safety.

Access to banking services via ATMs or access to bank accounts via the Internet is intended not only for the convenience of customers but also to enable financial institutions to reduce risks and operating costs (PITTERI, JÚNIOR e ARRUDA, 2010). For Porter (1999), technological transformation expands the limits of possibilities for companies, replacing human effort with machines. In Brazil, even with the evolution of mobile technology and the internet, around 8% of bank transactions are still carried out using ATMs⁷. In 2013, The Guardian published that Brazil was the country with the highest number of ATMs in the world⁸.

Technology and interaction design in banking automation provide convenience but also depersonalize the service, leading to phobias and psychological barriers for some users (PIRES, 2001). The expansion of technology-based services requires users to possess knowledge and skills, but not everyone has equal proficiency, affecting their ability to navigate tasks effectively (ADLER, 1986).

Rejection or difficulty using ATMs is not solely related to interface design issues, as user experience extends beyond the screens. As Mick and Fournier (1998) point out, emotional reactions to technology are influenced by its integration into daily lives, and the intrusion of

¹<https://glo.bo/3JiqEzR> accessed 15 March 2023

²<https://bit.ly/3ldqXDZ> accessed 15 March 2023

³<https://glo.bo/3Tfdvw7> accessed 15 March 2023

⁴<https://bit.ly/3JHzbh8> accessed 15 March 2023

⁵<https://bit.ly/42eQ3D3> accessed 15 March 2023

⁶<https://bit.ly/3JH0VTe> accessed 15 March 2023

⁷<https://bit.ly/3LpUPrC> accessed 15 March 2023

⁸<https://bit.ly/42cIYEK> accessed 15 March 2023



machines into human lives is not always welcome. According to Grootjans (1990), the success of self-service systems depends on user involvement and perceived benefits. Additionally, technology anxiety and demographic factors, such as age, gender, and education level, play a significant role in the adoption of self-service technologies (FERNANDO e DINESHA, 2019). Therefore, how can Human Experience Design address these human issues that go beyond the designed screens?

This study's primary contributions are twofold: first, to offer an in-depth comprehension of the design and psychological factors that impact individuals' decision-making processes when it comes to utilizing self-service technologies, notably Automated Teller Machines (ATMs); and second, to suggest constructs that lead to Self-Service Aversion.

2. Theoretical background: acceptance and rejection of technology

Technology aims to improve human capabilities and enhance daily life (MOCHAMA, 2020). However, as technology becomes more integrated, its complexity increases, leading to difficulties in interacting with new devices and systems. This "Technology Paradox" arises when adding functionality to a product also adds complexity to its use (NORMAN, 1988). For instance, elderly individuals often face challenges when using touchscreen devices such as ATMs, self-checkout machines, and mobile devices (CLAYPOOLE, SCHROEDER e MISHLER, 2016). Guidelines have been proposed to improve the user experience for the elderly, addressing issues such as touch precision, mapping between actions and consequences, feedback, and hidden information.

The use or non-use of technology is determined by two important factors: intention and usability. Firstly, the user must have the intention to use the technology. Secondly, the technology should be easy to use and operate correctly. The intention of use concerns the attitude and perception of users, while usability refers to the design of the technology (BARNARD, BRADLEY, *et al.*, 2013). However, in addition to usability issues and intended use, there are emotional factors involved in the interaction between human beings and technological devices.

The Unified Theory of Acceptance and Use of Technology (UTAUT), formulated by Venkatesh (2003), aims to explain the user's intentions regarding the use of technology and subsequent use behavior. The theory holds that there are four main constructs: 1) performance expectancy; 2) effort expectancy; 3) social influence; and 4) facilitating conditions. According to UTAUT, individuals consider the potential benefits of new technology, reflect on the learning curve, are influenced by social factors, and evaluate the organizational and technical support before adopting a system.

In a study (BARNARD, BRADLEY, *et al.*, 2013), the authors investigated the acceptance and rejection of new technologies by elderly people and found that, in many cases, the elderly may have a conception that they are not capable of using new technologies. They also feel safer when there are others around who can help them. The authors also cite some of the main



characteristics of easy-to-learn interfaces, according to Donald Norman (1988): transparency, affordance, feedback, and error recovery.

With regard to the difficulty of investigating emotional factors on user behavior, in a study (HOLBROOK e HIRSCHMAN, 1982), the authors addressed the issue of preconscious, subconscious, and unconscious aspects related to consumer choices, pointing out situations related to sensory satisfaction, fantasies, and other internal and irrational aspects (e.g., fears, desires) that are normally left under censorship. However, they mentioned the difficulty of investigating these factors, which are usually analyzed through in-depth interviews, diary studies, or on-site observation, pointing to a limitation similar to the present study.

The decision to utilize or forgo a tool involves a complex evaluation of multiple factors, including past experiences, individual beliefs about how the machine works, and emotional and social factors. Regarding Cognitive Psychology on decisions and preferences, the initial models about decision-making processes assumed that the decision-maker is informed about the options and possible results, is sensitive to the differences between the alternatives, and is rational about the choice, stating that a decision is based on the deliberation between benefits and risks (STERNBERG, 2000). However, later theories recognized that people often use subjective criteria and estimates, influencing their decisions, often unconsciously and overly subjectively, and without control. In this sense, Simon (1957) suggested that decision-making would involve bounded rationality. Later, Tversky (1972) stated that, in cases where a person has many possibilities to choose from, that individual focuses on one attribute of the alternatives and develops a minimum criterion for this aspect, adopting “mental shortcuts” (i.e., heuristics) and hypotheses that limit the ability to make rational decisions, particularly when estimating probabilities (CORRÊA, 2011). In an article on the influence of heuristics on judgment (TONETTO, KALIL, *et al.*, 2006), the idea was presented that human decision-making is based on some specific cognitive heuristics, such as Anchoring and Adjustment, Availability, and Representativeness. These cognitive tendencies have a significant influence on decision-making, particularly in situations of uncertainty or when there is insufficient information to make a fully rational choice.

In research on affective and cognitive factors in people’s preferences (ZAJONC e MARKUS, 1982), the authors work on the emotional aspects of choices. Changing the way a service is performed in exchange for the recommended use of technology can generate resistance from people who are not assiduous with technology or who are not familiar with electronic devices; it may also cause stress, anxiety, and misuse. Therefore, it is of great importance – both socially and economically – to investigate design approaches that link applied knowledge from Cognitive and Behavioral Psychology to the design of electronic and digital products used on a large scale by a wide range of users.

3. Self-service vs. human support

ATMs have played a vital role in the banking industry over the past few decades. Nonetheless, even with the exponential advancement of technology and interaction design practices, it remains unclear why some customers still favor human support. For instance, in a



prior study (FILHO e FERNANDES, 2019) examining the utilization of digital technologies by elderly individuals at bank ATMs, nearly 50 participants were surveyed, revealing that 47% of the elderly cohort still rely on professional assistance when operating ATMs. In another survey about the relationship between the elderly and banking services (REIS, GONÇALVES e ZAGANELLI, 2018), all participants stated that the presence of bank professionals does not cause any suspicion; on the contrary, it instills credibility and conveys a sense of security when using the ATM.

A survey conducted in Canada (LATULIPE, DSOUZA e CUMBERS, 2022) to investigate the extent to which close others assist older adults with banking and finance-related tasks found that over a third of the surveyed close others reported having already gone to the ATM on behalf of the older adult, often for the purpose of withdrawing cash, illustrating an aversion or reluctance to use ATMs. Behavioral wise, certain psychological traits have a significant impact on the adoption of self-service technologies (SSTs) (JOHNSON, WOOLRIDGE e BELL, 2021), and one of the major predictors of SSTs' interest is technology anxiety (CEBECIA, ERTUGB e TURKCANC, 2020).

Frequently, age is associated with the acceptance of technology (ELLIOTT e HALL, 2005). In addition, other significant social and psychological components include self-control and social anxieties (HILTON, HUGHES, *et al.*, 2013). Moreover, personal capacity, perceived risk, relative advantage, and preference for personal contact are the primary factors that influence the adoption and utilization of SSTs (WALKER e JOHNSON, 2006). However, the decision to be assisted by a human instead of using an ATM or even requesting the help of an auxiliary professional is not always limited to elderly people, though. In the report "The Future of Money and Banking,"⁹ based on a survey carried out with a thousand Americans, it was found that more than 10% had never used an ATM, of which 43% said they preferred to deal with human service instead of ATMs. Of these, 16% are young people between 18 and 24 years old.

The problem addressed in this research is the rejection by customers of autonomous use of bank ATMs, leading them to rely on the assistance of others or auxiliary professionals (self-service support team). Despite technological advancements and the increased accessibility and user-friendliness of electronic equipment and digital devices, some individuals still exhibit aversion towards using self-service machines such as bank terminals, airport kiosk totems, and supermarket self-checkout kiosks. Instead, they choose to seek assistance from auxiliary professionals or rely on the support of professionals or friends.

A recent study (LAWO, NEIFER, *et al.*, 2021) investigating the adoption of self-checkout systems in supermarkets revealed that certain participants expressed apprehension regarding the possibility of making errors and being held liable for not operating the system correctly. Another study (LEE e LYU, 2019) proposes that the adoption of SST by older consumers is indirectly influenced by their perceptions of usefulness, enjoyment, and control of SST characteristics, which are mediated by service quality and/or perceived risk. The awareness of these findings also assisted in the construction of the hypotheses presented below.

⁹<https://www.digitalcenter.org/fom/> accessed 15 March 2023



To advance the development of novel SSTs approaches, it is imperative to comprehend the factors that impact the decision-making process surrounding the utilization of these electronic tools. Additionally, it is essential to explore how theories in Cognitive Psychology and applied studies in Human Experience Design can aid in elucidating and resolving this complex phenomenon of human behavior.

3.1. Hypotheses

- i. There are psychological factors that influence people's preferences and decision-making when seeking assistance from auxiliary professionals rather than utilizing self-service technologies (e.g., ATMs);
- ii. Individuals who rely on the assistance of auxiliary bank professionals may experience anxiety over their ability to perform certain tasks independently, such as transferring money, as they feel they lack complete control over the situation;
- iii. The fear of making a mistake in public can significantly influence individuals' decision-making when using ATMs, as there are typically other customers waiting in line. This fear may stem from a fear of embarrassment, incompetence, and causing queues to back up.

4. Method

This study primarily used the Contextual Inquiry method, which involves an observer analyzing tasks performed in their original context, such as a bank branch, and asking questions to understand user behavior. Contextual inquiry is a phenomenological research method that utilizes qualitative methods in design (WHITESIDE, BENNETT e HOLTZBLATT, 1988).

4.1. Ethical Issues

When conducting a survey involving observing and interviewing people, it is essential to consider ethical issues. In this inquiry, the researcher obtained proper authorization from the bank, observed individuals outside, and conducted interviews with their consent, without infringing upon their privacy. The research maintained confidentiality, avoided causing harm or distress, and remained unbiased.

4.2. Research Questions

The following research questions were framed to guide the Contextual Inquiry:

- **Question 1:** Despite the significant technological advancements and user-friendly interfaces, what justifies the persistent preference of some individuals for human support over self-service technologies, especially Automated Teller Machines (ATMs)?



- **Question 2:** What influences the decision-making process of using or not using ATMs? How can the principles of Cognitive Psychology and studies in Human Experience Design shed light on this phenomenon of human behavior?

4.3. *Sample*

As this research focuses on bank self-service technology, the study included bank branch customers who use ATMs with the assistance of a bank professional. The majority of participants were over 40 years of age, with both men and women represented. An exclusion criterion was the use of ATMs without assistance. In total, 221 participants were observed and interviewed in their natural setting, following the ethical approach described in section 4.1. Flick (2008) states that no minimum participant number is required for qualitative research, which aims to understand participant experiences and perspectives without generalizing to a larger population.

4.4. *Procedure*

In the first stage, a literature review was conducted, focusing on emotional factors related to the rejection of new technologies, technology anxiety, and other psychological phenomena, as well as research on emotional and behavioral design related to this context. The review also included specific studies on the topic of this research, such as the evolution of self-service design and equipment for banking services, and the impact of the implementation of this technology on customer satisfaction in the banking services industry in Brazil.

Subsequently, a thorough investigation was carried out utilizing the Contextual Inquiry method, which encompassed on-site observation and a survey conducted at three distinct bank branches in Brazil. During a two-month span, 221 bank clients who utilized ATMs with assistance were observed using an ethnographic approach to scrutinize their behavior. Following the observation, the participants were invited to complete a questionnaire comprising strategic queries. The study was executed with the knowledge and consent of the participants, as outlined in section 4.1.

4.5. *Statistical Analysis*

An analysis from the perspective of Human Experience Design and Cognitive and Behavioral Psychology was conducted, allowing the construction of inferences and results by articulating theories about the collected data and observations made throughout the study.

Cross tabulations, chi-square tests, and modified contingency coefficients (BARBETTA, 2008) were used to demonstrate the dependence between the main qualitative variables derived from the survey. The chi-square test was employed to verify the presence of association among categorical variables, while the contingency coefficient was utilized to examine the degree of association, with values close to 1 indicating a high degree of association between the variables.



In summary, the statistical analyses facilitated the identification of the influence of psychological factors on the behavior and perception of banking customers. The contingency coefficient (C^*) used in this study is expressed by the formula below:

$$C^* = \sqrt{\frac{X^2}{X^2 + N}} \times \sqrt{\frac{k}{k - 1}}$$

Where:

- X^2 is the chi-square statistic, calculated from the observed and expected frequencies (under the assumption of independence) from the contingency tables.
- N is the total number of observations in the contingency tables.
- k is the smaller number of rows and columns in the contingency tables.

5. Results

Association tests were conducted to investigate the relationship between variables related to behavioral preferences and fears, allowing for a thorough and statistically significant analysis, as described in section 4.4. The results obtained from the survey conducted after observing bank customers are presented below.

5.1. Familiarity with technology

Of the respondents, 34.9% lacked skills to use new digital devices, 30.2% showed slight interest, 18.6% did not like technology, and only 16.3% expressed strong interest. Over half (55.7%) had no computer knowledge, and 34.8% did not own a smartphone. Among smartphone owners, the device was primarily used for entertainment and communication, with 86.5% still using it primarily for making phone calls. Half did not have the bank's app installed, 11.1% were unaware of its existence, and 13.9% uninstalled it. 25% had the app active. 86% of non-users had fears about using software for transactions, with 51.1% expressing significant fear. Only 14% would use the app without fear if necessary.

Tests of associations were then conducted between ATM skills and the experience of using the ATM alone, as well as between having a smartphone and past experiences. In terms of the relationship between ATM skills and the experience of using the ATM alone, a significant contingency coefficient ($C^* = 0.705$) indicated a strong association. Similarly, for the association between having a smartphone and past experiences, the contingency coefficient was significant ($C^* = 0.417$), indicating a moderate relationship.

5.2. Human support request

To further explore the survey, specific questions were created regarding consumer behavior and habits regarding ATM usage at bank branches. One of these questions inquired whether they sought assistance from a bank professional during their visits. The findings revealed that



the majority (76%) of respondents sought assistance, while the remaining 24% occasionally used ATMs alone but sought professional help at times. 72.1% prefer ATMs with help to avoid losing money when doing something wrong, 30.2% feel embarrassed for not knowing how to use them properly. Other reasons mentioned less frequently include fear of password theft and doubts about banking services.

Regarding knowledge and skills in using ATMs, the result was homogeneous: 31.7% said they had little idea how to use them, 27.6% said they knew very little, 14% admitted not having enough knowledge to use an ATM autonomously, while 26.7% stated that they clearly knew how to use it. When asked if they had ever tried to use an ATM alone in the past, 19.9% reported making mistakes and compromising their own bank account, 20.8% ended up seeking assistance, 16.3% experienced difficulties in usage, among others such as accessibility issues (13.6%) and scams (2.3%).

The contingency coefficient of the relationship between the preference for using the ATM alone and past experiences revealed a strong effect between preceding episodes and the inclination to use the ATM unassisted ($C^* = 0.733$). A strong association was also found between age and the experience of using the ATM alone ($C^* = 0.732$), as well as a significant association between computer skills and the autonomy of ATM usage ($C^* = 0.650$).

5.3. Difficulties, fears and apprehensions

When asked how comfortable they felt using the ATM without the help of other people, 34.8% said they did not feel comfortable. 33.9% stated that they would use it alone as long as there was someone ready to help them. 24% claimed to be comfortable using the terminals alone. However, this may seem contradictory since all respondents were seen with a professional while using the ATM on the days they were analyzed, so it may be a case of response bias (FURNHAM, 1986). When asked if they would use the ATM alone if there were no one to assist them, 60.2% vehemently stated that they would not use the terminal.

Regarding the rejection or unsuccessful attempt to use ATMs autonomously, participants' responses clustered around themes such as difficulty operating the ATM, fear of mistakes and scams, apprehension in crowded queues, anxiety about using it alone, preference for seeking help, issues with the card or account, and reliance on assistance.

Association tests were then conducted. The relationship between fear of using the banking app on the smartphone and fear of using the ATM alone yielded a highly significant contingency coefficient value ($C^* = 0.706$). Similarly, albeit moderately, there was a significant association found between fear of using the app and autonomy of ATM usage ($C^* = 0.678$). Lastly, the relationship between age and fear of using the banking mobile app also proved to be significant ($C^* = 0.533$).

6. Discussion



The findings suggest that the aversion of selected banking consumers towards self-service machines stems from a combination of psychological, behavioral, and social factors. The statistical analysis revealed a strong relationship between psychological and behavioral factors, specifically regarding the fear of using the banking app and ATMs, the preference for unassisted ATM usage and past experiences, and the relationship between the fear of using the app and autonomy of ATM usage. Notably, age group exhibited a significant correlation with a lower inclination towards using ATMs without assistance. Therefore, the present results support the hypothesis that psychological factors play a role in people's preference for seeking assistance from human professionals rather than using ATMs alone. This finding underscores that the graphical interface of ATMs is not the primary concern, although design can significantly impact users' perceptions and emotions (DAMAZIO e TONETTO, 2022).

In addition to interface usability issues, psychological factors influence users' perceptions, leading them to rely on others for tasks such as bank deposits, bill payments, and cash withdrawals. This can be observed through the strong correlation between ATM skills and experiences of unassisted ATM usage, as well as the correlation between computer usage skills and autonomy of ATM usage, thus confirming the hypothesis that individuals may experience anxiety when using ATMs without assistance from banking professionals.

Furthermore, most participants demonstrated varying degrees of aversion to technology, feeling fearful and unable to use the ATM autonomously. However, technology anxiety only partially represented the problem. People may be averse to the task itself rather than the technology (REINSCH JR, 1985), especially given the strong association between fear of using the banking app and fear of using ATMs alone, indicating an aversion to technology-based banking activities without human presence. In this sense, instead of training customers to be proficient in using ATM technology, it may be more effective to clarify how banking transactions work, how secure the banking system is, and any potential risks (if any).

Another factor related to the aversion to ATMs is the fear of losing control, which involves doubts about being able to control impulses, desires, and emotional behavior. As a result, fearful bank consumers may feel a lack of control over the situation, also supported by the high contingency coefficient between ATM skills and the experience of using ATMs alone. A study on the fear of losing control (GAGNÉ e RADOMSKY, 2017) conducted with undergraduate students, which included electroencephalogram tests, found that those who were led to believe that they could lose control when performing a requested task via computer became more fearful and cautious during the experiment. A strong correlation was found between past experiences and the preference for using ATMs accompanied by others. Thus, past experiences also play a crucial role in shaping individuals' perceptions. The "perceived ease of use" is primarily influenced by individuals' prior experiences with technology, their training, and their willingness to use technology (PARVEEN, 2014).

The evidence of a strong correlation between the preference for using ATMs alone and past experiences, as well as between ATM usage skills and the level of comfort in using ATMs alone, along with having a smartphone and past experiences, supports the hypothesis that fear of making mistakes in public may also influence individuals' decision to seek assistance when using ATMs. The fear of making mistakes may be related to the "impostor syndrome", in which



capable individuals suffer from illusory inferiority, believing that they are not as capable as others and underestimating themselves. In this case, there is a strong fear of receiving negative evaluations from other people when exposed (THOMPSON, FOREMAN e MARTIN, 2000). Additionally, the fear of making mistakes may stem from early childhood experiences when the child experiences feelings of shame and humiliation when they do not receive approval for their achievements (CHRISMAN, PIEPER, *et al.*, 1995). Negative past experiences can also be a dominant factor, as previously demonstrated.

Based on the results, the fear of using self-service technologies is more prominent in situations involving higher financial risk, such as transferring or withdrawing large sums or handling others' money, like paying bills on behalf of a company. This behavior can be linked to "loss aversion," where people prioritize avoiding losses over achieving gains. Consequently, individuals may take greater risks to recover from losses (KAHNEMAN e TVERSKY, 1979). It is important to note that this phenomenon is not limited to older adults, as younger respondents also exhibited similar behavior. However, further research is required to explore these issues in-depth.

6.1. Self-Service Aversion

In this context, Self-Service Aversion (SSA) denotes the inclination of certain individuals to favor human assistance rather than automated machine services (such as ATMs), despite the fact that self-service technologies are typically seen as more efficient and offer greater independence to users. Self-Service Aversion cannot be attributed to a single factor. Instead, it is influenced by the interaction of multiple factors, categorized into four primary constructs.

6.1.1. Sense of uncertainty

When someone first sees a self-service machine (which they haven't tested yet), it can actually elicit two different perceptions: 1) The idea that it can provide faster and more customized service, since they have control over the process; or 2) A certain level of technology anxiety or fear of what the machine can offer, caused by the perceived lack of information, characterized as the "Fear of the Unknown" (CARLETON, 2016). In both cases, there is a lack of knowledge, which can lead to apprehension and uncertainty of use, and this can be further intensified by the lack of past experience with the machine in question.

6.1.2. Environment

The environment can strongly influence (positively or negatively) an individual's decision-making regarding the use of a self-service machine. For example, an ATM located in a busy mall with a high frequency of use may seem more intimidating to some than an ATM located inside an empty bank branch. Many people are afraid of making mistakes in front of others, which can disrupt the flow of the customer queue and attract unwanted attention, discouraging



the use of technology. The environment can also affect the perception of the machine's safety during use.

6.1.3. Sense of accountability

The degree of SSA is proportional to the sense of accountability for the task: the more an individual feels responsible for successfully performing the task, the greater their resistance to using self-service machines. This may occur, for example, when withdrawing retirement money needed to pay monthly bills, transferring significant amounts of money to a company they work for, or when flight check-in is about to close.

6.1.4. User Interface design

While the problem primarily relates to service design as a whole rather than just user interface design, the screen still plays a crucial role as the sole point of interaction between customers and the services provided by the bank branch. User interface design can significantly impact the overall human experience, either exacerbating or alleviating aversion. Friction between the user and the machine can lead to negative memories, discouraging future self-service adoption. Research Question 1 delves into psychological, behavioral, and social factors that contribute to this aversion, including system usability, technological anxiety, fear of losing control, making mistakes, and feeling incompetent. Research Question 2 is addressed by exploring the constructs of Self-Service Aversion, which shed light on the factors influencing the decision to use an ATM alone or seek assistance.

7. Final considerations

Self-service technologies can bring benefits such as convenience, increased service availability, standardization of services, and cost-effectiveness. Nevertheless, because of the psychological intricacy and user behavior, it can create an aversion to self-service among certain individuals. According to Buell (2018), not everything should be automated, and people still prefer human interaction to solve some of the problems. In some cases, when services are automated, employees have their workload reduced, but this effort is transferred to the customer, who must complete the task alone.

The present study employed the Contextual Inquiry method to investigate the aversion towards self-service technology among bank customers. Observations were conducted of hundreds of bank customers at several branches over the course of two months. Following the observation period, hundreds of customers who utilized third-party assistance when using the self-service machines were interviewed. Based on the results, it appears that a significant proportion of the participating bank customers exhibited an aversion towards self-service technology. Several factors that contribute to this aversion can be built upon by four main



constructs: Sense of Uncertainty, Environment, Sense of Accountability, and User Interface Design.

In conclusion, this study sheds light on the various factors that contribute to Self-service Aversion among bank customers. Understanding these factors can help banks and designers develop strategies to improve the usability and overall human experience of self-service machines, ultimately leading to increased adoption and customer satisfaction.

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