Understanding How Brazilian Software Organizations Collect and Utilize User Feedback: A Survey

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ABSTRACT

Context: User feedback is a critical resource for guiding software evolution and improving usability and user experience. However, in Brazil, there is still little evidence of how organizations collect, analyze, and utilize user feedback in practice. *Objective:* Our goal is to provide an overview of how Brazilian software organizations have captured and utilized user feedback. *Method:* We conducted a survey involving 31 Brazilian software organizations. Data was collected through a structured questionnaire, represented using graphs and tables, and analyzed. *Results:* The study results revealed that most organizations predominantly have captured explicit feedback, combining internal and external sources, but systematic analysis and longitudinal monitoring have been limited. User feedback has been used mainly to support maintenance, strategic decision-making, and innovation initiatives aiming at software evolution. Integrating supporting tools, low response rates, difficulties in interpreting subjective or generic feedback, and resistance from development teams to incorporate user feedback into decision-making were highlighted as challenges faced by the organizations. *Conclusion:* Although organizations have recognized the importance of user feedback, the study results suggest that user feedback management practices in Brazil are not very mature yet, indicating opportunities for improvement, such as using implicit feedback and monitoring changes in user feedback over time.

KEYWORDS

User feedback, Survey, Software Engineering, Brazilian Organizations

1 Introduction

User feedback is a central element in software development, as it provides valuable information about users' experiences, needs, and expectations regarding the offered products and services [14]. The systematic collection and analysis of feedback make it possible to identify improvement opportunities, correct defects, validate requirements, and guide the planning of new functionalities [15]. Feedback plays a critical role throughout the product lifecycle, assisting organizations in validating value hypotheses, adjusting priorities, and avoiding waste in development efforts [16]. Furthermore, continuous user feedback is crucial for maintaining competitiveness in today's market, where customer demands evolve rapidly and adaptability has become a strategic differentiator [18]. In the context of approaches such as Continuous Software Engineering (CSE), the role of user feedback becomes even more critical. CSE emphasizes iterative practices and the continuous integration of information derived from real product usage to promote rapid delivery and adaptive evolution [3].

Despite the recognized importance of user feedback, there is still a need to better understand how organizations capture, analyze, and utilize this information in practice. In recent years, new approaches—such as agile methods and CSE —and emerging technologies, including haptic devices and Artificial Intelligence (AI)-based tools, have potentially reshaped how feedback is collected and used. Understanding current practices is essential not only to describe the state of practice but also to identify barriers and opportunities for methodological and technological advancement. Recent findings suggest that the lack of alignment between recommendations from the literature and what is effectively adopted in the industry can hinder the evolution of software engineering practices, especially when organizations face difficulties in interpreting and operationalizing user feedback in the software development workflows [23].

Acknowledging the importance of further investigating practices related to user feedback, Johanssen et al. [7] conducted a study analyzing how organizations collect, organize, and use user feedback in the CSE context. The study consisted of a survey and involved 24 practitioners who work in organizations located in Germany. Inspired by Johanssen et al.'s study, we conducted a survey to investigate practices related to user feedback adopted in Brazilian organizations, expanding the scope by using a more comprehensive questionnaire and including in the target population not only organizations that adopt CSE but also any software development organization dealing with user feedback.

The survey involved participants from 31 Brazilian organizations of various sectors and sizes. It explored feedback collection practices, types of feedback captured, tools used for collection and analysis, purposes for capturing and utilizing user feedback, as well as good practices and challenges encountered. Among the main findings, it stands out that most organizations predominantly collect explicit feedback, combining internal and external sources, but still face challenges in dealing with implicit feedback, systematically perform user feedback analysis, and monitor it over time. User feedback has been used not only to support product maintenance

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and evolution but also to aid in strategic decision-making and innovation initiatives, highlighting its multifaceted role in software development.

This paper contributes by providing an overview of how Brazilian organizations have managed user feedback. For researchers, this panorama helps fill a gap in the literature and offers insights for future research aligned with industry needs. For practitioners, this paper provides information about adopted practices and can reveal improvement opportunities.

The paper is organized as follows. Section 2 presents a brief theoretical background on user feedback in software development. Section 3 regards the study design. Section 4 addresses the study execution and data analysis. Section 5 discusses the main findings and their implications. Section 6 presents threats to validity. Section 7 discusses related work. Lastly, Section 8 presents our final considerations.

2 Background

User feedback encompasses the insights provided by users related to their interaction with a software system, including their perceptions, challenges encountered, and suggestions for improvement. These insights are valuable for aligning development decisions with actual user needs and expectations [12]. This type of information plays a fundamental role in the development and evolution of systems, allowing organizations to better understand real user needs and promote continuous improvements [22].

The literature indicates that user feedback in Software Engineering (SE) is typically collected in dynamic and iterative environments, with short development cycles, strong integration with agile methodologies, and the use of automated tools (e.g., logs, telemetry, and analytics), distinguishing it from more regulated or static domains [23]. Domains such as Healthcare, Education, and Public Policy, for example, usually adopt longer feedback cycles, often relying on structured surveys, formal interviews, or institutional evaluation mechanisms. In these areas, feedback-driven decisions occur less frequently and are subject to distinct ethical and organizational validation processes, due to the critical or sensitive nature of the data [4, 8, 17].

Effective use of user feedback contributes to defect identification, requirements validation, feature prioritization, and usability enhancement, increasing user satisfaction and product competitiveness in the market [2]. With the growing complexity of systems and the rapid pace of technological changes, user feedback has become an essential strategic resource to support development decisions based on concrete evidence [12].

User feedback can be classified in different ways depending on the nature of the information and the method of collection. A fundamental distinction is between explicit and implicit feedback. *Explicit feedback* is directly and consciously provided by users through channels such as surveys, app store reviews, digital platform comments, or interviews [12]. *Implicit feedback*, on the other hand, is inferred from user behavior during system interaction, such as navigation patterns, click rates, time spent on specific functionalities, and system logs [2].

Additionally, feedback can be categorized according to the type of data obtained. *Qualitative feedback* refers to descriptive and textual information that expresses users' opinions, feelings, or suggestions, allowing a richer and more contextualized analysis of their perceptions [13]. *Quantitative feedback*, in turn, involves structured and numerical data, such as star ratings, usage metrics, and performance indicators, facilitating statistical analysis and the identification of general trends [23]. A proper understanding of these types is essential for designing effective strategies for the capture, analysis, and use of user feedback in the software development cycle.

User feedback can be collected through a variety of methods and channels, depending on the goal, context, and type of information desired. Traditional methods include online questionnaires, structured or semi-structured interviews, focus groups, and usability testing sessions [24]. With the advancement of digital technologies, embedded feedback collection mechanisms have become widely adopted, such as pop-up evaluations, feedback buttons, in-app surveys, and interaction heatmaps [11]. External sources such as app stores, discussion forums, social media, and support platforms are also used to capture spontaneous user perceptions [7]. In systems that collect implicit feedback, monitoring logs, event tracking, and telemetry analysis allow inferring behaviors and difficulties without direct user intervention [23]. The choice of collection methods must consider factors such as the users' profiles, the effort required for participation, and the balance between desired qualitative and quantitative data.

Once collected, user feedback must be properly analyzed to generate useful insights for system development and evolution. The analysis of qualitative feedback usually involves coding and thematic categorization techniques to identify patterns, recurring needs, reported problems, and suggestions for improvement [9]. Quantitative feedback, in contrast, is often processed using descriptive statistics, trend analysis, and graphical visualizations to help identify critical areas for intervention [1]. In more mature organizational environments, feedback analysis is integrated into requirements management processes, feature prioritization, early defect detection, and strategic decision support [20]. When feedback volumes are high, particularly in digital contexts with thousands of users, automated analysis strategies such as opinion mining and sentiment analysis are employed to extract relevant information on a large scale [10]. The systematic use of user feedback enables not only problem correction but also the continuous alignment of the product with market expectations and needs.

In scenarios where the volume of user feedback is extremely high, such as in widely distributed applications or global services, specific strategies emerge to collect, store, and analyze large amounts of information from different sources and user profiles. One of these strategies is known as Crowd-based Requirements Engineering (CrowdRE), which leverages feedback from large crowds to support the definition and evolution of system requirements [21]. In the context of CrowdRE, data from app stores, social networks, user forums, and customer service platforms are aggregated into centralized repositories, allowing automated analysis of emerging patterns, needs, and recurring problems. Although it has the potential to enrich requirements engineering with real user experience data, adopting CrowdRE approaches also poses challenges such as source heterogeneity, data noise, and difficulties integrating these practices into traditional development processes [21].

3 Study Design

The study consisted of a survey whose **goal** was to investigate the practices of capturing, analyzing, and utilizing user feedback in Brazilian software development organizations, providing an overview of this topic in practice. A survey aims to identify the characteristics of a broad population by generalizing data collected from a representative sample of individuals [19]. Surveys are conducted to produce a snapshot of the situation to capture the current status [25]. We chose this method to reach many organizations, which could be harder or unfeasible through interviews or case studies, for example. We followed the process defined in [25], which comprises five activities: scoping, when we delimit the scope of the study and establish its goals; planning, when the study design is determined; operation, which consists of data collection; analysis and interpretation, which involves analyzing data to draw conclusions about the research topic; and presentation and package, when the results are communicated.

Aligned with the study goal, we defined the following **research question**: (RQ) *How has user feedback been captured, analyzed, and utilized in Brazilian software development organizations*?

The **instrument** used in the study was a form created in Google Forms. It is composed of a consent term for participation in the study and three sections of questions. The first section contains five closed questions to characterize the organization. The second section presents four closed questions to characterize the participant. The third section is composed of thirteen questions related to the research questions, most of them closed questions, some of which allowed participants to complement their answers by providing additional information in text format. There is also one open-ended question for the participants to report user feedback practices that have worked well in their organizations and challenges they have faced, and another to collect further comments and general suggestions. The third section of the questionnaire was based on [7]. Some questions were reused from that work, others were refined, and new ones were added, aiming at a more comprehensive scope and also making the questionnaire more suitable for the Brazilian context. The form used in the study is available at https://doi.org/10.6084/m9.figshare.29410151.v1

The survey **participants** had to be a sample of the target population. Therefore, the study targeted software organizations that capture and utilize user feedback. For representing such organizations, the study aimed at professionals with knowledge of and experience in software development processes and user feedback management within their organizations. Each organization should be represented by a single participant.

The **procedure** followed in the study consisted of three steps. In the first step, we conducted a small pilot to evaluate the form and the study protocol. We asked four experienced professionals to answer the questionnaire and report response time, problems, and suggestions for improvement. Based on their feedback, we made minor adjustments to the form. In the second step, we sent messages inviting people to participate in the study. Messages were sent via email, WhatsApp, and LinkedIn to people from public and private organizations and universities. We also asked the invitees to forward the invitation to other potential participants. The final step consisted of collecting data from the answered questionnaires, organizing it in tables and graphs, and analyzing it through frequency analysis, correlation investigation, and content analysis. The initial analysis was carried out by the first author. Subsequently, the results were reviewed by the other authors. In cases of disagreement, discussions were held until consensus was reached. This process involved multiple iterations.

For the analysis of open-ended responses, we adopted a thematic analysis approach, following a systematic procedure. Initially, the first author organized the responses in a spreadsheet and grouped them based on semantic similarity, even when different linguistic formulations were used. These groupings enabled the identification of recurring ideas and the assignment of representative descriptive labels. The preliminary categorizations were then discussed among all authors to promote consensus (some labels were adjusted after discussion) and minimize individual bias.

4 Study Execution and Data Synthesis

Invitations to participate in the study were sent between early February and late March 2025. Approximately 70 professionals from different Brazilian public and private organizations were contacted. A total of 31 participants completed the questionnaire, resulting in a response rate of about 44.3% – this is an approximate value because invitees may have forwarded the invitation to others, who invited others, and so on. We did not identify cases of abandonment or withdrawal after partial participation. The study had an opinion-based nature, with no sensitive intervention, and was conducted with informed consent, anonymity, and voluntary participation, in line with guidelines discussed in the related literature.

Participants were instructed to ensure that only one representative per organization would respond to the survey and that the participant should be familiar with software development processes and user feedback management within their organization. To ensure privacy, providing the organization's name was optional. For cases where this information was omitted, an analysis of additional data — such as state location, organization type, and size — was conducted to check for possible duplication. No significant similarities were found, and it was considered that each answer represented a distinct organization.

The participants represented a diverse range of Brazilian organizations in terms of location, type, and size. Regarding *geographic distribution*, organizations from all five Brazilian macro-regions participated in the study: 7 (22.6%) located in the North, 4 (12.9%) in the Northeast, 2 (6.5%) in the Midwest, (6.5%) 2 in the South, and 16 (51.5%) in the Southeast. Among the organizations that disclosed their names, only one was identified as a subsidiary of a multinational company [1]

Concerning *organization type*, participants reported working in various types of organizations: 9 (29%) in public organizations with internal software development departments, 7 (22.6%) in private organizations with development departments, 5 (16.1%) in software factories, 3 (9.7%) in Startups and other 3 (9.7%) in organizations that have a single software product representing the core business (e.g., digital platforms).

[1]Despite this distinction, we did not observe any relevant differences in its responses compared to the purely Brazilian organizations.

Regarding *organization size*, 19 (61.3%) participants reported working in organizations with more than 99 employees, 4 (12.9%) in organizations with between 50 and 99 employees, 4 (12.9%) in organizations with between 10 and 49 employees, and 4 (12.9%) in small organizations with fewer than 10 employees.

Figure 1 summarizes the organizations characteristics.

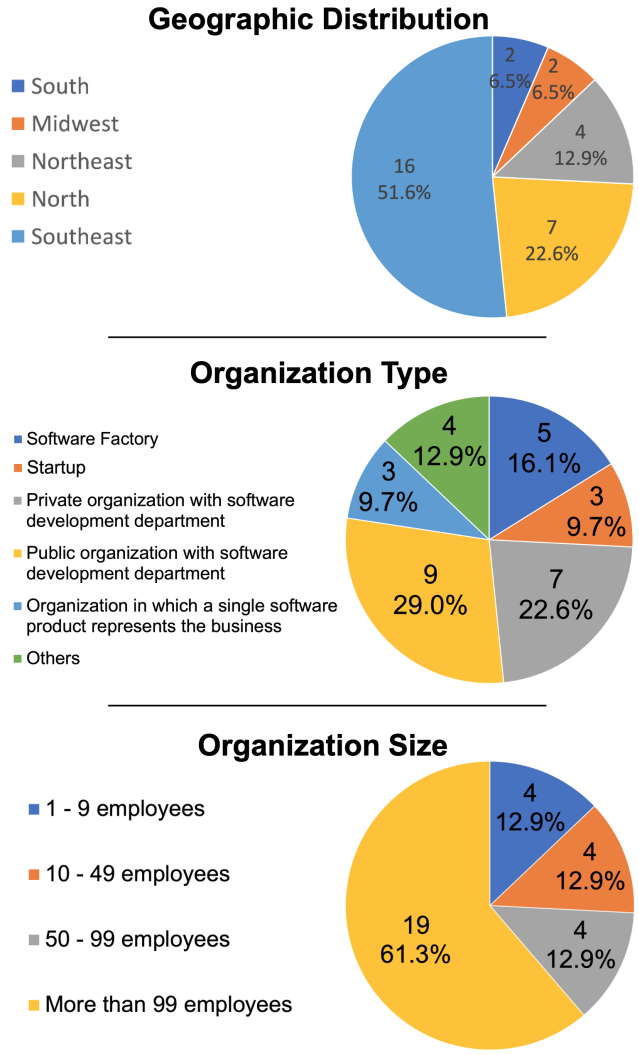

Figure 1: Organizations characteristics

The participants declared to have a high *level of education and experience*. Most respondents (11, 35.5%) held a specialization degree, 9 (29%) a master's degree, and 5 (16.1%) a doctorate, indicating a highly qualified profile. In terms of professional role, nearly half (15, 48.4%) are developers, followed by project managers (5, 16.1%), technical leaders (3, 9.7%), and other roles such as directors, coordinators, researchers, and analysts. Regarding professional experience, 16 (51.6%) participants reported having more than 10 years of experience in software development, with 8 (25.8%) having between 11 and 15 years, and another 8 (25.8%) with more than 16 years of experience.

Next, we summarize the results grouped by topic. Each topic refers to a user feedback aspect investigated in the survey. Several questions of the questionnaire can be addressed in the same topic.

Types of user feedback. Most organizations (28, 90,3%) have collected *explicit user feedback*. From these, 13 (41.9%) collect qualitative feedback, 4 (12.9%) collect quantitative feedback, and 11 (35.5%) collect both qualitative and quantitative explicit feedback. Sixteen (51.6%) organizations have captured *implicit feedback*. From these, 3 (9.7%) collect only quantitative feedback, 4 (12.9%) collect only qualitative feedback, and 9 (29%) collect both qualitative and quantitative implicit feedback. Figure 2 illustrates these results.

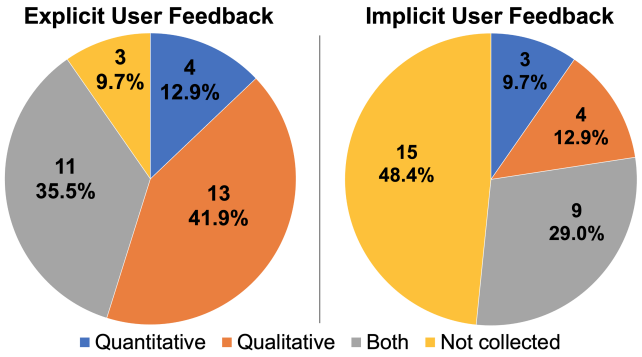

Figure 2: Types of user feedback

Scope and frequency of user feedback collection. Regarding the *user feedback scope*, we consider that feedback can be related to the entire application (e.g., when the user provides a score indicating their satisfaction degree with the application considering its performance, usability, etc.) or to specific features or components (e.g., when the user provides feedback about a particular functionality or interface component). Most organizations (14, 45.2%) have collected only user feedback related to the entire application, while 10 (32.3%) focus on specific features or components. Seven organizations (22.6%) have collected feedback related to both scopes.

Concerning the *frequency of user feedback collection*, event-driven approaches have been predominant. Thirteen organizations (41.9%) have collected feedback in response to specific events, such as the release of new functionalities or important updates. Nine (29%) participants informed that their organizations have collected user feedback sporadically. In contrast, 7 organizations (22.6%) have collected feedback continuously, which involves the use of automated systems to capture opinions, comments, and data from the user, and 5 organizations (16.1%) have captured feedback periodically, by following predefined intervals (e.g., daily or weekly). Figure 3 represents the results related to user feedback scope and frequency of capture.

Sources of feedback and collected contextual information. User feedback can be captured from external *sources*, such as end users, clients, and other stakeholders, as well as from internal sources, i.e., members of the organization, such as testers and quality assurance members. Fourteen organizations (45.2%) have collected feedback from both internal and external sources, demonstrating

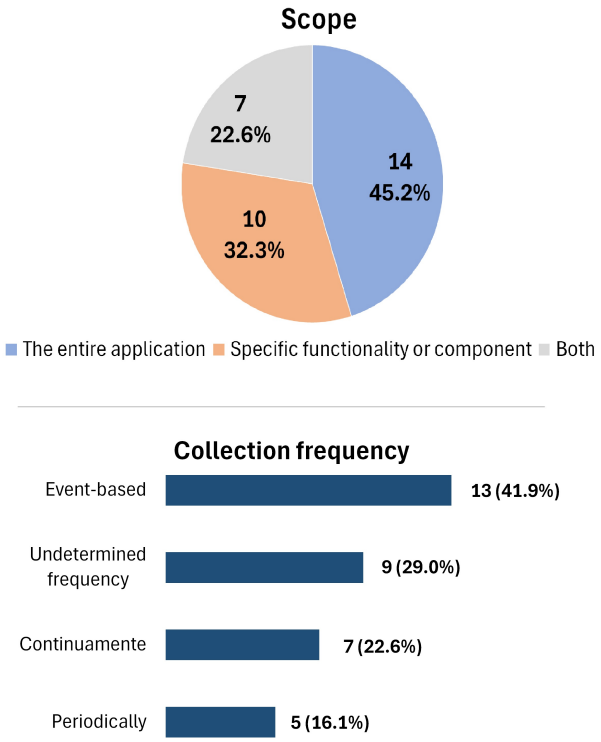

Figure 3: Scope and frequency of user feedback collection

a more comprehensive approach to information gathering. Ten organizations (32.3%) indicated that feedback has been sourced internally (e.g., technical support teams, customer service teams), while 7 organizations (22.6%) have relied on external sources such as end users or partners.

In addition to collecting the feedback itself, capturing *contextual information* can help better understand the feedback. Eighteen organizations (58.1%) informed they register the timestamp when the feedback is provided, 17 (54.8%) capture the type of device used, 16 (51.6%) collect specific circumstances related to the user's interaction context (e.g., internet connection quality), 14 organizations (45.2%) record the user's location. Figure 4 summarizes the results.

Supporting tools to collect and analyze user feedback. Several tools can be used to support user feedback capture and analysis. Concerning *capture*, most organizations have used internally developed solutions (13, 41.9%). Embedded feedback buttons within applications have been used by 8 organizations (25.8%). App store reviews, in-app surveys, email surveys, social media comments, and heatmaps were indicated by 5 organizations each (16.1%), and the use of feedback pop-ups was reported by 3 (9.7%) participants. Notably, 7 organizations (22.6%) reported not using any specific tools to support user feedback collection.

Regarding user feedback *analysis*, again, most organizations (16, 51.6%) have used internally developed tools. Structured data analysis tools, online survey tools, artificial intelligence solutions, and

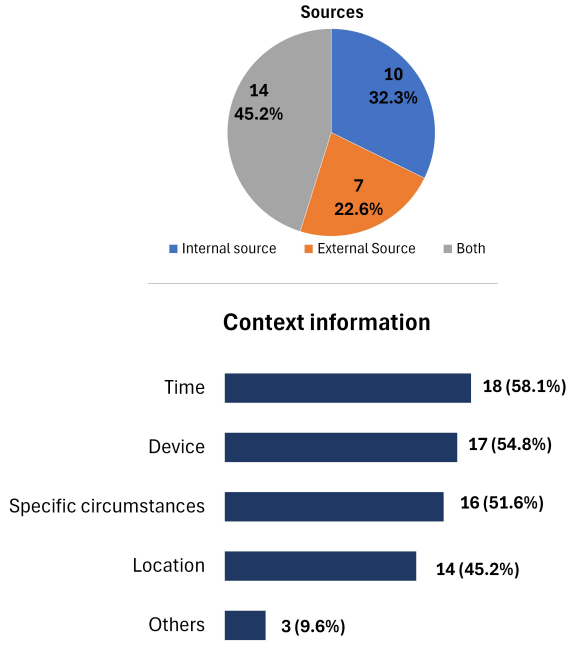

Figure 4: User feedback sources and context information

dedicated feedback management systems have been used respectively by 8 (25.8%), 5 (16.1%), 4 (12.9%), and 2 (6.5%) organizations. Ten respondents (32.3%) indicated that their organizations have not used any specific tool to support feedback analysis, suggesting a reliance on manual or ad hoc processes in some organizations. Figures 5 and 6 represent support tools that have been used by organizations.

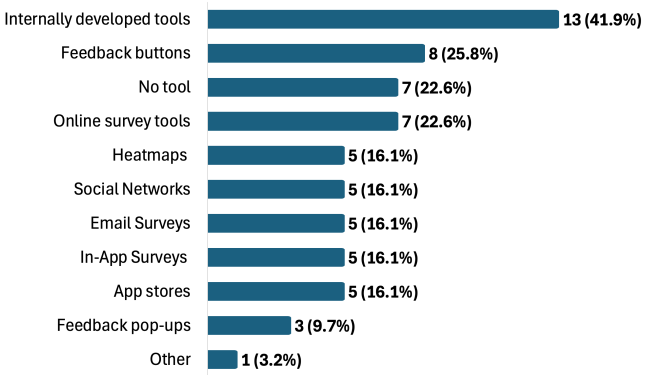

Figure 5: Supporting tools to collect user feedback

Monitoring user feedback changes over time and considering different types of user feedback in combination. By analyzing user feedback, it is possible to obtain useful information that supports software evolution and strategic decisions. We investigated whether, when analyzing user feedback, Brazilian organizations have monitored changes over time and combined different types of user feedback to better understand user needs and behaviors.

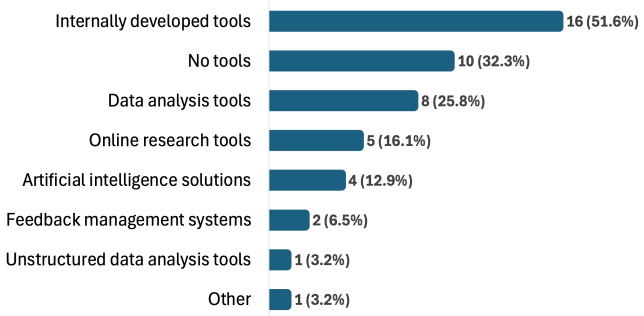

Figure 6: Supporting tools to analyze user feedback

Most organizations (17, 54.8%) informed that they have monitored *user feedback changes* over time. From these, the majority (10, 32.3%) have used manual methods or non-specific tools, such as spreadsheets, to perform this task. The other 7 organizations (22.6%) have used specific feedback analysis tools capable of identifying trends and variations over time.

As for *combining different user feedback types*, 18 organizations (58.1%) have combined different types of feedback to improve analysis. Thirteen participants (41.9%), in turn, reported not combining different types, suggesting that in many cases, organizations still analyze feedback in an isolated or fragmented manner rather than leveraging a more integrated view of user interactions and perceptions. Figure 7 illustrates these results.

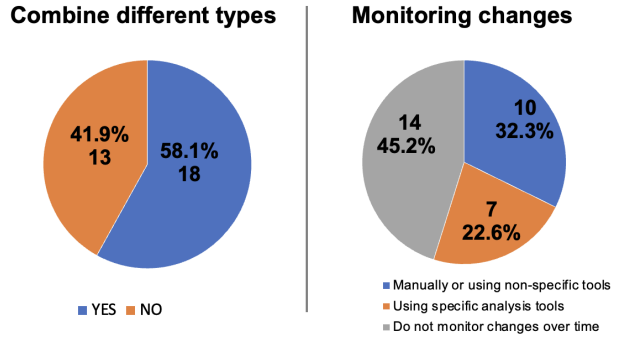

Figure 7: Monitoring user feedback changes and combination of different user feedback types

Purposes of collecting user feedback. When asked about *why the organization collects user feedback*, most organizations (26, 83.9%) informed that it has been to support product evolution planning. Eighteen organizations (58.1%) have collected feedback to improve existing functionalities, 16 (51.6%) to provide better customer support and develop new functionalities, 14 (45.2%) to validate product requirements, and 13 (41.9%) to support strategic decision-making and prioritize bug fixes. Optimizing product performance and enhancing product security were indicated by 9 (29%) organizations each. Some participants presented additional purposes: use of feedback as a strategic indicator for opinion research and to evaluate the general performance of IT departments within public organizations. Table 1 summarizes these results.

Table 1: Purposes of collecting user feedback

Purposes	Quantity	%
Improve existing features	26	83.9
Support product evolution planning	19	61.3
Provide better customer support	18	58.1
Validate product requirements	16	51.6
Optimize product performance	16	51.6
Prioritize bug fixes	14	45.2
Develop new features	13	41.9
Influence strategic decisions about the product	10	32.3
Improve product security	9	29
Evaluate the effectiveness of newly implemented updates	9	29
Other: Strategic indicator based on opinion surveys	1	3.2
Other: Overall IT assessment of the organization	1	3.2

Difficulties and practices that have worked well. Participants were asked to share which practices related to collecting, analyzing, and using user feedback have worked well in their organizations, as well as which difficulties or challenges they have faced. Responses revealed a broad range of positive strategies, including continuous and structured feedback collection during actual system use, short interviews with key users immediately after releases, the combination of qualitative and quantitative data (e.g., usage logs and user comments), and the use of support tools such as Customer Relationship Management (CRM) systems and dashboards. Other practices also mentioned include direct observation of user behavior, documentation of feedback via email, and incorporation of feedback buttons into the interface to quickly capture user impressions. Concerning challenges, the participants pointed out low response rates, generic or overly subjective and difficult-to-interpret feedback, difficulties in translating feedback into actionable insights, and limitations in collecting data from users with low system familiarity or in socially sensitive contexts. Cultural barriers were also mentioned, including internal resistance to valuing user input and difficulties in involving stakeholders in iterative cycles of improvement.

5 Discussion

In this section, we interpret the obtained results considering the topics addressed in the previous section, discuss the results, and compare some of them with the results from the study conducted by Johanssen et al. [7].

Regarding ***types of feedback***, the data showed a clear predominance of *explicit feedback* (more than 90%), meaning that the feedback has been collected, for example, through forms, emails, chats, and support channels. On the other hand, *implicit feedback*, extracted from behavioral interactions such as usage, navigation, and

click logs, has been collected by only around half of the organizations. This difference reveals an organizational culture still centered on direct verbalization by the user, which, although valuable, ignores sources rich in information and analytical potential. The study carried out by Johanssen et al. [7] highlights that the exploration of implicit data is essential in CSE contexts, as it allows passive, constant, and large-scale collection. The low use of implicit feedback may be related to technical barriers (such as the lack of instrumentation and analytical infrastructure), but also to cultural factors, such as the low appreciation of indirect feedback and the prioritization of collecting data through more direct and visible interactions.

The ***user feedback scope*** directly influences the depth and applicability of the user feedback. Around 45% of organizations have focused on general aspects of the application, such as performance and overall usability, through mechanisms such as general ratings or comprehensive questionnaires. On the other hand, around 32% of organizations have chosen to collect specific feedback, related to individual features or components of the interface, a strategy that tends to provide more targeted and actionable data for local adjustments. Only around 23% of organizations reported collecting feedback at both levels, which represents a more balanced approach recommended by the literature, since it favors both the macro view of the product and specific improvements.

Concerning the ***frequency of user feedback collection***, circumstantial approaches have been predominant. Around 70% of organizations have collected feedback sporadically or based on events. Only around 23% have collected user feedback continuously through automated systems.

This shows that although user feedback collection has been performed in the surveyed organizations, it has often happened reactively rather than systematically integrated as a continuous improvement process. There has been a low adherence to continuous feedback practices — one of the pillars of CSE — suggesting that user feedback is not yet fully integrated into the development cycle of Brazilian organizations.

As for ***user feedback sources***, both internal and external sources have been adopted (around 45% of organizations have adopted this dual approach). This suggests an understanding that combining different perspectives — from internal stakeholders (such as Quality Assurance and customer support teams) and external users — is essential to obtain a more comprehensive view of the product's strengths and weaknesses. However, most of the organizations use only one kind of source. Surprisingly, around 32% have used only internal sources. A possible explanation for this is that these organizations develop software internally, and the participants considered that the users are internal sources because they belong to the same organization.

When these results are compared to the findings of Johanssen et al. [7], there is a similarity in the recognition of the importance of diverse sources of feedback. However, Johanssen et al. highlighted that, in many organizations, internal sources still predominated, often due to easier access to technical teams. In contrast, our study suggests that Brazilian organizations are making conscious efforts to actively capture external feedback, despite possible structural limitations. This finding may reflect particularities of the Brazilian market, such as the greater proximity between companies and their user bases, especially in service-oriented sectors. However, as pointed out by Johanssen et al. [7] and corroborated in our study, integrating and reconciling feedback from multiple sources still poses significant technical and organizational challenges. Several participants reported difficulties in organizing, analyzing, and synthesizing user feedback when it comes from diverse sources.

Regarding ***context information,*** all organizations have collected some pieces of information, mainly the time at which feedback was provided (which allows temporal analysis and correlation with specific product events), the type of device used (allowing the identification of behavior patterns or platform-specific problems), specific circumstances (such as connection quality or operating environment), and the user's location. This additional information enriches the qualitative and quantitative analysis of user feedback, providing greater precision in identifying causes and facilitating more effective corrective or evolutionary actions. The combination of user feedback and context brings the practices closer to user-centered approaches, as advocated by Johanssen et al. [7], and represents an important step towards personalizing the experience and continuous product improvement. However, despite these advances, it is observed that few organizations have collected all these pieces of information simultaneously, which suggests a fragmented and opportunistic approach.

Concerning the ***tools used to support user feedback collection and analysis***, there has been a predominance of the use of internal solutions. This may indicate greater control over the data, contextualized analysis integrated into internal flows, and a more precise adaptation to the specific needs of the organization's products and needs. On the other hand, using tools developed internally also imposes barriers related to the scalability and maintenance of these tools. The use of proprietary solutions may also reflect the lack of market tools compatible with the reality of these organizations or, even, technical, cultural, or budgetary barriers that hinder the adoption of external solutions.

Other *user feedback collection* tools mentioned included the use of feedback buttons embedded in applications, as well as methods such as app store ratings, internal surveys, comments on social networks, and heat maps. The use of feedback pop-ups was also mentioned, which suggests a preference for less intrusive mechanisms that are more integrated into the user experience. Despite the diversity of collection approaches, around 23% of organizations have not used any specific tool to support user feedback collection. This indicates a relevant weakness, in addition to a possible underuse of the channels available for structured listening to users. The lack of technological support can limit not only the volume of data collected but also the systematization and reliability of the information used to support engineering decisions.

Other tools to support the *analysis of user feedback* were also mentioned, such as structured data analysis tools, online survey tools, and solutions based on artificial intelligence. Only around 6% of the organizations have used dedicated feedback management systems, and more than 32% of organizations have not used specific tools to support analyzing user feedback data. The results suggest that the use of more sophisticated tools is still limited, which may limit the ability of organizations to extract strategic value from the feedback received. Moreover, it appears that in many organizations, analysis has been carried out manually or with little support, based

on ad hoc procedures or with low standardization. This scenario compromises the scalability and reliability of interpretations, in addition to making practices such as automated pattern detection, sentiment analysis, and intelligent demand prioritization unfeasible. As pointed out by Johanssen et al. [7], the absence of specific tools or the dependence on manual processes makes it difficult to integrate user feedback into the continuous development cycle. Appropriate supporting tools are essential to ensure agility, repeatability, and traceability in user feedback-based actions. The lack of integration between capture and analysis tools, in turn, compromises the fluidity between observation and action. Thus, there is a clear opportunity for advancement in the adoption of more integrated, accessible, and aligned technological solutions to engineering flows, especially in contexts with high user feedback frequency or multiple input channels.

As for the ***purposes for collecting and analyzing user feedback***, the results showed that user feedback has been primarily used to support product evolution planning and improving existing functionalities. Other applications include assisting customer support activities, developing new functionalities, validating product requirements, and making strategic decisions. These results are consistent with those reported by Johanssen et al. [7], who also found that user feedback was predominantly applied in maintenance and incremental improvement contexts. While Johanssen et al. observed a more restricted use of feedback for strategic and innovative purposes, our findings show that more than one third of organizations have been employing user feedback to support activities such as innovation and business decision-making.

This may reflect an evolving maturity in the perception of user feedback: transitioning from a reactive tool used mainly for fixing defects to a proactive instrument for shaping the future direction of software products. Nevertheless, the findings also reveal that opportunities for further advancement remain. For instance, fewer organizations reported using user feedback explicitly to enhance product security, an important area, but that may require more technical and structured feedback mechanisms.

Regarding ***monitoring user feedback over time***, the results show that more than 45% of the organizations have not monitored changes in user feedback over time. Among those that do, the majority (around 32%) have relied on manual processes or generic tools, such as spreadsheets. Only around 23% have employed specialized tools that enable longitudinal analysis of user feedback. Monitoring user feedback evolution over time is a critical practice for identifying emerging user needs, detecting changes in behavior, and ensuring continuous improvement of software products. However, the findings of this study reveal that this practice seems to be still underdeveloped in many Brazilian organizations.

These findings mirror those of Johanssen et al. [7], who also identified user feedback monitoring as one of the most fragile and immature practices in the organizations they studied. Both studies highlight that, while the initial capture of feedback is relatively widespread, the continuous and systematic tracking of feedback evolution — which is crucial for organizational learning and proactive adaptation — remains a significant challenge.

In the Brazilian context, qualitative responses from the survey participants suggest that there is an emerging awareness of the importance of this practice. However, organizations still face obstacles such as a lack of resources, integrated tools, and limited process formalization. Therefore, the study indicates that while there are positive signs of change, many organizations are still in the early stages of establishing user feedback monitoring as a strategic process. Strengthening this practice will be critical for organizations aiming to evolve toward more mature, data-driven development models.

Finally, the analysis of the participants' qualitative responses revealed important insights into **successful practices and challenges related to user feedback**. Among the practices perceived as most successful, participants highlighted the continuous and structured collection of feedback, informal interviews and collaborative meetings with key users, the use of specific tools such as CRMs and dashboards for data organization, direct observation of user interactions with the system, and the integration of feedback into short iteration cycles within development processes. These practices foster richer insights into user needs and enable more agile prioritization of improvements, reinforcing recommendations from the literature for effective feedback management. Johanssen et al. [7] did not investigate successful practices or perceived challenges directly, but they emphasized the importance of proximity to users and the timely use of feedback as enablers of continuous improvement. These aspects were reflected in the participants' responses, particularly regarding informal interactions and short feedback loops.

On the other hand, the main challenges reported include low user engagement in providing feedback — especially in the context of new systems — difficulties in interpreting subjective or generic feedback, selection bias favoring more critical or highly satisfied users, structural limitations such as the absence of appropriate tools, and resistance from internal teams, particularly developers, to incorporate user feedback into decision-making processes. Although the study by Johanssen et al. did not explicitly examine challenges, the structural and cultural barriers described by our participants resonate with broader issues discussed in the literature, such as tool fragmentation, lack of process integration, and gaps between development and user-facing teams. Thus, our study highlights that while organizations have adopted user feedback good practices, there are still several opportunities for improvement, especially regarding the institutionalization of systematic processes and the fostering of a feedback-oriented culture within organizations.

Considering the results as a whole, the research question defined in the study design — *How has user feedback been captured, analyzed, and utilized in Brazilian software development organizations*? — can be answered in a nutshell as follows: user feedback collection has focused on explicit feedback (qualitative or quantitative), related to the entire application, collected mainly when specific events occur and from internal and external sources. Context information has been captured to enrich user feedback data, and organizations have mainly used tools developed by themselves to support user feedback collection and analysis. User feedback data has been used mainly to support planning software evolution, and the analysis has combined different user feedback types (but many organizations still do not do that) and does not monitor user feedback changes over time. The results also revealed that Brazilian organizations have relied more on direct communication channels with users and have been interested in the use of user feedback to support strategic

and innovative initiatives. Among the challenges to be addressed, we highlight the ones related to collecting user feedback continuously, interoperating supporting tools, and integrating different user feedback sources and data.

6 Threats to Validity

The validity of a study denotes the trustworthiness and credibility of its results. As with any empirical research, this study has threats that must be recognized, mitigated as much as possible, and considered with the results. We discuss threats following the classification proposed by Wohlin et al. [25].

Construct Validity. Concerns the degree to which the instruments truly capture what they are intended to (i.e., how the constructs involved in the study can affect the results). In this study, the main threat refers to the possible misinterpretation of questions by the participants. To mitigate this threat, after designing the questionnaire, it was evaluated by researchers external to the design process. Subsequently, we carried out a pilot with four experienced professionals in software development and user feedback management to evaluate the questionnaire structure, clarity, and estimated response time. Based on their feedback, we made minor adjustments to the questionnaire.

Another threat concerns the alternatives of answers presented in some questions, which may not have covered all possible responses (e.g., purposes for utilizing user feedback). To address this limitation, we included the "Other" option in several questions, allowing the participants to provide free-text responses that better reflect their realities. Additionally, it is important to recognize that the answers reflect the participants' personal perceptions, experiences, and interpretations, which naturally embed subjectivity that could not be entirely eliminated.

Internal Validity. Refers to the extent to which the results accurately reflect the studied phenomena. One potential threat in this study is the possibility of multiple participants from the same organization answering the questionnaire. To mitigate this threat, the invitation message informed that only one person per organization should participate in the study. Moreover, when answering the questionnaire, participants were asked to provide their organization's name. However, to preserve privacy, informing the organization was not mandatory. After data collection, we verified that all the participants who identified the organization's name were from different organizations. Then, we analyzed the responses from participants who did not disclose their organization's name, examining organizational characteristics (e.g., state, sector, size) and comparing them with the responses from the other participants to detect possible duplications. We did not find similarities suggesting repeated organizations.

Another threat concerns potential inaccuracies in the answers provided by the participants, for thinking they or their organizations could be evaluated. To mitigate this threat, we informed the participants that data would not be evaluated individually and anonymity would be preserved. Even so, distortions cannot be fully ruled out.

The adequacy of the participants to respond on behalf of their organizations also threatens the study results. To address this issue, the questionnaire included questions about the participants' profiles, such as the time they have worked in the organization, their roles, and knowledge and experience in the topic, allowing us to assess their suitability for the study. Given that someone with insufficient knowledge could have responded, we analyzed the answers for inconsistencies or contradictions that could indicate that. We did not find any significant discrepancies. Thus, we believe that the participants were adequate for the study. Even so, the threat can not be disregarded.

External Validity. Concerns the extent to which it is possible to generalize the study's results. The sample size (31 organizations) is a threat to the results generalization. To mitigate this limitation, we sent the invitation to different individuals from several types of organizations, located in different Brazilian states, including private companies, public entities, and different technological domains. As a result, the sample, although small, includes organizations from all the Brazilian macro-regions. However, this threat and its effects cannot be disregarded.

In addition to the sample size, we recognize that the representativeness of the participating organizations is also influenced by the diversity of industry sectors and organizational profiles. Although our sample includes organizations from several sectors (such as technology, public administration, health, education, and financial services), sizes, and maturity levels, we cannot ensure that the distribution is aligned with that of the Brazilian organizations population. These factors may impact the applicability of the findings to contexts different from the ones considered in the study.

Concerning generalization to the international context, it must be considered that the cultural, organizational, and technological characteristics of Brazil may influence the investigated practices. These contextual factors should be considered when interpreting the findings and drawing broader conclusions. Moreover, new studies should be carried out before extrapolating the conclusions to other contexts.

Reliability Validity. Refers to the extent to which data and analysis depend on specific researchers. Regarding collected data, the invitation was sent by the researchers to people from their contact network and the invitees were asked to send it to other people they judged suitable for participating in the study. Therefore, if the invitation would be sent by other researchers, a different sample could have been reached. Therefore, sample bias should not be disregarded. As for data analysis and interpretation, it was initially carried out by the first author and, thus, reviewed by the other two. Discussions were performed to refine the conclusions, minimize biases and reach consensus. Lastly, we must consider that qualitative analysis inherently involves subjective judgments, and variations might occur if different researchers conducted it.

7 Related work

User feedback has gained increasing attention in the Software Engineering literature, particularly within the context of agile and continuous development practices. For example, Fitzgerald and Stol [3] approach user feedback in CSE context, pointing out that continuous capture of usage data and feedback is essential to shorten feedback loops and accelerate system adaptation to market changes. Olsson et al. [6], in turn, emphasize the importance of continuous feedback in the software development process, highlighting the

role of experimentation and systematic user data collection to guide product evolution decisions.

Research related to Crowdsourced Requirements Engineering (CrowdRE) has also addressed user feedback. For example, Groen et al. [5] provide relevant contributions by discussing practices for extracting requirements from large volumes of user feedback collected in online environments. These practices also highlight the challenges of dealing with noisy, heterogeneous, and difficult-to-interpret user feedback data.

Although user feedback has been the object of study in several works, few works have investigated the subject in practice through surveys. The work most closely related to ours is the survey carried out by Johanssen et al., which investigated how user feedback was collected and utilized in continuous software development organizations. The study involved 24 participants from 17 organizations located in Germany. Their study revealed that collecting user feedback was a common practice in the studied organizations. However, there were weaknesses in user feedback analysis and monitoring. Moreover, the authors identified that integrating multiple feedback sources, both internal and external, were a major challenge for many organizations.

The Johanssen et al.'s study served as a basis for ours, thus we reused questions defined in [7] (sometimes with some adjustments). As the main differences, our study includes questions not addressed in [7] (e.g., regarding user feedback practices that have worked well and challenges that organizations have faced) and is not limited to the CSE context. Moreover, our study focuses on Brazilian organizations. We did not find any similar study investigating user feedback in Brazil. As discussed in Section 5, some of the results obtained in our study are consistent with the results from Johanssen et al.'s study. However, new findings were revealed in our study, providing evidence on how Brazilian organizations have captured, analyzed, and utilized user feedback.

Recent works have reported surveys with practitioners, providing updated insights into how user feedback is handled in different contexts. Tkalich et al. [23] and Li et al. [9] observed that companies in countries such as Germany, the United States, and Canada use feedback to prioritize requirements, support strategic decisions, and enable continuous product validation. These practices are typically supported by automated tools, structured channels, and agile development methods. Li et al. [9] also reported best practices across industries, emphasizing structured and tool-supported feedback life cycles. Our study results reveal comparable tendencies in Brazilian organizations, but also highlight a higher degree of informality, less standardization, and more frequent technical limitations, reflecting the distinct cultural and operational characteristics of the Brazilian context.

8 Final Considerations

This paper presented a survey that investigated how Brazilian organizations have captured, analyzed, and utilized user feedback. The study involved 31 organizations from all Brazilian macro-regions.

The results showed that most organizations have predominantly collected explicit feedback, combining internal and external sources. However, practices such as continuous collection of user feedback, monitoring of user feedback changes and systematic data analysis are still not well consolidated. Despite these challenges, user feedback has been used as a strategic resource to support product maintenance, evolution, and decision-making.

The study also revealed practices that have been successful in the investigated organizations, such as collecting user feedback continuously (the organizations that reported to perform this practice considered it as a differential), conducting interviews with key users, and using specific tools for data analysis. On the other hand, organizations have also faced challenges such as low user response rates, difficulty in interpreting generic feedback, and the lack of adequate tools for structured analysis.

The results also suggested that larger and more mature (older) organizations have adopted explicit feedback in a more structured manner (e.g., with structured surveys to collect and analyze feedback), supported by automated tools (mainly internal tools) and through continuous processes. In contrast, smaller and younger organizations (e.g., startups) have frequently relied on informal channels such as email and social media and prioritized qualitative feedback with short analysis cycles, tightly integrated into strategic decision-making, reflecting the need for constant market validation. These results suggest that organizational size and maturity have influenced how feedback has been collected and used.

When compared with [7], which was the main basis for our work, the results indicate similar trends but also highlight particularities of the Brazilian context, such as the strong emphasis on direct communication channels with users and an emerging concern to use feedback more strategically.

By providing an overview of user feedback practices in Brazilian organizations, this paper broadens the understanding of user feedback in Brazil and provides insights for researchers and practitioners interested in improving their practices. The results also point to opportunities for evolution, both in organizational processes and technological support.

As future work, we intend to deepen the investigation into how to combine different user feedback sources and support decision-making regarding product maintenance, evolution, and identification of new opportunities.

ARTIFACT AVAILABILITY

The supplementary material containing the questionnaire used in the study and the collected data is available at https://doi.org/10.6084/m9.figshare.29410151.v1

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