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UMA METODOLOGIA DE PESQUISA DESIGN SCIENCE APLICADA EM UMA ESTRATÉGIA OMNICCHANNEL EM UMA INSTITUIÇÃO FINANCEIRA BRASILEIRA

A DESIGN SCIENCE RESEARCH METHODOLOGY APPLIED IN A OMNICHANNEL STRATEGY IN A BRAZILIAN FINANCIAL INSTITUTION

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Objetivo do estudo
O objetivo do artigo é apresentar uma solução para a baixa eficiência operacional e utilização inadequada de insumos nos canais de atendimento de uma grande instituição financeira brasileira.

Relevância/originalidade
O artefato proposto neste estudo foi desenvolvido com base em fundamentações teóricas e levantamentos empíricos, que consideraram diferentes perspectivas no desenvolvimento da solução.

Metodologia/abordagem
Este estudo adotou a metodologia Design Science para desenvolver uma plataforma que unificasse sistemas de atendimento e direcionamento de demandas e processos de negócios.

Principais resultados
A solução de canais de atendimento e contribuiu para a melhoria significativa na gestão de processos ao permitir uma visão integrada do relacionamento, facilitou a análise dos serviços e promoveu aos clientes a experiência de jornadas de sucesso.

Contribuições teóricas/metodológicas
A contribuição desta pesquisa identificou que a falta de eficiência operacional era causada pelo fato de as áreas de atendimento serem separadas e independentes, utilizarem ferramentas para registro e tratamento de demandas distintas e precisarem ser sistemas integrados ou legados.

Contribuições sociais/para a gestão
Após a implantação integral da ferramenta, será criada uma célula específica para gestão da demanda, responsável pelo controle de prazos, qualidade das respostas e adequação das negociações, sem a necessidade de dispersão dos recursos responsáveis por essas atividades de controle.

Palavras-chave: Transformação Digital, Omnichannel, Tecnologias, Suporte ao Cliente, Design Science Research

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Study purpose
The aim of the article presents a solution to the low operational efficiency and inadequate use of inputs in the service channels of a major Brazilian financial institution.

Relevance / originality
The artifact proposed in this study was developed based on theoretical foundations and empirical surveys, which considered different perspectives on the development of the solution.

Methodology / approach
This study adopted the Design Science methodology to develop a platform that unified customer service systems and the direction of demands and business processes.

Main results
The solution of service channels contributed to the significant improvement in process management by allowing an integrated view of the relationship, facilitating the analysis of services, and promoting to customers, regardless of the point of contact, the experience of successful journeys.

Theoretical / methodological contributions
This research indicates that the lack of operational efficiency was caused by the service areas being separate and independent, using tools for recording and treating distinct demands, and needing to be integrated or legacy systems.

Social / management contributions
After the full implementation of the tool, a specific cell will be created for demand management, responsible for controlling deadlines, quality of responses, and adequacy of the negotiations, without the need to disperse the resources accountable for these control activities.

Keywords: Digital Transformation, Omnichannel, Technologies, Customer Support, Design Science Research

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1 Introduction

Customer dissatisfaction tends to cause a loss of profitability and competitiveness for companies due to the termination of the client relationship or the sharing of negative experiences with future company consumers (Hult et al., 2019). These aspects can add to the cost of retaining the current customer base or conquering new ones (Paiola et al., 2023). Fernandes and Santos (2008) warn of the possibility of dissatisfied customers leaving the company through the termination of the relationship or the non-realization of future transactions. The authors also draw attention to the possibility of negative word-of-mouth communications (Ngoma, 2019) impacting the company's acquisition of new customers (Zhang et al., 2021).

A study by the Technical Assistance Research Program (TARP), as cited by Fernandes and Santos (2008), probed the impact of the spread of negative experiences on companies. The survey showed that dissatisfied customer disclosed their experience with the brand to nine other people, causing companies to lose 10 to 15% of their annual sales volume. This influence has grown increasingly with the spread of social networks (Buskens, 2020) and the creation of private pages, such as Reclame Aqui, which is currently the largest platform for resolving conflicts between companies and consumers in Latin America.

In this sense, the literature shows that the more a consumer interacts with a brand, the more positive these interactions are and the greater is the value created (Ammen et al., 2021; Priem, 2007). Using inputs from customers' spontaneous activations with brands is essential to intensify, strengthen and even improve the consumption experience (Soetan et al., 2021).

In traditional market research methods (such as face-to-face interviews, telephone surveys, and online surveys), consumers sometimes reveal what they think and do (Kotler et al., 2021; Edeling et al., 2021). In this research, we look at the marketing-finance interface, an important field that helps demonstrate the responsibility of the marketing-finance relationship within companies and builds an essential interdisciplinary bridge (Srinivasan & Hanssens, 2009).

Thus, customer service and support channels are excellent tools for identifying strategies for the creation, increase and support of competitive advantages, increased efficiency in improving or creating products and services, as well as correcting possible errors and crisis management (Sturgeon, 2019). This set of strategies for customer service channels brings 'new' advanced digital technologies that seem poised to drastically reduce the demand for routine tasks and transform organizations and job content. These actions positively impact customer experience (Mahr et al. 2019) with companies and make relationships longer and more profitable.

The industry 4.0 era brought considerable changes in consumer behavior to online and/or mobile channels, triggered by advanced digital technologies and easy access to the global market. Intelligent digital devices and advanced technologies have enabled a 'contactless' service, facilitating the encounter and creating value for the customer (Verleye, 2015) without personal contact with employees of various institutions, including financial ones (Lee & Lee, 2020). Hence, Information Technology (IT) has been considered one of the most important components of today's business environment; Brazilian organizations have used this technology extensively and intensely, both at the strategic and operational levels.

Furthermore, administrators have faced the challenges of this increasingly complex environment and require a deeper knowledge of its particularities and dynamics (Saeidi et al., 2019). The use of technology depends on the value it has for the company and availability of

IT applications and their different levels of configuration. At the highest levels, technology can even contribute to changes or even the creation of new business models (Peng et al., 2016; Ilmudeen et al., 2019; Tavoletti et al., 2022).

Moreover, Straker et al. (2015) claim that customer interaction with companies has changed significantly with technological advances in recent years. Similarly, Shen et al. (2018) argue that, in addition to traditional channels, companies began to provide new forms of interaction, such as apps, social networks, digital stores and contact centers (Mainardes et al., 2019). Regarding digital technologies, the omnichannel approach is becoming particularly relevant in the financial institution.

The company studied for the preparation of this work, not identified by confidentiality issues, and named throughout the text as Bank A, is present in the ranking of banks and financial funds most complained about with the Central Bank of Brazil - BACEN, with a high rate of complaints about the active customer base, which can negatively impact its future sustainability. Therefore, customer dissatisfaction, proven by the high volume of complaints registered directly in BACEN, tends to cause a loss of profitability and competitiveness for companies due to the termination of the client's relationship or sharing the negative experience with future consumers of the company. These elements can add to the cost of retaining the current customer base or conquering new ones.

Therefore, this research proposes the development of a platform that unifies the systems of service and targeting of demands, mapping, and standardization of flows, as well as established procedures of service with the expansion of the solution areas, following the methodological principles of the Design Science Research (DSR) approach (Hevner et al. 2004; De Sordi et al., 2020). It was developing an artifact that brought together characteristics of a technological management 'model' and its implementation IT in 'instantiation'.

The artifact proposed in this study was developed based on theoretical foundations and empirical surveys, which considered different perspectives on the development of the solution. The solution adopted in this work can be considered as an incremental innovation, conceptualized by Garcia and Calantone (2002) and Scherer and Carlomagno (2009), as one with a degree of moderate novelty and that generates relevant gains in an existing market. Humble and Jones (1989), state that this type of innovation is used to improve the characteristics of a product or process.

The article is structured as follows: the theoretical foundation is presented, highlighting aspects associated with customer service in financial institutions and Omnichannel's strategy as an improvement in customer service. Forward, the method used is described, while in the next section, the development of the artifact is presented with the requirements gathering, operationalization of the solution and the evaluation of the artifact, and finally, the final considerations of the study and the next steps in the implementation of the solution are presented.

2 Research background

2.1 Customer service in Brazilian financial institutions

Vasiliev and Serov (2019) define the banking sector as a complex, service-oriented architecture of several systems that unite the different organizational areas that manage discrete parts of the customer experience.

Regulatory bodies and supervisors control the functioning of these institutions. Among the main ones stand out the National Monetary Council (CMN), which is responsible for ensuring the stability of the currency and the economic and social development of the country. BACEN has the task of ensuring that financial operators comply with legislation, respect citizens' rights, and form a fair competition environment. In addition, any financial institution

requires the authorization of the BACEN to act, which limits the powers of the operators. For this reason, financial operators end up providing similar products and services in terms of characteristics and prices (Reis, 2018).

It is essential to highlight that the perception of quality and care offered by financial institutions can also be analyzed through a ranking elaborated by BACEN itself. This ranking is formed from the manifestations recorded by citizens directly in the central bank's service channels. According to BACEN, the listed institutions are classified in descending order of the complaints index, which is calculated according to the following equation (1):

$$Complaints\ Index = \frac{Complaints\ .\ 1.000.000}{Customer\ Base} \quad (1)$$

The ranking is published quarterly and presented in two listings: a) 10 largest banks and financial in the number of customers and b) other banks and financial banks that have thirty or more regulated complaints closed in the reference period, as presented in Table 1.

Table 1. Complaints Ranking: Q1 2020

Position	Financial Institution	Index	Complaints	Customer Base
01	FACTA FINANCEIRA S.A.	1,416.17	132	93.209
02	BARIGUI (conglomerate)	996.26	28	28.105
03	NOVO BANCO CONTINENTAL S.A. -	532.98	39	73.172
04	SAFRA (conglomerate)	463.34	1,247	2,691.273
05	INDUSTRIAL DO BRASIL (conglomerate)	255.51	16	62.618
06	BNP PARIBAS (conglomerate)	217.64	684	3,142.799
07	BANK A.J. RENNER S.A.	163.43	39	238.631
08	ORIGINAL (conglomerate)	159.83	443	2,771.671
09	SOFISA (conglomerate)	84.31	20	237.213
10	BRB (conglomerate)	83.58	76	909.295

Source: BACEN.
Note. Although present in this table, Bank A is not identified due to confidentiality.

2.2 The Omnichannel Strategy as an improvement in customer service

Kotler et al. (2021) state that marketing must adapt to the changing nature of consumer paths in the digital economy. It is precisely the adaptation observed with the changes in marketing efforts in recent years, which migrated from the product-oriented focus (marketing 1.0) to the customer (marketing 2.0), followed by values (marketing 3.0) and, more recently, the focus on human beings (marketing 4.0). Finally, the advent of the Marketing 5.0 concept is presented, which is the application of technologies that mimic human behavior to create, communicate, deliver, and increase value throughout the customer journey (Ammen et al., 2021). The authors also state that with disruptive technologies, shorter product life cycles, and rapidly changing trends, the brand needs to be dynamic enough to behave in certain ways in specific situations [...] brands need to engage customers and make sure their experiences of ownership and total consumption are positive and memorable. When customers have problems and complaints, brands should be aware of and make sure they receive solutions (p. 83).

One of the strategies used by companies to ensure satisfactory experiences is omnichannel, defined as an evolution of the concept of multichannel, as it provides for the

unification of customer experience among all communication channels provided by organizations (SEBRAE, 2017).

The omnichannel approach should be seen as an evolution of the multichannel approach originating in the retail sector (Rosman, 2015; Saghiri et al., 2017; Vasiliev & Serov, 2019). The difference between omnichannel and multichannel strategy is the possibility that consumers can continue an interaction initiated on another channel without duplicating information (Vasiliev & Serov, 2019), which refers to a strategy that improves the quality of customer service and reduces specific costs.

Lazaris and Vrechopoulos (2014) and Shen et al. (2018), cited by Mainardes et al. (2019), state that the omnichannel solution is relevant in the banking sector, as it emphasizes joint action in the various access channels so that an integrated and consistent experience is available to meet customer needs.

However, Shen et al. (2018) and Mainardes et al. (2019) reinforce that the success of the implementation of the omnichannel strategy depends on the perception, usability, and positive effect generated. Therefore, omnichannel banking, or the omnichannel strategy applied to banks, focuses on the principles of consistency, optimization, and perfection, intending to make the customer experience as satisfying as possible (Komulainen, & Makkonen 2018, cited in Vasiliev, & Serov, 2019).

It is important to note that more than the evolution of multi-channel service platforms for the omnichannel strategy is needed. It is also recommended to improve data mining processes for the use of information in a structured way for corrections of the customer journey, business processes management, and even possible systemic incidents (Gissoni, 2017). Arantes (1998, as mentioned in Boianovsky, 2008) states that business process standardization contributes to the satisfaction of customer needs.

From the point of view of customer service, this situation is corroborated by Silveira and Moura (2010), who affirm that analysts from the front line of customer support should have all the information organized in script procedures. Also, according to the authors, this standardization aims to unify the company's and the service agent's speech. In this sense, mapping the service processes of each customer contact channel and standardizing all scripts ensures greater uniformity of the customer experience, both from the point of view of response time and in the resolution offered.

Gissoni (2017) argues that retail companies must sophisticate their traditional tools, software, and customer relationship management systems to make it more important to support the crossing of this data. They should then apply specific analytics models to generate insights. According to the author, developing an analytical capacity for data use can identify opportunities that retailers would not otherwise encounter (Gissoni, 2017).

3 Methodological Aspects

This study was conducted following the guidelines of the Design Science Research (DSR) methodology, whose objective was to develop an artifact, to which we refer to the Omnichannel Customer Service Platform. The DSR approach adopted in this study followed the guidelines of Hevner et al. (2004), which structured this methodological approach in three primary cycles of associated activities: cycle relevance, cycle rigor, and cycle design. Figure 1 illustrates the scope of the research and its association with the primary key components of the study, based on the cycles of Design Science Research proposed by Hevner et al. (2004).

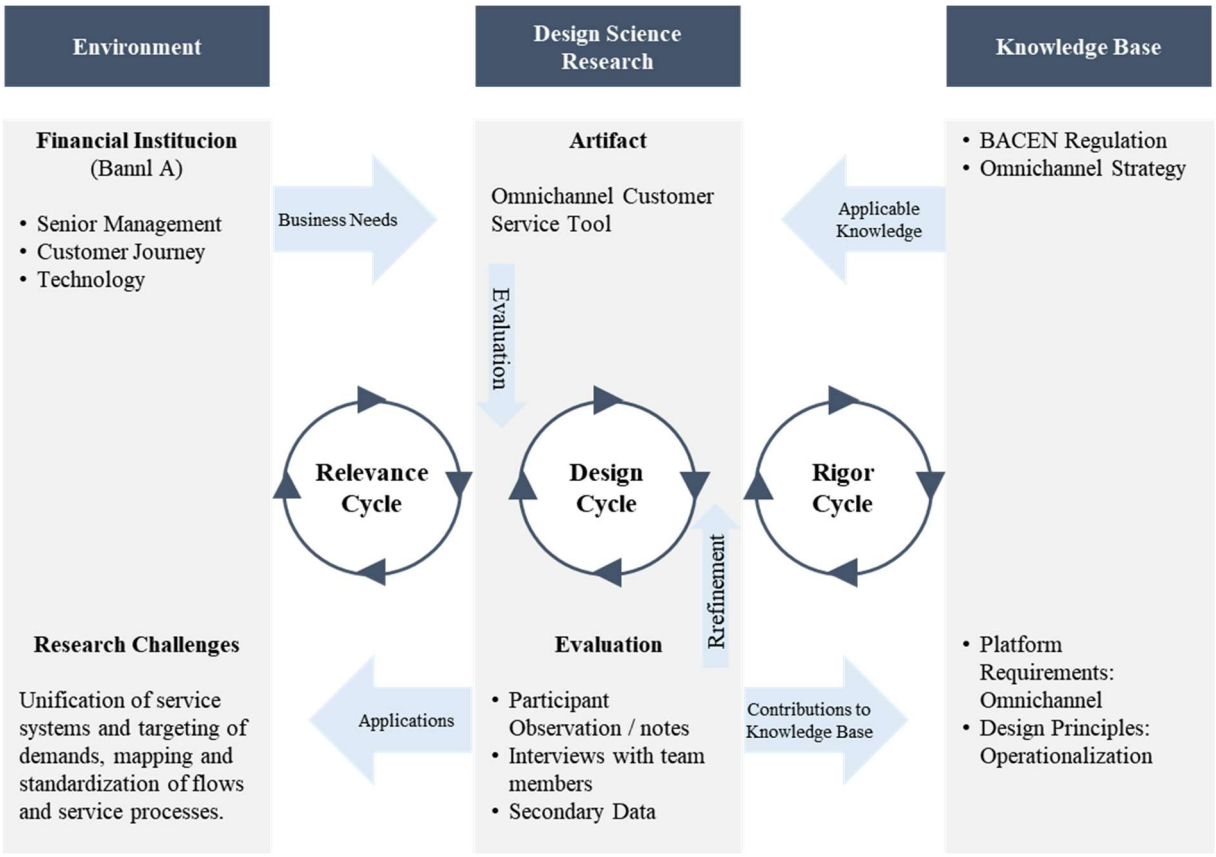

Figure 1. Association between the main components of the study based on DSR's cycles source
Source: Adapted from Hevner et al. (2004, p. 80).

The relevance cycle allows requirements to be identified, such as the problem to be addressed and the insertion of the artifact developed and evaluated in the environment, to solve the research challenges identified (Hevner, 2007). In this research, we dealt with the aspects related to the unification of care systems and demand targeting, mapping, and patronization of process flow, these being the challenges addressed in this study. It was developing an artifact that brought together characteristics of a technological management 'model' and its implementation IT in 'instantiation'. Finally, the usefulness of the artifact was demonstrated and evaluated in the field.

The design cycle aims to perform development activities and evaluate the artifacts resulting from the study (Hevner, 2007). This research proposed the development of an artifact in the form of a platform whose objective was to improve customer support in organizational environments. It is also added that to evaluate the artifact developed. The artifact was demonstrated, followed by evaluative steps. Thus, the following stages of DSR were followed to develop the model proposed in this study. This research contributed with data relevant to the development of the omnichannel customer support platform for a financial institution, which allowed us to see the development journey in this institution, whose results were used in the evaluation stage during the demonstration of the model.

The rigor cycle enables the research and application of theories and methods present in the knowledge base to support the development and evaluation of the artifact developed in the Design Science research (Hevner, 2007). In this research, different sources were identified to support the development of the proposed artifact, such as some regulatory aspects determined by BACEN, and a survey of concepts associated with the omnichannel strategy theme applied to customer service.

3.1 Artifact Development

3.1.1 Context of The Investigated Reality

The proposal of an omnichannel solution applied to the customer service channels of Bank A was adopted, with the unification of customer support systems and demand targeting to solve the operational efficiency problem envisioned throughout this work.

Bank A has been operating in the financial market as a retail and wholesale bank for more than 100 years and is headquartered in a large business center in São Paulo, with branches distributed in all Brazilian cities and 24 other countries on three continents. Bank A, whose mission is to be a sustainable and perennial institution whose businesses are guided by relationships based on respect, clarity of purpose and honesty, offers solutions for individuals and legal entities. The main services offered are checking accounts, debit and credit cards, money transfers (DOC, TED, and PIX), insurance, investments, and credit operations.

Bank A is positioned among the most complained-about banks and financial institutions of the secondary group of the BACEN complaint ranking according to Table 1, with a high rate of complaints about the customer base and negative brand exposure. Thus, inserted in a market where the characteristics and prices of products are similar, to differentiate itself from the competition, Bank A has bet on developing customer service excellence in all its contact points. Before the implemented solution, service analysts manually identified the complexity of customer demands so that demands with low complexity and low solution time are handled directly by operators, and demands with medium and high complexity, or high execution time, were directed to support areas that assess and solve customer demands.

The service analysts performed the classification of the reason for the client's activation in the channels manually. This process may incur interpretation errors, besides disregarding valuable information, such as suggestions for improvement in internal processes, as well as unmet desires and needs by consumers.

Only two service tools used by the institution had the functionality to direct demands to the support areas automatically. This functionality was unavailable for all contact reasons, as the tools still needed to be deployed and available for back-office use, causing the targeting to still occur via email. It is also noteworthy that only the demands directed by these two tools can control the time of performance in each service, allowing the identification of possible bottlenecks in processes so that there is no traceability to demands sent by other tools.

Moreover, the tools were not integrated, so the consultation was not performed at the time of service. If the client previously contacted the institution through a different channel from those contemplated in each tool. Besides, this lack of integration made it difficult to identify possible actions already commanded by the teams that served the customer previously. The analysis of the data obtained by contacting customers to identify experience problems with Bank A and directing identified improvements was made possible through the manual extraction of the databases of each registration and targeting tool.

These databases were unified into a single data repository and handled manually for management reporting. Thus, this analysis process was performed by each area of service, quality and products involved, indicating an overlap of human resources and, consequently, increased transaction cost for support.

In addition to the low resolution identified by the solution scope limited to 60% of the demands received and the volume of previous passages in the transactional and primary channels of care, the causes for the manifestation of the efficiency problem appeared to be heterogeneity in the tools of registration and targeting of customer requests and lack of integration between the applied solutions, databases, and the organization’s internal systems. This situation made it difficult to identify the similarities between the customer’s drives with

the company, the elaboration of improvement plans for the customer experience, and the increased cost of transactions stemming from human resources overlap.

3.2 Survey of Users' Requirements and Literature

It is known that organizations depend on specific requirements to ensure their success, which can be achieved with the use of information technology. For this reason, one of the first steps for the development of the solution was the definition of the main functional requirements of the single system of registration and direction of service, formalized in a meeting that brought together participants of customer service, back-office, and technology teams in June 2020. The mapped requirements are described in Table 2.

Table 2. Empirical Requirements

ID	Requirements	Requirement Detail
01	Omnichannel	Unique tool for recording and targeting demands across all customer contact channels.
02	Cross-device compatibility	Available on an online platform and accessed in the institution's own network by all types of devices (desktops, notebooks, tablets and mobile phones), allowing consultation and interaction from anywhere, at any time.
03	Simplified access	Access through login with the current network username and password.
04	Cadastral integration	Consultation of all customer information, such as the history of your previous contacts with the institution, registration data, contracted products and services, contracting provisions, complaints and cancellations. The search takes place by CNPJ or CPF of this and displays all previous client interactions with the institution.
05	Systems integration	Integration to legacy registration systems and the products and services offered by the institution, allowing hiring and cancellation of these at any time. When selecting the customer, the Fields of Data, Products, and Statements should appear as a link.
06	Telephony integration	Integration with the telephony system so that the authenticated contact is initiated when receiving a client call, and the protocol number is generated automatically.
07	Integration with regulators	Integration with regulatory agencies to collect open calls in these channels to treat the institution.
08	Manual classification	Classification of the reasons for service will be manual by choosing a drop-down list.
09	Automatic classification	Integration with speech and text analytic solution for automatic classification, without human intervention.
10	Targeting demands for support areas	Allow targeting of unresolved demands from the front line to the support areas. The support area will be chosen and triggered automatically from the choice of the motive of the call.
11	Attach documents	Allow, at any time, to include attachments in the protocol and targeting views.
12	Demand/ pipeline control	Automatic feeding of dashboard for the volume of demands, considering: Total Tasks, In Progress, Inside and Outside the Deadline.
13	Crisis Protocol	Automatic activation of crisis protocols based on deviations from the volume of drives.

14	Safety Net	Use predictive and prescriptive models for claimant customers in critical channels to increase primary channel elevation and agility.

Note. Own elaboration.

As suggested in the rigor cycle of DSR, we sought the realization of theoretical support, documents, and concepts to the knowledge base to assist in developing the proposed solution. This review allowed for additional requirements to direct the elaboration of the solution. The requirements mapped by the working group were combined with the indications of the literature studied to develop the solution proposal. This procedure highlighted the tool's design principles based on the expected results with the implementation, as presented in Table 3.

Table 3. Solution design principles

Literature Indications	**Requirement ID**	**Design Principle**	**Expected Result**
SEBRAE, 2017 Lazaris and Vrechopoulos, 2014 Rosman, 2015 Saghiri et al., 2017 Shen et al. 2018 Komulainen and Makkonen, 2018 Mainardes et al., 2019 Vasiliev and Serov, 2019	01 02 03 04 05 06 07 10 11	Adopt the omnichannel approach as a customer satisfaction strategy.	Control the volume of drives performed in critical channels and, consequently, the negative exposure of the brand in the complaint rankings. Offer agile service to solve customer questions or complaints.
Arantes, 1998 Boianovsky, 2008 Silveira and Moura, 2010 Oliveira, 2016		Perform mapping and standardization of service processes and scripts.	
Gissoni, 2017	08 09 13	Improve data mining processes.	Greater efficiency in improving or creating products and services. Quick response to desires and needs yet to be met by the market. Less rework to identify the root cause of complaint and opportunities for continuous improvement.
Magalhães, 2018	10 12 14	Centralize control processes for all service cells in a single team, as supported by shared service center theory.	Lower transactional cost resulting from overlap of control activities, manipulation, and analysis of data, currently performed by different resources in several teams; operational errors, as well as efforts to attract, monetize and retain customers.

Note. Own elaboration.

3.3 Artifact operationalization

Design principles and requirements were shared with the Technology team to evaluate the development and deployment effort. The solution proposal was validated by all the involved teams (transactional, primary, critical, and external channels) and taken together by all stakeholders to prioritize demand with the Bank's project and technology teams. The result of the technical analysis regarding the functional specification was the dismemberment of the implementation of the solution proposed in four phases:

- Phase 1 - Development, homologation, and implementation of the tool for transactional and primary channels (Central, Chat, and SAC); completed in February 2021.
- Phase 2 - Development, homologation, and implementation of the tool for reputational channels (Complain Here and Social Networks) completed in September 2021.
- Phase 3 - Development, homologation, and implementation of the tool for critical channels (Ombudsman, BACEN, and Consumidor.gov); in early 2022.
- Phase 4 - Development, homologation, and integration of the tool with speech and text analytics solutions to improve the data mining processes of service and implementation schedule in planning by the technology team.

The developed solution implemented the omnichannel solution for capturing information and establishing automated crisis protocols. From the identification of deviation of the standard curves of complaint, the system triggers the teams responsible for solutions and alerts customers possibly impacted, preventing increased calls in the channels. The system also creates predictive and prescriptive models for identifying patterns of claimant customers in critical channels to prevent the migration from primary care to critical care.

However, throughout the development of the tool, it was also decided to develop the alternatives of expansion of elevations for primary channels to solve at least 80% of customer requests in the first contact, as well as to map and standardize the flows and procedures of service of the contact channels.

This addition is supported in the literature: in his study, Oliveira (2006) sought to evaluate whether operational indicators of care were related to customer satisfaction and identified that only the first call resolution (FCR) indicator was significant for increasing the level of customer satisfaction. That is, the greater the number of customers served by a single call, the higher the satisfaction level.

Anand and Barsoux (2017) highlight in three pillars the key to a change that involves implementing new technology. They are a) define the catalyst for transformation, b) has a main objective to be achieved, and c) ensure leadership training to achieve the objectives, ensuring successful corporate transformation. In other words, it involves leadership in the correct definition and execution to achieve the main offending problem or that requires a reinvention.

The phase 1 delivery was completed without delay by the development team, and upon its termination, the service teams and impacted support areas were trained regarding the tool's usability. The need to develop a functionality for scheduling demands close to maturity or overdue was identified throughout the use. Thus, protocols maturing the next day or expired a day ago generate an automatic notification for the analyst responsible for completing the demand; protocols that expired two days ago are directed to the responsible manager; and protocols that expired three days or more are directed to the superintendent of the support area. This request was included in the technology project pipeline and delivered in May 2021, so phase 2 delivery already contemplated this functionality.

The service teams contemplated in Phase 2 of the project were also trained regarding the tool's functionalities and so far, also indicate positive acceptance of this new feature. Phase 3 of the project is still under development, with implementation scheduled for 2022. The extension of this phase is due to the complexity of establishing the functionality of integrating the tool with regulatory agencies to collect open calls in these channels for the institution's treatment. From this delivery, it will be possible to evaluate the impact of the implemented solution on the standardization of the customer experience.

In addition, the business process mapping and procedure standardization for contact channels were carried out. Furthermore, the quotas for the primary channels were increased to resolve at least 80% of customer requests in the first contact.

This mapping consisted of analyzing each possible reason and sub-reason for contacting a customer for each product and service offered by the Bank. The means available to the customer to deal with this eventual complaint were also observed, identifying, e.g., if the necessary information is available in the application, internet banking, with the manager himself, or the service channels.

4 Artifact evaluation

The evaluation of the model is an important step in design science research because it allows evidence of the artifact's behavior in the solution of the problem (Hevner et al., 2004; De Sordi, 2020). Thus, to meet the DSR's design cycle, we chose to perform a descriptive evaluation, in which we sought to demonstrate the performance of the artifact from the evaluation of people involved in monitoring decisions related to customer service in this organization. Finally, to evaluate the impact and results of the implemented solution, qualitative research techniques were adopted, the steps of which are described in Table 4.

Table 4. Steps of data collection for evaluation

Step	Main Objective	Data	Methodology		Research Subjects
1	Understand the perception of Bank A employees regarding the impact of the project, in positive and negative aspects.	Primary	Qualitative	Participant Observation	Technology and BackOffice operational and management teams.
2	Identify possible detachments among the data collected by participant observation of the real feeling of the other project participants.	Primary	Qualitative	Semi-structured interview	General Superintendent of Bank A Customer Care Centers.
3	Evaluate the impact of the project implemented so far in the ranking of complaints of BACEN.	Secondary	Qualitative	Documentary analysis	Ranking of the most complained about institutions on the BACEN website.

Note. Own elaboration.

Participant and non-participant observation methods are becoming a research tool prioritized by many researchers in organizational studies. According to the author, participant observation is a qualitative method rooted in traditional ethnographic research that allows the researcher to become part of the analyzed group and understand their interactions more deeply (Marietto, 2018).

One of the authors of this study was a fixed member of all meetings of the project, from its specification and approval to the meetings of development monitoring, homologation, training, and post-implementation of each implementation phase presented throughout the intervention. This evaluation method, however, has limitations. According to Geertz (1993 as quoted in Marietto, 2018) the reading that the researcher makes of contextual reality will always be on the shoulders of others, and only these can attribute the true meaning of the reality they experienced. For this reason, the second stage of data collection for evaluation was conducting a semi-structured interview with the general superintendent of Bank A's call centers.

Next, secondary data obtained by documental analysis of BACEN's complaints ranking, published quarterly on the institution's website, were evaluated. Besides, to find out if there

was an impact of the project implemented so far in the position occupied by Bank A in the list of the secondary group's most complained about banks and financial funds.

It is noteworthy that the solution adopted continues to be developed and implemented in the institution, and it is only possible to measure the gains of efficiency and effectiveness in its entirety at the moment of writing this work. After the full implementation of the solution, the evaluation can be complemented by a qualitative method of documental analysis of the databases of drives and complaints registered in all service channels provided by Bank A.

The indicators collected should be compared to those analyzed at the project's beginning. It should also be evaluated if there was

- Reduction in the index of complaints about the customer base, calculated by BACEN between the beginning and end of the implementation of the tool;
- Reduction of the rate of customer recurrence in service channels; and
- It increased the rate of demands solved at first contact.

Throughout the development of this work, there was an adequate awareness of Bank A's senior management regarding the need to adapt the organizational culture to offer agile and increasingly digital solutions to its customers and employees.

From the project meetings, managers began approaching their operational areas to understand the client's voice and seek continuous improvements in processes, products, and services. This movement resulted in the daily work of process teams for mapping and reviewing processes and attendance in monthly committees between the operation, product managers, and the back office to improve the customer experience. The centralization of quality-of-care processes, such as monitoring and quality auditing, including sales channels, in the same cell, was another achievement of these meetings.

Regarding the adoption of the new service tool itself, the acceptance by users impacted by phases 1 (call center, chat, and SAC) and 2 (reputational channels such as 'Reclame Aqui' and social networks) of implementation were quite positive.

Among the features that favored the adoption of this technology, we highlight the functionalities of automatic targeting of service demands to the support teams and the possibility of controlling the solution term of each targeted demand via reports made available in the tool itself automatically.

To corroborate the identified gains and mitigate the limitations of the researcher's perception, in October 2021, a semi-structured interview was conducted with the management of Bank A's call centers.

When asked about her perception of the tool implemented and the main gains she brought to the day-to-day life of her teams, the manager stated that the observed benefits could be classified as improvements in safety, operational efficiency, and management: "From a security point of view, the tool already presents the client to the customer analyst identified and authenticated, ensuring the security of operations, both in the customer's vision and the Bank's vision. Regarding efficiency, from the tool's implementation, we now have the visibility of the effective service time of our customers for cases where a back office makes the completion. Until then, we had a "gentlemen's agreement" regarding the average time of each demand, but today we can see in real-time the service queues and deadlines and act to give a faster response to complaint cases […]"

Both aspects have been highlighted throughout this work. On the need for companies to be attentive to their customers' experiences, Gissoni (2017) indicates that companies can do this by using their service management systems as tools that generate improvement insights. The real-time view of the service queues and dynamism of corrections mentioned by the interviewee is in line with the mentions of Kotler et al. (2017). This interviewee was also asked about her perception of the future vision of the tool and what is expected after its disclosure to

all customer contact areas: "By accessing a single platform, all channels will have the customer's contact history and use the same language and procedures in the service. I believe this will minimize friction with speech differences between channels and bring even more agility and quality to our customers [...]."

This perception is corroborated by Silveira and Moura (2010), according to which the standardization of the language of the operation ensures greater uniformity of the customer experience, and by Lazaris and Vrechopoulos (2014) and Shen et al. (2018), cited by Mainardes et al. (2019), which claim that the omnichannel solution offers an integrated and consistent experience to meet customer needs. The governance establishment collaborated in this study to control the deadline for meeting demands based on the tool implemented and highlighted by both the participant observer and the interviewed manager.

Therefore, the continuous improvement in processes, products, and services contributed to the reduction of negative brand exposure in the ranking of complaints of BACEN. This previously mentioned result is due to the mitigation of the volume of protocols closed after the deadline established by the areas and informed to the customer during the first service instance. Table 5 shows the ranking of complaints from banks and financial statements of the secondary group of BACEN at the time of writing this article.

Table 5. Complaints Ranking: Q1 2023

Position	Financial Institution	Index	Complaints	Customer Base
01	FACTA FINANCEIRA S.A.	854.46	845	988,923
02	MASTER	647.82	296	456,914
03	BANCO DIGIMAIS S.A.	187.09	51	272,956
04	GRUPO BONSUCESSO – BS2	152.09	50	326,810
05	XP	150.01	223	1,486,516
06	DAYCOVAL	101.28	192	1,895,613
07	AGIBANK	87.85	184	2,094,424
08	PORTO SEGURO	64.64	194	3,000,851
09	BMG	63.04	813	12,894,925
10	MERCANTIL DO BRASIL	61.46	381	6,198,860

Source: BACEN.

The previous table indicates that Bank A is not among the leading institutions that make up the ranking, confirming the effectiveness of the implemented solutions.

5 Final Considerations

This study presented the development of an Omnichannel platform to improve customer service of a relevant Brazilian financial institution that has been operating in the financial market as a retail and wholesale bank for more than one hundred years.

Although the service channels of the financial institution studied are essential for support regarding doubts, information, requests, and complaints of all products and services offered by the institutions of this sector, the company demonstrated low operational efficiency in the service channels. Another problem diagnosed was the lack of adequate use of the inputs they captured, which impaired the company's ability to identify strategies for creating, increasing, and supporting competitive advantages, as well as prevented the increase of efficiency in improving or creating products and services, correcting possible errors, and managing crises.

Furthermore, this research contributes identified that the lack of operational efficiency was caused by the fact that the service areas were separate and independent, used tools for

recording and treating distinct demands, and needed to be integrated or legacy systems. In addition to causing a lack of visibility of the customer journey between service channels, this scenario also incurred the overlap of human resources with the same functions in different areas, which generated high transaction costs in service and control activities.

To solve the problem in question, the strategy of unification of service systems and targeting of demands, improvement of data mining processes obtained from the institution's contacts with its clients, in addition to mapping, and standardization of care flows and procedures, expanding the scope of first contact solution (FCR).

The platform was developed according to the precepts of DSR and based on the literature on the theme investigated, in addition to considering the regulations that affect public sector organizations and empirical requirements.

The solution adopted proposes an incremental innovation and contributes to improving Bank A's processes because it enables an integrated view of the relationship and contacts of customers with the institution and facilitates the analysis of service in sum to identify problems and opportunities.

The conduct of the work in the organization was led by the researcher, who is part of the 'quality team' of Bank A. The 'quality team' has the legal task of mobilizing the organization to develop its most sensitive points and, until April 2021, was allocated under the same management as the critical care teams, which facilitated the interaction between the professionals of these departments and access to the main complaint indicators. This increased dialogue also played an essential role in facilitating negotiations with the areas impacted by the implementation of the solution.

The main difficulty faced in the implementation of the solution was the obtaining and analysis of care data due to the heterogeneity of the systems of record, demands, and dispersion of databases. These barriers were overcome with the help of the operational team allocated in each serving cell, which supported the unification of the bases and the punctual crossing of the service data.

This work initiated the digital transformation of the organization's service channels. It spread the institutional concern that all customers, regardless of the point of contact, experience fluid and successful journeys, sensitizing managers to use the customer's voice and unstructured data to improve the business (Tavoletti et al., 2022).

Under the management aspects, the work elaboration process contributed to the service teams incorporating in their culture the continuous review of processes and attendance, as well as the monthly governance agenda between the service operation and the product and back-office areas.

Until the current implementation stage, the tool already allows the analysis of previously unknown indicators, such as the average time of completion of a service directed to a support area. These functionalities were determinant so that the service management teams impacted by phases 1 and 2 of the implementation received the new tool in a very positive way because they began to have the possibility to control the solution time of each of the demands directed through reports made available in the tool itself automatically.

After the full implementation of the tool, a specific cell will be created for demand management, responsible for controlling deadlines, quality of responses, and adequacy of the negotiations, without the need to disperse the resources responsible for these control activities in each serving cell. This architecture corresponds to what Magalhães (2018) calls the Shared Services Center like a process-based, self-managed organization model by which an area provides services to multiple units or departments of one or more companies.

This alternative has as its main gains the possibility of centralizing the visualization of all previous contacts of the client with Bank A; the guarantee of uniformity in customer service,

both from the point of view of response time and in the resolution offered; the mitigation of operational errors caused by information asymmetry between service agents; and the facilitation of analysis of service information to identify problems and opportunities. This perception of the gain obtained by the solution is in line with the mentions of Kotler et al. (2017) on the need for companies to be attentive to the experiences of their customers and Gissoni (2017), which indicates a way for companies to do this is by using their service management systems as tools that generate improvement initiatives, both aspects highlighted throughout this work.

It was also possible to observe that the changes caused by this work positively impacted the position occupied by Bank A in the BACEN complaint rankings, so the institution is no longer among the ten most complained institutions in the regulatory body.

With the full implementation of the solution proposal presented in this study, it is expected to further increase the operational efficiency of the financial institution in addition to the gains obtained with the partially implemented solution. This result will be obtained by reducing the volume of complaints registered in BACEN and the transaction cost by over-access efforts.

As the following steps, based on the benefits of performing this work in the institution analyzed, and in addition to the dissemination of the culture focused on the management of success and customer experience for all areas of the organization, the Bank may use new quality indicators and recommendation to make up the diagnosis and identify improvements, both in service, as well as in the creation of financial products and services, such as NPS (Net Promoter Score) and CSAT (Customer Satisfaction Score) (Korneta, 2014).

The need to improve service services and their updating and application as a tool for creating and maintaining a competitive advantage has proven to be a possibility for several sectors. Therefore, from the elaboration and implementation of the omnichannel solution presented in this work, it is recommended to consult by professionals who intend to create or boost the customer service area of their business.

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