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AUTOMATING REPOSITORY MANAGEMENT AND KNOWLEDGE SHARING: PRACTICES IN BPO SUPPORT SERVICES FOR RESEARCH AND DEVELOPMENT

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Biographical Sketch

Maria Katrena Estonio is from the Philippines and was born in Pasay City. Katrena is a seasoned professional in the BPO Industry with over 14 years of accumulated experience in customer experience, quality assurance, and process optimization. She earned a Bachelor of Arts in Communication from Leyte Normal University in 2011, from which she began her career as a customer service representative. She advanced through the ranks to subsequently become a quality analyst, quality supervisor, and in the culmination of her career, a quality manager.

Apart from the previously mentioned roles, Katrena also worked as a business analyst with specialization in speech analytics technologies. She used to work in Automation as a business analyst where her primary duties included the application of artificial intelligence as well as the creation of automation frameworks that were aimed at improving service measures and efficiency. Her work covers AI solution implementation with cross organizational AI solution implementation and system designs that improve the productivity of agents and satisfaction of the customers.

Currently, Kathy works in a BPO company, particularly within the IT Support Services department. Her responsibilities include optimizing performance metrics, leading automation initiatives, and ensuring that customer-centric solutions align with organizational goals. She has developed a deep understanding of how technological innovation can drive impact in support environments, particularly in client-facing and research-aligned operations.

Her growing interest in innovation and system thinking led her to pursue a master's degree in Research and Development Management at the University of the Philippines Open University. Although she is not directly involved in an R&D department, she found the program highly relevant to her work, offering frameworks and insights that enhanced her role as a quality and automation leader.

Through her academic and professional journey, Katrena has become passionate about contributing to the field of R&D management by integrating practical knowledge from AI-driven automation, client support systems, and quality operations. She aims to advocate people-centered solutions that strengthen knowledge sharing, collaboration, and technological advancement within the evolving science and technology landscape.

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Abstract

This qualitative case study analyzes the use of automation in knowledge-sharing and repository management within the IT Support Services (ITSS) department of a business process outsourcing (BPO) company for research and development. It focuses on the effects of three automation tools: Chatbot Automation, Technology Resource and Support Automation, and Remote Work Access Automation, examining how they affect job performance and information-sharing practices. The study rests on ethnomethodology, which focuses on how social practices are organized, and applies thematic analysis to derive patterns across the automation processes. The findings indicate that automation transcends a purely technical solution, functioning instead as a process shaped by users' social interactions and contextual modifications.

Chatbot Automation enhances self-service and provides responsive support, allowing users to choose assistance options based on their specific needs and familiarity with the system. Technology Resource and Support Automation promotes peer-led, collaborative knowledge building, where employees contribute insights, workarounds, and feedback that shape the evolving repository. Remote Work Access Automation enables users to engage with repositories across devices and locations, supporting knowledge sharing in flexible and distributed work environments. Together, these automation practices reflect the organization’s underlying values of autonomy, responsiveness, and co-development. They promote continuity, adaptability, and user-centered knowledge sharing. This study contributes to the growing body of literature on practice-based automation by highlighting the essential role of support services in sustaining R&D-related knowledge infrastructures in S&T-driven settings.

Keywords: Knowledge sharing; Repository management; Chatbot; Automation.

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CHAPTER I

RATIONALE

In choosing to focus on repository management and automation in knowledge sharing, this study zeroes in on a slice of the larger knowledge management universe that often goes unnoticed, particularly within support teams that work behind the scenes of research and development (R&D). These practices, while not front and center in most traditional R&D studies, actually shape how innovation and collaboration play out on the ground, especially in digital, distributed workplaces.

What makes this study meaningful is not just the technical systems being used, but the way people interact with them, adjust to them, and even reshape them in real time. This has practical implications not just for companies managing large-scale support operations, but also for scholars and practitioners trying to understand how R&D environments can stay responsive, agile, and knowledge-driven.

For R&D practitioners and researchers, the value of this study lies in its focus on the invisible infrastructures that uphold research continuity, agility, and responsiveness. This study highlights how everyday practices and assumptions around automation help make it a reliable part of support work. In doing so, it invites R&D managers and scholars to consider the quieter systems, those that keep knowledge moving across teams, time zones, and tasks, as vital to the bigger picture of innovation.

Moreover, these insights tie in with broader global development goals. The study aligns with SDG 9 (Industry, Innovation, and Infrastructure) as it highlight how digital tools and practices utilized behind the scenes can contribute to innovation in support functions through improved efficiency, responsiveness, and smarter

workflows. Aside from just upgrading technology, what this study tries to present is how these changes influence the way people work together, learn from each other, and build on what they know, a different approach in how people work, learn, and build knowledge together.

Knowledge Sharing in R&D

In research and development (R&D), the ability to share, refine, and apply knowledge across teams is important to innovation and problem-solving. This is very much true in organizations where circulated, cross-functional work is facilitated by information systems and digital infrastructure. In such situations, knowledge sharing is more than the transfer of data but also a collaborative process shaped by trust, accessibility, and contextual understanding.

Sakakibara (2003) emphasizes that knowledge sharing enhances R&D performance by strengthening a firm's absorptive capacity, the ability to recognize, incorporate, and apply new knowledge. In cooperative environments, such as R&D consortia, structured mechanisms for sharing motivate participants to deepen research engagement and contribute to collective learning. Liao (2008) adds that factors like trust, managerial support, and social power play vital roles in knowledge-sharing behavior, especially in distributed or outsourced environments.

Thus, having a system in place for repository management plays such an important role in organizing, updating, and making knowledge readily accessible. In R&D settings, this enables teams to build on existing insights, avoid duplication of efforts, and provide more collective feedback more efficiently. Rather than simply storing information, a well-managed repository supports continuous learning and

innovation by serving as a shared space where knowledge is refined, reused, and applied across projects.

Automation of Knowledge Sharing in R&D

In many cases, traditional repository practices still rely heavily on manual documentation which often result to inconsistent documentation, limited access, and workflows that don't run as smoothly as they should (Kurniawan et al., 2014). Bringing automation into the picture helps solve these issues by allowing for real-time updates, quicker retrieval, and better organization through dynamic categorization. More than just making things efficient, these features also help teams build shared knowledge and make well-informed decisions, especially in R&D support services.

Automated knowledge management systems in BPO settings have been shown to improve information sharing, simplify operations, and boost higher employee engagement (Balas et al., 2004; Blancaflora et al., 2023). These systems help facilitate the application of functional knowledge and enhance responsiveness, which are important in environments where precision, speed, and adaptability are critical to both service delivery and scientific productivity.

Regardless of the benefits, most of the literature on automation focuses on the system design and architecture, often using a linear input–through–output model. Such approaches often ignore the actual usage, interpretation or the day-to-day practices surrounding automation tools. There is a growing academic consensus that automation cannot be understood as a socially neutral or pre-set process, but rather as a socially embedded phenomenon shaped by the automation the needs of efficiency, accountability, and collaboration (Leonardi, 2011; Suchman, 2007). This

automation approach stresses the meaning and construction of automation shaped by interactions, flow, situated adaptation, and situated reasoning.

This study does not regard automation as an external remedy to inefficiencies within knowledge management processes. Instead, it employs a practice-based perspective focusing on how automation is experienced, negotiated, and, more importantly, how it is reconfigured by users in real-time. It explores how interventional memory, cooperative knowledge creation, and knowledge granularity emerge in the course of routine automated system interactions, especially in environments where supporting services need to maintain the continuity of research activities amidst fragmented teams and intricate workflows.

Thus, the study shifts the automation perspective, not as a standalone one-time technical upgrade, but rather a sociotechnical system, or an infrastructure that evolves through social interaction, reflexivity, and lived experience (Orlikowski, 2000; Star & Ruhleder, 1996). This viewpoint brings a more intricate dimension to automation in science and technology (S&T) driven workplaces and challenges the assumption that integration of systems is always seamless.

While the research site is not an official R&D department, it functions within an ecosystem that integrates R&D activities through information and communication technology (ICT) systems. Therefore, it illustrates how overlooked support services in traditional R&D paradigms emerge as high-impact catalysts for innovation, scientific productivity, and technological progress (Chesbrough, 2003; Liyanage et al.). By surfacing the invisible yet essential work of adapting and sustaining knowledge-sharing systems, this study contributes to a more inclusive and grounded understanding of how R&D-related practices are made possible.

CHAPTER II

REVIEW OF LITERATURE

This chapter reviews the literature on these topics, beginning with the role of knowledge sharing in R&D, followed by repository management and automation. It also considers the dominant systems-based view in literature and highlights the need for alternative, practice-based approaches. Finally, it explains how this study, using ethnomethodology, addresses gaps in current understanding.

The Role of Knowledge Sharing in R&D

Knowledge sharing is widely described as a critical enabler of learning and innovation in R&D settings. Sakakibara (2003) observes that cooperative R&D initiatives foster knowledge spillovers, allowing organizations to enhance their absorptive capacity, which is the ability to identify, assimilate, and apply new knowledge. This dynamic is particularly important in research-intensive environments where information is frequently updated and built upon.

The SECI model by Nonaka and Takeuchi (1995) explains how tacit knowledge that grounded in personal experience, can be transformed into explicit knowledge through cycles of socialization, externalization, combination, and internalization. Such transformation is critical in areas like health research, where information must be encoded, shared, and accessed by numerous users across various levels.

Alavi and Leidner (2001) built a case for formally documented and undocumented systems in organizations and stressed the significance of sharing as a crucial component. As Liao (2008) stated, leadership, trust, and shared goals help people learn to share. In business process outsourcing (BPO) organizations that service research and development (R&D), these factors support collaboration among analysts, information technology (IT) personnel, and research support teams, who, although possess diverse skills, share information needs.

Understanding how knowledge is shared in health-related R&D starts with looking at how organizations manage intricacy. Scholars like Wenger (1998) and Nonaka & Takeuchi (1995) emphasized that effective knowledge-sharing practices improve information flow, streamline processes, and urge collaboration and partnership across different disciplines. These ideas place the foundation for exploring the organizational and technological systems that support knowledge distribution in these settings.

Repository Management and Knowledge Sharing

Repository management refers to the organized process of tagging, storing, and retrieving knowledge in an organization ranging from documents and policies and procedures, to reports and any communication records. In R&D environments, repositories are not only important for guarding critical information and making it easy to access, but they also help maintain research continuity and strengthen institutional memory.

However, many traditional systems are still reliant on out-of-date manual filing or static digital folders, which often lead to issues like inaccessible data, duplicate work, and poor communication (Kurniawan et al., 2014). On the other hand,

healthcare and information systems professionals have established that using well-designed digital knowledge management tools can improve accuracy and supports better, informed decision-making (Balas et al., 2004). These findings underscore the value of structured and dynamical repository systems in research settings.

As Maier and Hädrich (2011) noted, advanced repositories enable users to tag items, and apply metadata and intelligent indexing, which makes retrieval more efficient. These systems not only enable storage but also knowledge retrieval, reuse, and collaborative work, particularly when augmented with multi-department or multi-disciplinary workflows.

In BPOs that support R&D, repositories often act as translators between technical and research teams. Working threads, peer-to-peer discussions, and updates that are not static are usual in knowledge systems that are more adaptable and focused on the user (Wenger, 1998). The change from document archives to interactive, social knowledge systems in the repository paradigm demonstrate the adaptability of repository systems to the changing needs of digital work.

Literature emphasizes repository content maintenance and enrichment as a participatory process. The repositories are more reflective of practice when users are able to add, validate, or critique documents through easy-to-use interfaces. It illustrates the repositories as socio-technical systems that blend organizational design and lived experience, rather than merely tools that document organizational workflows.

Automation in Knowledge Management Systems

As a strategy to improve efficiency, uniformity, and the ease of sharing knowledge within an organization, automation has recently been adopted in

knowledge management systems (KMS). Automation has been applied in Information Technology and Business Process Outsourcing BPOs to streamline the uploading, organizing, and sharing of content in knowledge management systems (Lucy AI, 2021; Maier & Hädrich, 2011).

As noted by Lucy AI (2021), repositories are kept up-to-date with automated tagging, real-time syncing, and metadata generation. Automating these processes is critical in environments where operations must continue without interruptions.

With automation, knowledge is transferred and flows in a more structured and traceable manner. AI chatbots and ticketing systems, for instance, offer audit trails of interactions, streamline communication, improve response times, and ease backlogs within communication systems (Blancaflora et al., 2023). These systems are useful in eliminating inconsistencies in the processing and retrieval of information by and within a team, especially where team members are in different locations.

Nevertheless, experts have indicated that the level of success achieved through automation is contingent on the workflows of people. Raisch and Krakowski (2021) talk about the automation-augmentation dilemma, which says that as automation increases, the necessity for human contextual supervision and judgment changes at the same time. Similar to Orlikowski (2000), he highlighted that the result of a given technology is bound to the actions of the users, and technologies are not self-fulfilling. Rather, the results are contingent on how users make sense of the technology and how they interact with it within the context of their routine tasks.

Knowledge Sharing and Organizational Learning in Digital Work

Recent studies have highlighted the role of digital tools in influencing how organizations learn and share knowledge. Based on the model of knowledge

creation by Nonaka and Takeuchi (1995), it has shaped how we understand the role of collaborative platforms in supporting both individual learning and collective sense-making. In this view, digital workspaces became more than just tools for communication, but they serve as environments where new practices take root, and institutional knowledge continues to progress.

Building on this notion, Wenger (1998) initiated the idea of communities of practice, which often form around shared problems and everyday experiences. These communities, particularly within the digital settings like forums, chat platforms, or shared repositories, tend to surface casually and start to play an important role in both preserving knowledge and supporting professional development. In BPOs involved in research support, these peer-driven interactions can help bring forward practical, context-specific insights that are usually lacking from formal systems.

Alavi and Leidner (2001) added that knowledge management systems are most impactful when they become part of an organization's daily routines. When these tools go beyond simple storage and are used actively to support real-time collaboration and continuous learning, they help nurture a culture that is both adaptive and learning-focused. These dynamics are mainly evident in the deployment of intranet platforms, support bots, and discussion threads in digital health settings, where time-sensitive decisions depend on accessible and validated knowledge.

Automation and Human–Machine Collaboration

Due to advanced machine integration within organizational frameworks, automation's role has shifted from performing tasks to augmentation. This shift was discussed by Brynjolfsson and McAfee (2014) and referred to it as part of the

“second machine age,” where technology automates basic operations, and human intellect and social skills are engaged in complex multi-dimensional tasks. This type of balance is essential particularly in knowledge work where systems are built to support and not to substitute human thought.

Raisch and Krakowski (2021) conceptualize this as the automation–augmentation paradox: while organizations seek to automate processes, they also rely more on human interpretation and exception-handling. This is especially relevant in BPO and R&D support settings, where automation tools like chatbots or access systems assist users but still depend on user input, adaptation, and feedback for effectiveness.

Guzman et al. (2024) suggest that modern automation systems are increasingly reflexive shaped by continuous feedback and social interaction. These systems evolve not only through code updates but through everyday use, reconfiguration, and collective learning. In this sense, automation becomes part of an adaptive system, co-produced by both technical design and human practice.

Systems Perspective and its Limitations

Much of the literature on automated knowledge sharing is grounded in systems theory and process engineering. Foundational frameworks such as the input–throughput–output model (Von Bertalanffy, 1968; Checkland, 1981) conceptualize automation as a means of optimizing structured workflows. From this perspective, well-designed systems are expected to perform consistently and efficiently, assuming alignment between system logic and user behavior.

However, scholars have raised concerns about the limitations of these system-centric models. Star and Ruhleder (1996) argued that even technically sound

systems can fail when they do not align with local practices or user expectations. Orlikowski (2000) equally emphasized that technologies are formed not just by design but by how they are ratified in specific contexts. Users may reinterpret, bypass, or adapt systems in ways not anticipated by developers.

Suchman (2007) covered this assessment by highlighting the embeddedness of technologies in social and organizational life. Automation systems are not neutral tools but are configured through ongoing interactions, negotiations, and power dynamics. These insights highlight a gap in literature that assumes automation is inherently effective if properly implemented. In reality, user behavior, organizational culture, and emergent practices often influence system performance in unexpected ways.

The limitations of the systems perspective suggest the need for alternative frameworks that focus not only on structure and functionality but also on use, adaptation, and meaning making in real settings. This opens the space for practice-based and ethnographic approaches.

This change or direction challenges traditional views of automation as an easy technical fix and highlights the dynamic and negotiated nature of knowledge sharing. It shows how automated tools are able to both replicate and reshape the scientific and technological conditions in which health research and development take place. This ethnomethodological lens offers not just the theoretical insight but also practical implications for designing more responsive and inclusive R&D support systems.

By moving beyond the systems-based view, this review unpacks the assumptions underlying much of the literature and clarifies how this study provides an alternative, practice-focused perspective. It indicates that even if technical

systems are designed to function in specific ways, in reality, their use is molded by social contexts, power dynamics, and evolving practices (Orlikowski, 2000; Star, 1999).

This perspective allows the study to expose the different automations involved in sharing knowledge in S&T-driven health research. It showcases that automation in sharing knowledge goes far beyond technology; rather, automation involves social and organizational procedures that make genuine collaboration and knowledge sharing possible. This ethnomethodological approach builds the realism into management of R&D support services without losing depth and practical relevance.

Through the focus of practices and perspectives, this study seeks to situate its findings within the context of R&D and knowledge-sharing gaps and remain aligned with the theoretical framework that has guided the analysis.

This approach emphasizes that while systems are put in place to be operated with certain protocols, the implementation of such systems is influenced by social contexts, power relations, and established dynamics.

CHAPTER III

RESEARCH FRAMEWORK & RESEARCH QUESTIONS

Practice-Based and Ethnographic Approaches to Technology

This study addresses to the limitations of overly technical or systems-focused approaches by taking a closer look at everyday practices surrounding automated knowledge sharing. Instead of defining practices as just routine tasks or system functions, it explores how people actually engage with automation in the context of repository management such as how they adapt, negotiate, and make sense of these tools as part of their daily work. Focusing on lived experience allow the study to surface how technology use is shaped by local context, informal workarounds, and human judgment within the organization.

Ethnomethodology as a Research Framework

To accomplish this, the study draws on ethnomethodology (Garfinkel, 1967) and thematic analysis (Braun & Clarke, 2006) as tools in understanding how practices are enacted in real and actual settings. Rather than treating practices as abstract or static, this approach unpacks how they materialize from interactions, organizational logics, and the lived experiences of those involved (Leonardi, 2011; Suchman, 2007).

This study uses ethnomethodology as its guiding framework. Ethnomethodology is a qualitative method that discovers how social order is created and sustained through everyday practices and interactions with systems and structures (Garfinkel, 1967). Unlike conventional frameworks that rely on predefined

theories or cause-and-effect explanations, ethnomethodology unpacks how people and tools make sense of and accomplish practices in real-world contexts.

As Ten Have (2004) describes, ethnomethodology focuses on understanding the organizational techniques and practices that shape social and work environments. In this study, the focus is not on human interactions alone, but on how automation frameworks are able to structure knowledge sharing within a BPO's centralized repository tool. This approach looks at how design, categorization, and retrieval processes in automation affect the daily reality of knowledge sharing, how they create a particular social and organizational order.

Recent research (Guzman et al., 2024) suggests that ethnomethodology offers a valuable lens for examining how automation and AI affect decision-making and work practices within structured systems. By applying this framework, the study seeks to unpack how automation structures the categorization, retrieval, and sharing of information as it highlights the meanings and logics that emerge from these practices in S&T-driven R&D support services.

Research Questions

The following research questions guide this study:

1. What are the automation practices in repository management in a BPO support services for research and development?
2. What are the underlying perspectives that explain these automation practices?
3. What do the automation practices in repository management accomplish in knowledge sharing?

CHAPTER IV

RESEARCH METHODOLOGY

In the Philippine research setting, Saludadez and Garcia (2001) had pointed out that qualitative research is commonly viewed as less legitimate compared to quantitative methods and has been on the shadow of quantitative research, mainly because of deep-rooted hierarchies in how knowledge is valued in academic institutions. Their roundtable discussion highlights how qualitative inquiry is frequently seen as “less scientific,” especially in fields that are technical or science-driven. But they push back against this notion, arguing that qualitative approaches bring depth, context, and a different kind of rigor. This study takes their point further by using ethnomethodology to explore how automation tools are experienced and made meaningful in everyday support work. Instead of focusing on measurable outcomes, the study looks at real-world practices and how knowledge is co-created through daily interactions with technology.

Guided by this perspective, the study uses a qualitative case study approach to examine how automation is able to support repository management and knowledge sharing in the IT Support Services (ITSS) department of a BPO company that supports health research teams. This method allows a deeper view of how these tools are being used in day-to-day work as well as how people respond to them, adjust to them, and find meaning in them. The framework is guided by ethnomethodology of Garfinkel (Garfinkel, 1967), where it shows a perspective that looks at how people make sense of their actions, activities, and routines in real scenarios. The study also applies thematic analysis to identify the key patterns in

how the system is used, following Braun and Clarke's (2006) method for emerging common themes from documents and system-based activities.

Data Site

This research was conducted in the ITSS department of a BPO company that provides technical and process support operations. While it is not an R&D unit, its work is embedded in the broader science and technology (S&T) environment by supporting knowledge management and digital infrastructure. The automation tools examined are part of the IT infrastructure designed to help employees manage repositories and share knowledge, including those directly involved in research functions.

Data Collection

Data for this study were drawn from system-generated documents, user activity logs, screenshots, manuals, and personal observations of interactions with the automated tools. These tools included a centralized intranet platform and mobile-access systems used by employees. No interviews were conducted; instead, the study relied on materials that reflect real-time system usage and documentation practices. This approach aligns with ethnomethodology's emphasis on observed, situated practices rather than reported intentions.

Data Analysis

To make sense of the observed data, thematic analysis (Braun & Clarke, 2006) was used to identify recurring patterns and meanings across the three automation tools. (Chatbot Automation, Technology Resource and Support Automation, and Remove Work Access Automation). Each automation was examined in relation to the three research questions: (1) What are the automation

practices in repository management? (2) What underlying perspectives shape these practices? and (3) What do these automation practices accomplish in knowledge sharing? Analytical tables were created for each automation tool to demonstrate how raw data excerpts were coded and interpreted in line with the research questions.

The following tables below demonstrate how raw data were turned into meaningful insights and support the transparency of the thematic analysis process:

Table 4.1

Analytical Table based on Chatbot Automation

Extracted Data (Quotes)	Codes (RQ1: Practices)	Themes (RQ2: Underlying Perspectives)	Codes (RQ3: Accomplishments)
Employees previously had to call the IT helpdesk or fill out manual forms, often waiting days for a response.	Manual to automated transition	Automation as a proactive solution for streamlining efficient support workflows	Reduced support bottlenecks and delays
The chatbot speeds up routing to the support team and cuts logging time through automated triage.	Automated triage and routing	Automation as flexible infrastructure	Improved routing speed and accuracy
A health research analyst can report errors in real time via chatbot, preventing research delays.	Real-time automated issue reporting	Automation as enabler of research continuity	Enabled continuity in research workflows
The chatbot provides article suggestions based on queries.	Guided self-help interaction	Knowledge base as dynamic and contextual tool	Proactive, knowledge-driven troubleshooting

Extracted Data (Quotes)	Codes (RQ1: Practices)	Themes (RQ2: Underlying Perspectives)	Codes (RQ3: Accomplishments)
Users can choose between self-help, ticket submission, or live agent, depending on their urgency and familiarity.	User-determined interaction path	User-centered adaptation based on context and need	Flexible user engagement with automation
Chatbot use varies by preference, some users choose to solve issues, others escalate.	Adaptive decision-making in automation	Tacit knowledge in automation choices	Optimized automation for user diversity
Users can monitor ticket progress and avoid duplicate reports by referencing parent tickets.	Ticket monitoring and parent ticket linking	Automation as coordination and memory tool	Enhanced visibility and trend analysis
A thumbs up and thumbs down option appears that the user can choose based on their experience. If it's a thumbs up, it will ask for additional feedback with a free text box. If it's a thumbs down, there will be options on the reason for the feedback and a free text box for additional comments.	Multi-path feedback interface using thumbs up/down and comment boxes	Automation as co-developed through user interaction	Incorporating user insights for system improvement

Extracted Data (Quotes)	Codes (RQ1: Practices)	Themes (RQ2: Underlying Perspectives)	Codes (RQ3: Accomplishments)
After completing chatbot use, a 5-emoticon satisfaction survey appears (1 = saddest, 5 = happiest). Depending on the selected rating, users are shown reasons via checkboxes and a text box for feedback.	Layered satisfaction feedback with emoticon rating and reason capture	Automation as reflexive and user-responsive system	Detailed sentiment capture for service evaluation and refinement

Table 4.2

Analytical Table based on Technology Resource and Support Automation

Extracted Data (Quotes)	Codes (RQ1: Practices)	Themes (RQ2: Underlying Perspectives)	Codes (RQ3: Accomplishments)
Employees post, comment, and start discussions to share process enhancements and tool usage. Colleagues also	Peer-led discussion and collaborative problem solving	Knowledge as peer-validated and co-constructed	Fostering interactive knowledge sharing beyond static systems

respond to issues like guidelines on how to work remotely			
The platform sends automated email alerts to users when threads are updated, ensuring engagement even when users are off-site or across time zones.	Real-Time Engagement via Notifications	Automation as amplifier of engagement and continuity	Maintaining continuous, distributed engagement
User discussions are indexed and become part of a searchable knowledge base. Posts about workarounds turn into reusable institutional memory.	User-Generated Repository Management	Repository as emergent and shaped by use	Creating searchable, bottom-up institutional knowledge
Users flag broken links, outdated guides, or unclear documentation using the 'Submit Feedback' tool, prompting real-time updates from ITSS.	Submitting and acting on feedback to improve shared documentation	Automation enabling co-responsibility in content quality	Supporting dynamic and user-driven quality improvement

Table 4.3

Analytical Table based on Remote Work Access Automation

Extracted Data (Quotes)	Codes (RQ1: Practices)	Themes (RQ2: Underlying Perspectives)	Codes (RQ3: Accomplishments)
A manual on how to download the company portal is provided to users so they can access their work tools in their mobile device	Accessing Work Tools from Any Device	Work beyond physical office boundaries	Enhancing mobility and responsiveness
A health research worker can review documentation updates via mobile chat	Flexible and Remote Work	Flexible remote work as support in distributed work	Seamless communication with team members as well as documentation updates anywhere
A manual showing users how to set up their security through an authenticator app	Security and Compliance Through Automation	Security as invisible support for safe repository management	Improving secure access
A manual showing users how to set up their account	Managed and Auto-Installed Applications	Automation as seamless support for continuity and user focus	Ensures up-to-date access to essential tools without user intervention

The first two automation tools - Chatbot Automation and Technology Resource and Support Automation are embedded within the organization's intranet-based repository platform, which serves as a centralized infrastructure for support services and the exchange of institutional knowledge. In contrast, Remote Work Access Automation broadens the scope of this system by enabling secure access to enterprise applications and shared digital resources through mobile devices and remote networks, thereby supporting continuity of work beyond the physical office setting.

CHAPTER V

RESULTS & DISCUSSIONS

This chapter presents the results of the study, organized according to the three research questions. Each section discusses the findings and interprets them through a qualitative lens, drawing on documentary analysis and thematic coding. The results are not only descriptive but also analytical, reflecting how automation practices are experienced, interpreted, and embedded in the everyday work of IT support services in a BPO setting that supports research and development functions.

The first section answers Research Question 1: What are the automation practices in repository management in a BPO company that supports health research? To answer this, the results are grouped into three core automation systems implemented within the IT Support Services (ITSS) department: Chatbot Automation, Technology Resource and Support Automation, and Remote Work Access Automation. Within each system, multiple embedded practices were identified that reflect how automation is enacted in day-to-day repository management and knowledge sharing.

The second section answers Research Question 2: What are the underlying perspectives of these automation practices? Here, the discussion surfaces the meanings, assumptions, and social logics that shape and are revealed by the use of automation tools. It highlights how automation is interpreted and adapted in practice, shedding light on its role as a sociotechnical infrastructure rather than a purely technical fix.

The third section addresses Research Question 3: What do these automation practices accomplish in terms of knowledge sharing? This section analyzes how the

identified practices support institutional knowledge creation, accessibility, continuity, and collaboration within a distributed work environment.

Automation Practices in Repository Management in BPO Support Services for Research and Development

Chatbot Automation Practices

In many organizations, seeking IT support used to be intended to making a call, waiting in line, and relying on someone else to document and resolve their IT-related issues. But in this BPO company's support services, that experience has quietly transformed into a more dynamic and efficient practice. Now, when employees encounter technical problems, they no longer need to pause their workflow or ask around for help. They turn to the chatbot in a span of few seconds.

This AI-powered tool has become the first point of contact for most of the support concerns. Users are able to describe their issue in their own words, and the chatbot would respond with suggestions, guides them through self-help troubleshooting steps, or generates a ticket if needed. In the background, it sorts, classifies, and escalates concerns, often within seconds. What once involved several steps and multiple people is now a single conversation in a familiar interface.

But the chatbot is more than just a digital assistant. Over time, it has become a space where people don't just report problems, they engage with shared knowledge. It prompts the users to get guidance through help articles, and its structured responses reflect past interactions and feedback. Instead of fixed documentation sitting in the background, the system evolves through daily use. Employees help shape the knowledge base every time they click a suggestion, leave feedback, or flag unclear content.

One of the most visible changes is the shift from manual to automated ticket creation. Previously, employees had to fill out forms or call for assistance, and support agents did most of the sorting and triaging. Today, users can initiate and manage their own tickets through the chatbot, as well as choosing when and how to escalate an issue. This isn't just about being faster, it gives them a greater sense of control. It also changes how knowledge-related concerns are tracked and resolved: with fewer lags, records are clearer, and there is a stronger link between the user's context and the system's response.

In this kind of setup, support is not just something done for the user, instead, it's something done with them. The chatbot becomes a kind of partner in the process here. It is available anytime, responsive to different needs, and continuously shaped by the people who use it. The following sections explore how this dynamic uncovers across different practices that make automation not just functional but embedded in the everyday rhythms of work.

1. **Transitioning from Manual to automated ticket creation**

There was a time when getting IT help meant calling the helpdesk or filling out a form and then waiting. Agents would receive the request, try to interpret it, classify it, and forward it to the right team. It worked, but it wasn't fast. Miscommunication was common, and the time lost in back-and-forths added up.

Today, that experience looks very different. Employees now reach out to a chatbot, type their issue in their own words, and get it logged within seconds. There's no need for middle steps, no waiting in line. The request is automatically being captured, categorized, and sent where it needs to go so the user is assisted properly. For users, it feels like they are able to avoid the queue entirely.

This shift did not just change how tickets are created, rather, it changed how people interact with support systems. What was once a manual, agent-led process is now user-driven, faster, and more responsive. It shows how automation is able to quietly reshape the flow of work, not by replacing people, but by helping the people focus on what matters next.

Figure 5.1. Manual ticket creation process flow prior to chatbot automation.

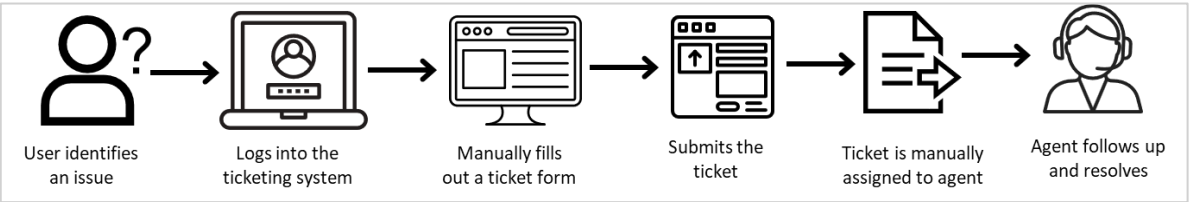


Figure 5.2. Step by step process users follow when calling the IT helpdesk for ticket creation and troubleshooting.

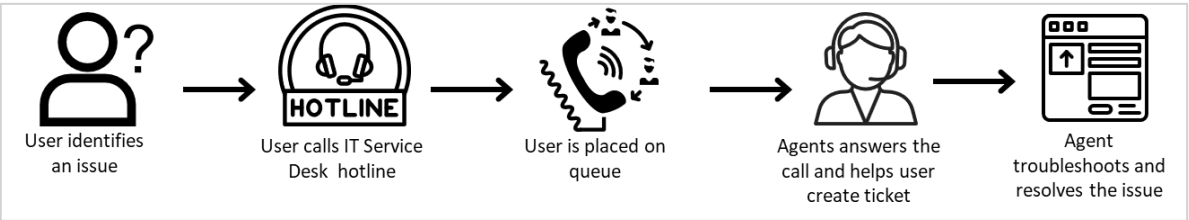


Figure 5.3. Manual ticket creation interface. Screenshot of the legacy tool used by employees to submit IT support requests before automation.

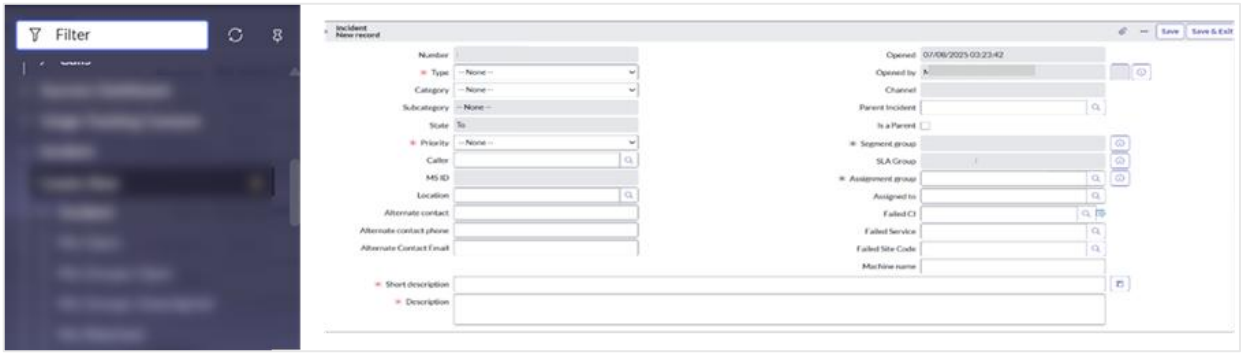


Figure 5.4. Automated chatbot ticket creation process flow. This flow illustrates how users interact with the chatbot to submit IT support tickets through an automated system.

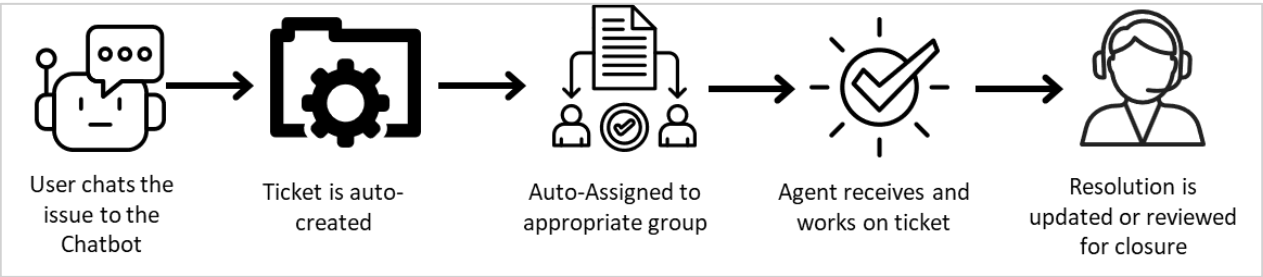
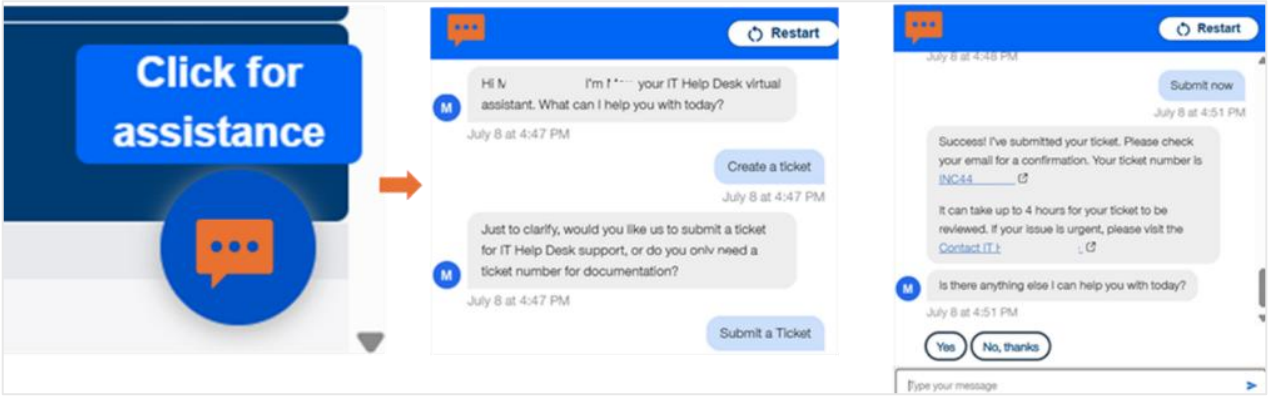


Figure 5.5. User interface for chatbot-based ticket creation; Screenshot showing a user initiating a support request through the automated chatbot system.



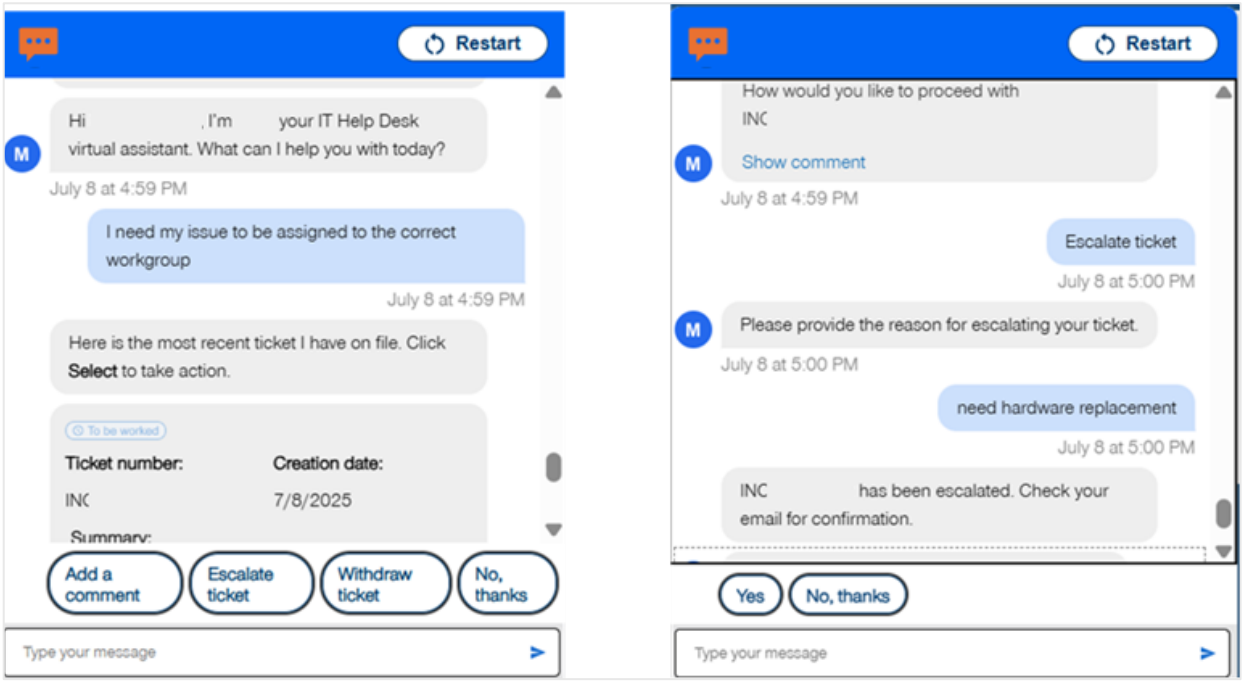
2. Automating triage and routing

Before automation, every support ticket needed to be manually sorted, someone had to read the issue, figure out which team should handle it, and then assign it. This meant delays, and sometimes, misrouted concerns that had to be bounced back and forth.

Now, the chatbot takes care of that sorting. When an employee reports a problem, for example, a login error or a system glitch. The chatbot does not just record it, but it also reads key terms, recognizes patterns, and routes the issue to the right team almost instantly. What used to require human judgment has been streamlined into real-time decision-making by the system.

But what's striking is how users have adjusted. They started to learn phrasing their issues clearly, because they are aware that the chatbot picks up on certain words. Over time, both the system and its users have adapted to each other. This mutual learning has shaped the triage process not just faster, but also smarter, where it reflects how automation, when grounded in practice, evolves into a collaborative routine.

Figure 5.6. Chatbot interface for triage and routing automation; Screenshot showing a user is requesting to escalate the support request using the chatbot, which automatically routes the ticket to the appropriate department.



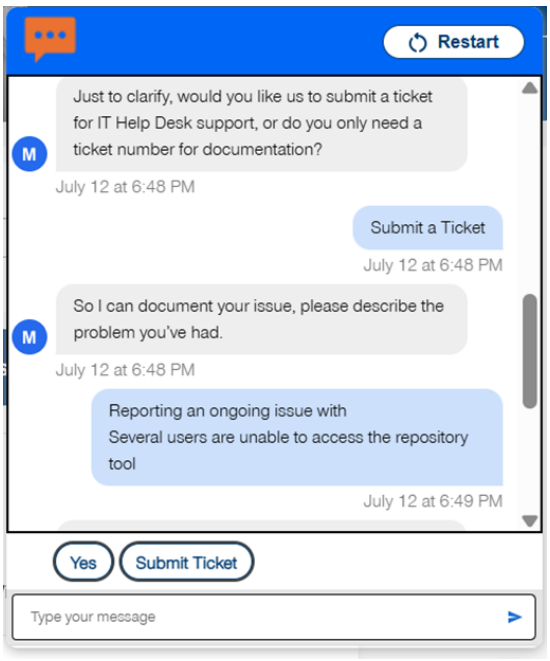
3. Real-time reporting of issue

Imagine you are working on a shared document and then you suddenly hit a bug or glitch that stops your progress. In the past, reporting this meant opening another app, composing an email, or waiting for a live agent. By the time help arrived, the urgency had already passed, or gotten worse, your work had been disrupted entirely.

Now, employees are able to log issues by the time they happen right from where they're working. The chatbot is integrated directly into their workflow, which allows real-time reporting without switching channels or waiting for someone to come online which sometimes take even days. It’s a small change in interface, but a big shift in experience.

This kind of efficient practice has made support feel more responsive, and it’s helped preserve the flow of collaborative work. Users no longer have to choose between documenting an issue or staying focused on a task, they can do both. And in fast-paced environments like R&D support, that kind of seamlessness really matters.

Figure 5.7. Chatbot interface for automated triage and routing; Screenshot showing a user escalating a support request through the chatbot, which automatically routes the ticket to the appropriate department.



4. **Guiding self-help interaction**

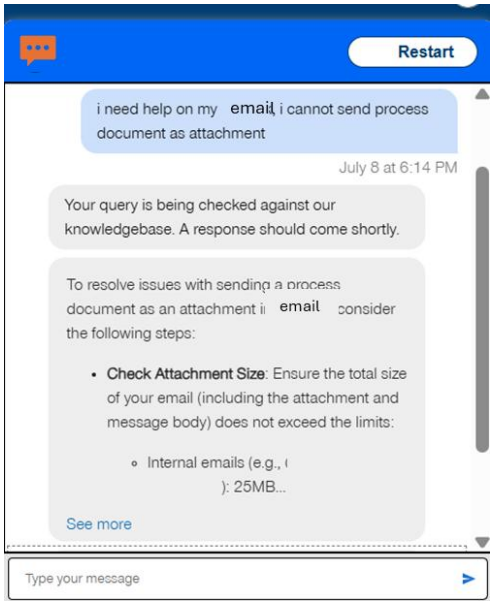
Not every technical glitch needs a live agent. Many employees, particularly those who encounter the same issues all the time, would really just want a quick fix

they can do themselves. The chatbot meets this user by acting like a digital guide because it listens to the user's query, analyzes keywords, and suggests relevant help articles or step-by-step instructions.

Instead of waiting in queue or typing out long descriptions for IT support, users are nudged toward resolving issues on their own. It's not a forced diversion but a first step that many are now willing to take, particularly when the solution is just a few clicks away. Even I, as the researcher, find myself very impatient with delays whenever I encounter tech issues. With this option of troubleshooting the issues immediately through chatbot does not just make things easier but also empowering. This sense of empowerment also applies whether the user is tech-savvy or not. If you think about it, those who are not tech savvy often feel a sense of accomplishment when they can solve issues themselves using the self-help troubleshooting articles. Meanwhile, tech-savvy users have that sense of validation and would be prouder because they know the steps and can quickly fix things on their own. In both cases, the system builds confidence and ownership.

In this way, the chatbot doesn't just resolve issues but it repurposes the knowledge base from being a passive archive to an active and dynamic part of the support process. It helps lessen the volume of tickets, shortens response times, and builds a culture where knowledge is not only consumed but actively applied.

Figure 5.8. Chatbot interface for automated self-help troubleshooting; Screenshot showing a user reporting an issue through the chatbot, which responds with a set of automated troubleshooting steps the user can follow to attempt resolution before escalation.



5. **Allowing user-determined interaction path**

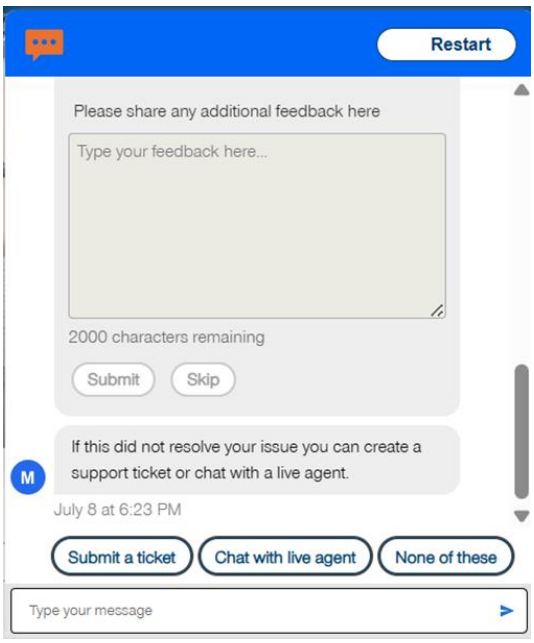
One of the most defining features of the chatbot system is how it gives users control over their own support journey. Rather than locking them into a fixed flow, the system offers multiple options such as browse help articles, submit a ticket, or request assistance from a live agent. This freedom might seem minor at first, but for users in the thick of their tasks, that choice matters a lot.

Not everyone experiences technical issues the same way. Some users would choose to explore possible fixes on their own, while others would want human help right away. Some are confident and familiar with support tools since other users are tech savvy while others may feel unsure and would need reassurance given that they are not that much familiar with technical aspects. The chatbot's design is able to acknowledge and adjust with this spectrum. It adapts to urgency, personality, and technical knowledge which allow users to assess the situation and choose what feels right for them.

In my own experience as a user, there were times I needed quick answers to small glitches and chose to self-navigate. But on more complex days, I immediately escalated to live support. With this availability of the system being able to respond to these nuances not just technically, but socially and emotionally has made the process feel more human.

In this way, the chatbot has become more than just a support tool, but it starts to transform into a responsive companion in the digital workspace. This practice does not assume a one-size-fits-all approach but instead it is able to recognize the value of flexibility. This practice reflects a subtle but significant shift in automation design: from rigid systems to inclusive, user-led interactions.

Figure 5.9. Chatbot response after failed self-help attempt; Screenshot showing the chatbot offering escalation options after the user confirms the issue was not resolved.

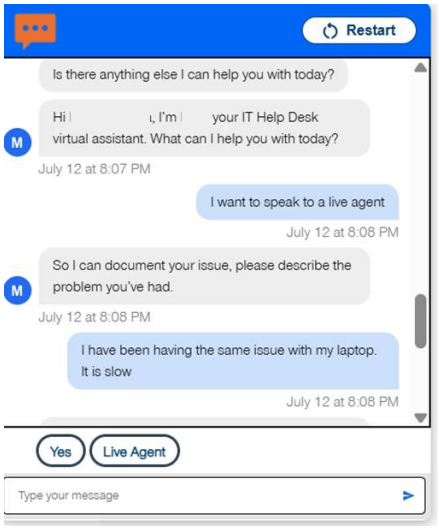


6. Adaptive decision-making

This practice reflects how users develop their own preferences when interacting with the chatbot, often shaped by previous experiences. For instance,

someone who has successfully resolved a technical issue through the chatbot may continue using it for similar concerns, while others might choose to skip it altogether if they've found it unhelpful in the past. As time goes on, users start to pick up on the system's strengths and its limits. They begin to recognize that for more complicated concerns such as hardware issues or requesting a device replacement, it's often quicker to bypass the chatbot entirely and reach out to live support instead. These day-to-day choices show how automation becomes part of the routine, not just as a tool that people use, but as something they actively assess and navigate based on what works best for them.

Figure 5.10. Screenshot showing the user requesting to speak to a live chat agent immediately due to an ongoing issue with her laptop.



7. Ticket monitoring and parent ticket linking

One often overlooked aspect of chatbot automation is what happens after a ticket is created. In the past, support tickets would vanish into the system, leaving users uncertain about what's happening next. But the current system changes that experience completely.

Now, after logging a ticket, users can track its progress in real time, like seeing their issue move from “open” to “in progress” and eventually “resolved.” It’s a small gesture, but it offers comfort. It tells the user, “We haven’t forgotten about your issue.” Personally, I’ve felt reassured seeing that little progress indicator while waiting for fixes, especially when the problem affects my ability to work.

More importantly, the system doesn’t treat each ticket in isolation. When multiple people report the same issue, for example, a company-wide login error, the chatbot links all those reports to a “parent ticket.” Individual concerns become part of a larger picture, and users are kept informed as part of a wider conversation. It’s not just about resolution but it’s about coordination.

Users can also add their reports as “child tickets,” which means they’re included in the resolution timeline without overwhelming the support team with repeats. This avoids duplication, strengthens transparency, and creates a sense of shared experience: “I’m not the only one having this problem, and it’s being looked into.”

This linking process builds more than efficiency. It fosters a quiet kind of community where users become aware of patterns, systemic issues, and even each other. In that way, what starts as a personal frustration turns into part of a collective response. And that’s a powerful shift in how support, automation, and knowledge work come together.

Figure 5.11. Screenshot showing the user is asking for the status of her ticket and Chatbot automatically provides the ticket number and its status as “to be worked”.

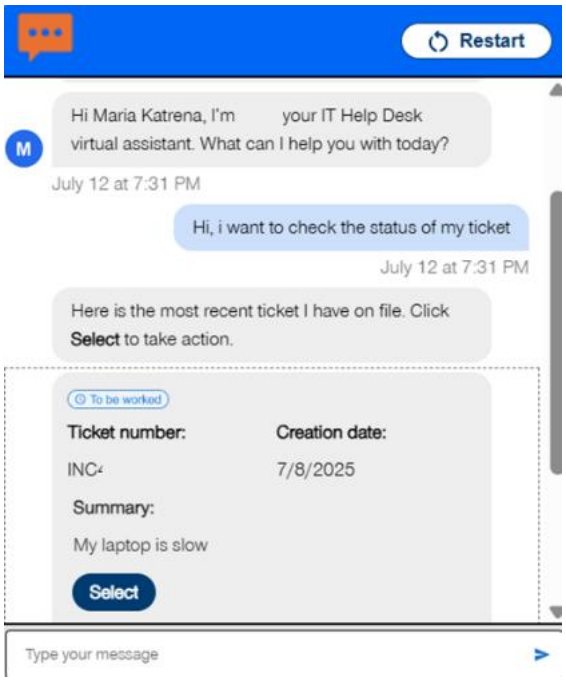


Figure 5.12. Screenshot showing the user is asking chatbot for the trending issues of an outage.

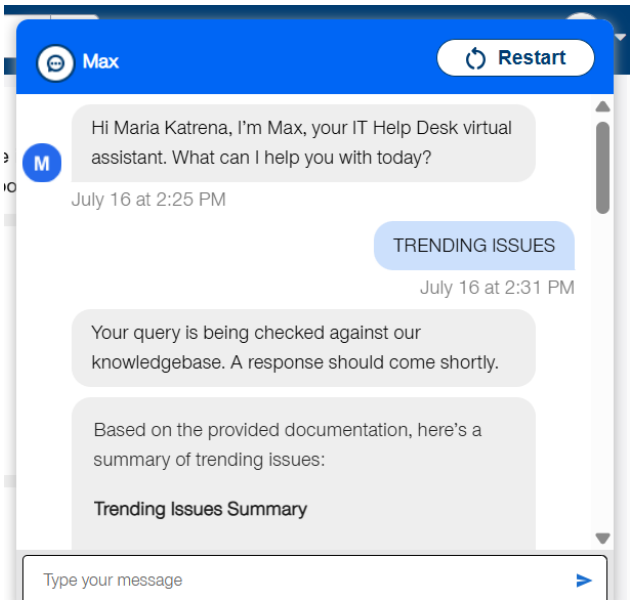
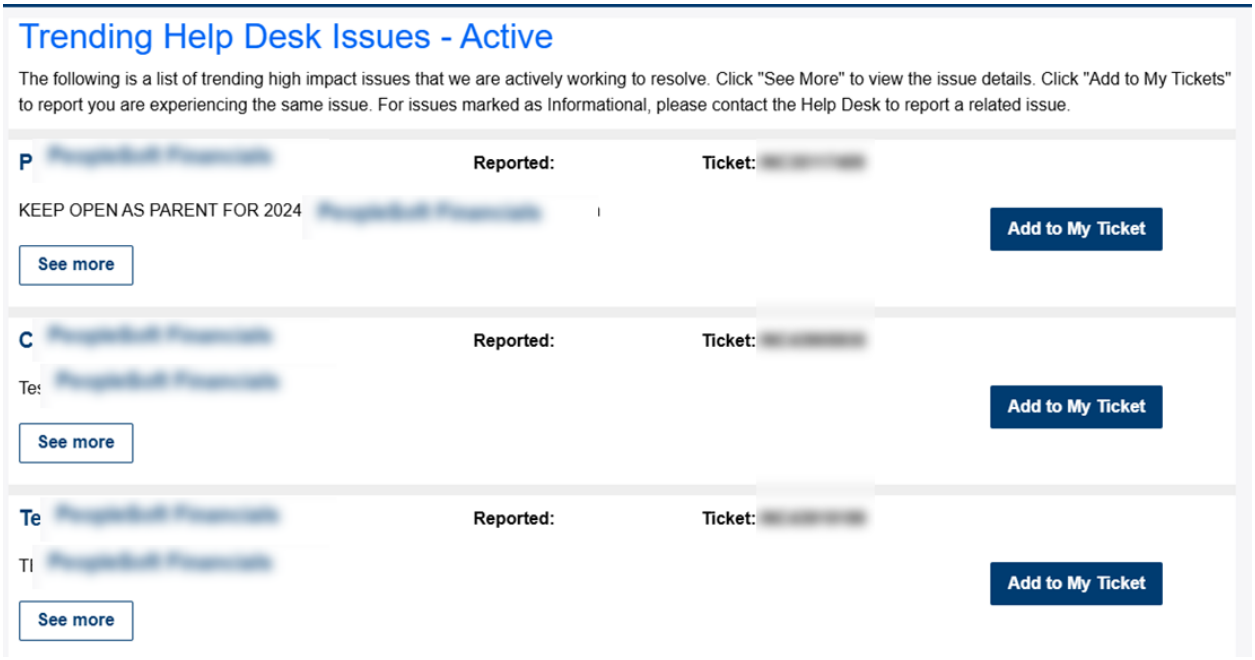


Figure 5.13. Screenshot showing the list of trending help desk issues where users can add their ticket as a child ticket to avoid duplications.



8. **Multi-path feedback interface using thumbs up/down and comment boxes**

One of the understated but most empowering part of the chatbot system is the way it offers users to give feedback right after an interaction. A straightforward thumbs-up or thumbs-down may seem minimal, but in practice, it becomes a powerful moment of user intervention.

After reading a help article or getting a response from the chatbot, users can immediately say whether it worked for them or not. And if it didn't, the system doesn't just stop there, but it asks why. Did the chatbot provide a confusing solution? Was it not applicable? Or did it lead to more complicating questions than answers? Users are given structured options to explain what went wrong, along with the space to add open comments if they want to share more.

As someone who uses the system regularly, I've found myself using these features most of the time, especially when something wasn't. right. It's not just about expressing frustration but more of about partaking in a cycle of improvement. That real-time feedback loop makes you feel heard. And even when I gave a thumbs-up, it felt good knowing I was affirming that a guide worked and might help someone else, too.

What's interesting is how this mechanism shifts users, not just as support seekers, but as contributors to the system itself. The chatbot learns from these interactions, and so do the people who maintain the knowledge base. As time passes, feedback that is repeated allows the articles to be reviewed. It also changes in how prompts are worded, or even the addition of completely new help materials.

It's a quiet but consistent partnership as every thumbs-up or comment builds a smarter and more responsive support environment. And in that sense, automation doesn't just serve users, it grows with them.

Figure 5.14. Screenshot showing the user giving a thumbs up after the chatbot offered self-help troubleshooting steps.

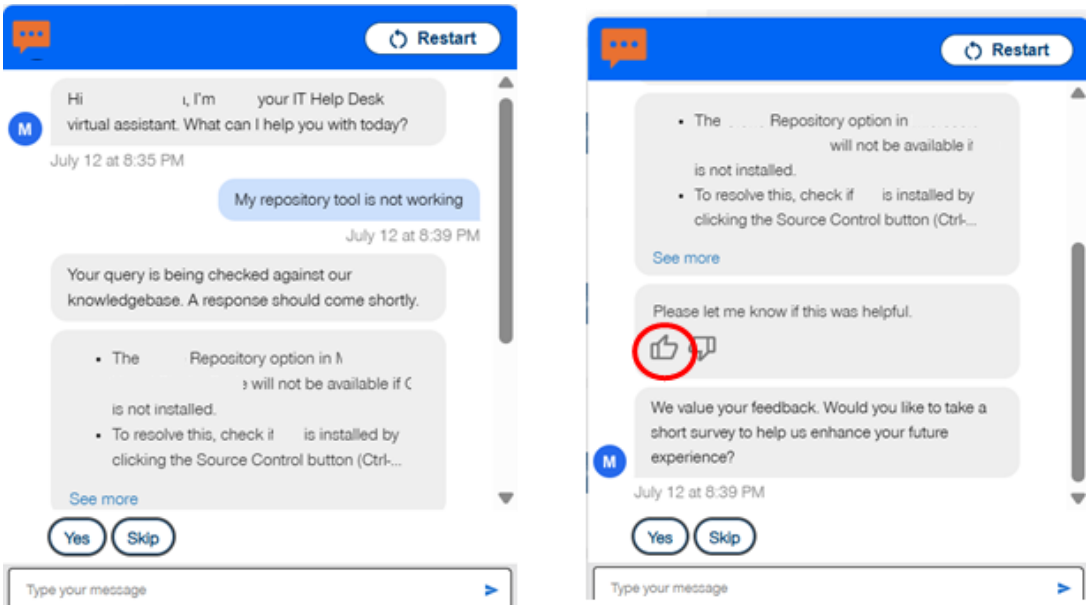
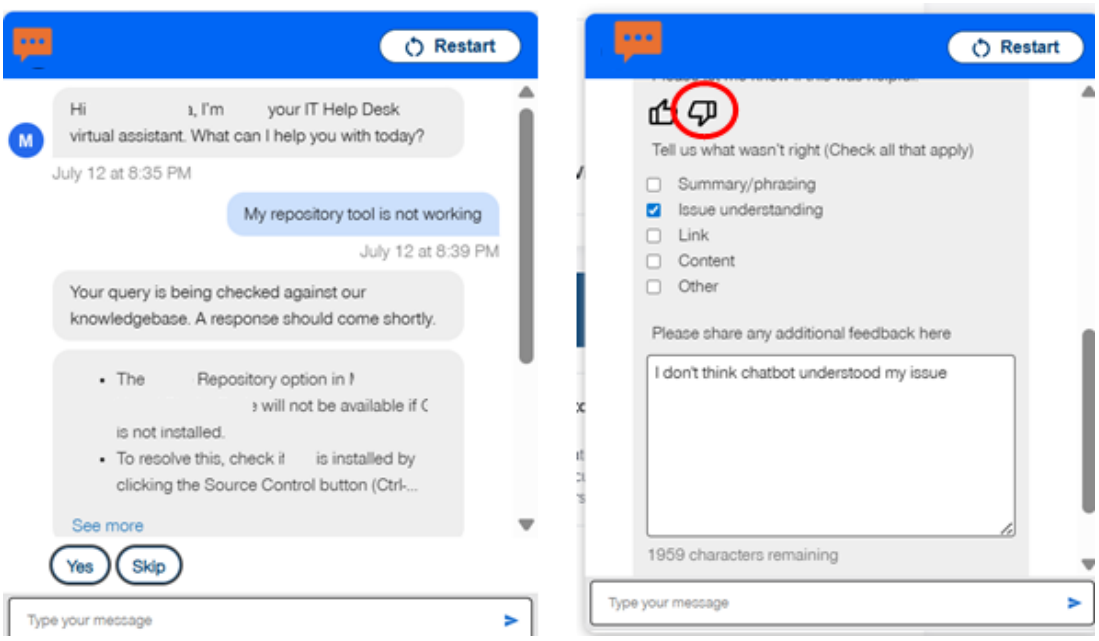


Figure 5.15. User gives a thumb's-down after the chatbot suggests self-help steps. The chatbot requests a reason, and the user provides feedback in the comment box.



9. User satisfaction feedback with emoticon rating and reason capture

At After a chatbot interaction (right after users give a thumbs up or down on the self-help article), users are provided the option to rate their experience using a five-point emoticon scale. It's a quick gesture, one tap to say how the interaction went. But beneath that simplicity, it opens a space for users to share how they really felt about the support they received. If someone gives a lower rating, the system doesn't stop there, it gently follows up, asking for reasons and even a short comment, if the user wants to explain further.

In my experience, this kind of feedback feels more approachable than formal surveys. It doesn't demand much, but still gives people the chance to say, "Hey, this helped," or "This didn't work for me." I've used it myself when something felt off or when I appreciated how fast an issue was resolved. Over time, these small

interactions is able to create something bigger and meaningful such as patterns, trends, insights, things the support team can actually act on.

What I find great about this setup is how it quietly invites users in improving the tool regardless of how you are knowledgeable with technical aspects or not, your voice is part of the loop. In a way, it reminds us that automation is not meant to remove the human side of it, but its message is that it should listen to the human side better.

Figure 5.16. User selects the happiest emoticon in response to the chatbot survey. The chatbot prompts for reasons behind the rating and asks for additional feedback in the comment box.

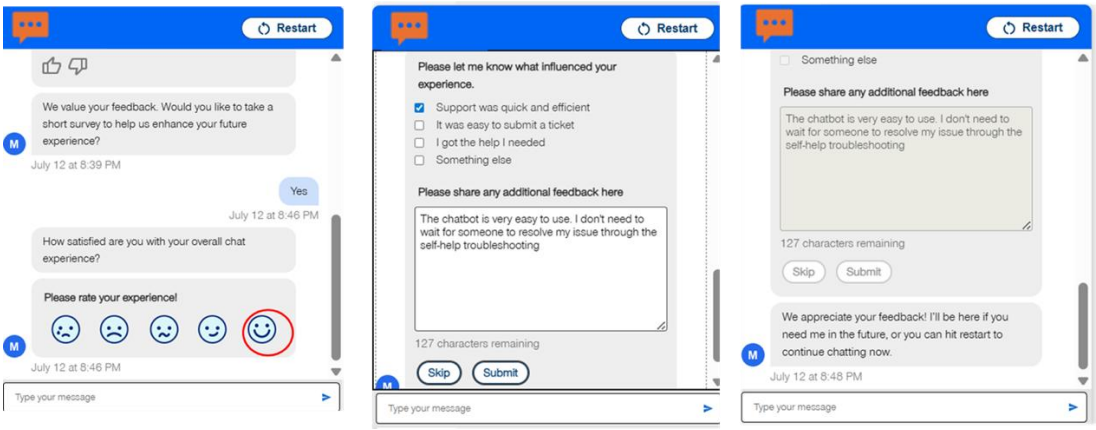
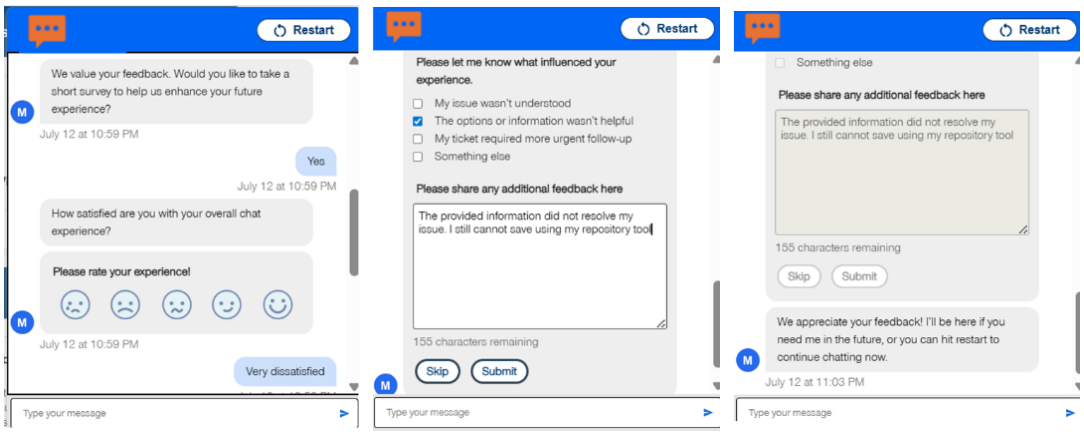


Figure 5.17. User selects the saddest emoticon in response to the chatbot survey. The chatbot prompts for reasons behind the rating and invites additional feedback in the comment box.



Technology Resource and Support Automation Practices

If chatbot automation is focused on resolving issues through direct interaction, this next system works a little differently. Technology Resource and Support Automation is more on building and managing a shared space for knowledge, one that users can actively shape and contribute to.

Instead of just waiting for answers, users engage with internal platforms filled with manuals, discussion threads, and self-help tools. These resources are intended to assist them troubleshoot tech-related issues on their own, or with the help of their coworkers. The best thing about this practice is that it doesn't just deliver static content, rather, it evolves based on how users interact with it over time.

For example, users have the option to stay updated with the progress of their own logs, or they can leave feedback directly within the system. Also, users can choose to be notified via email whenever their favorite material is added to or updated. That feeling of real-time collaboration is made by these little touches. What begins as a resource created by IT becomes something more robust because it is molded by official documentation and informal user feedback.

The platform encourages content to grow in response to actual needs. Users spot gaps, recommend new materials, propose improvements, and even validate what's already there. In that sense, it distributes ownership: no longer is the IT team the sole gatekeeper of repository knowledge. Everyone becomes a contributor.

With this tool, digital asset management can evolve from a static, technical system into an interactive one that fosters teamwork, precision, and quick reactions. The following sub-practices illustrate this in action, drawing attention to the various ways users contribute to and maintain the repository.

1. **Interactive Peer-Led Knowledge Sharing**

In practice, one of the most helpful things about this system is how employees naturally turn to each other when they hit a roadblock. If something isn't working or a process seems unclear, someone usually starts a thread, sometimes with just a quick question, sometimes with a full walkthrough of what worked for them before. It's not formal, and that's what makes it work.

Most of the time, these conversations can go deeper than what is written in manuals or SOPs. People can share screenshots, point out small glitches in the system, and also offer up solutions they have discovered just by trial and error. A lot of the time, these threads become more useful than the official documentation, especially when it comes to issues that keep happening or things that were never really explained well in the first place.

What is more interesting is that this back-and-forth doesn't just help the person asking but it also helps everyone who reads the thread later on. Over time, these posts build up into some sort of shared knowledge base. And because these inputs come from real situations, it feels more trustworthy, reliable and practical.

This type of peer support makes the system feel more active and responsive. It's not just a static library of information, it grows with each contribution. Instead of just using the knowledge base, people are actively shaping it. That's what makes this practice stand out: it's informal, it's grounded in actual experience, and it keeps evolving with the people who use it.

Figure 5.18. Website for automating technology resource and support, where employees can post discussions and engage with others through comments and reactions, similar to social media platforms.

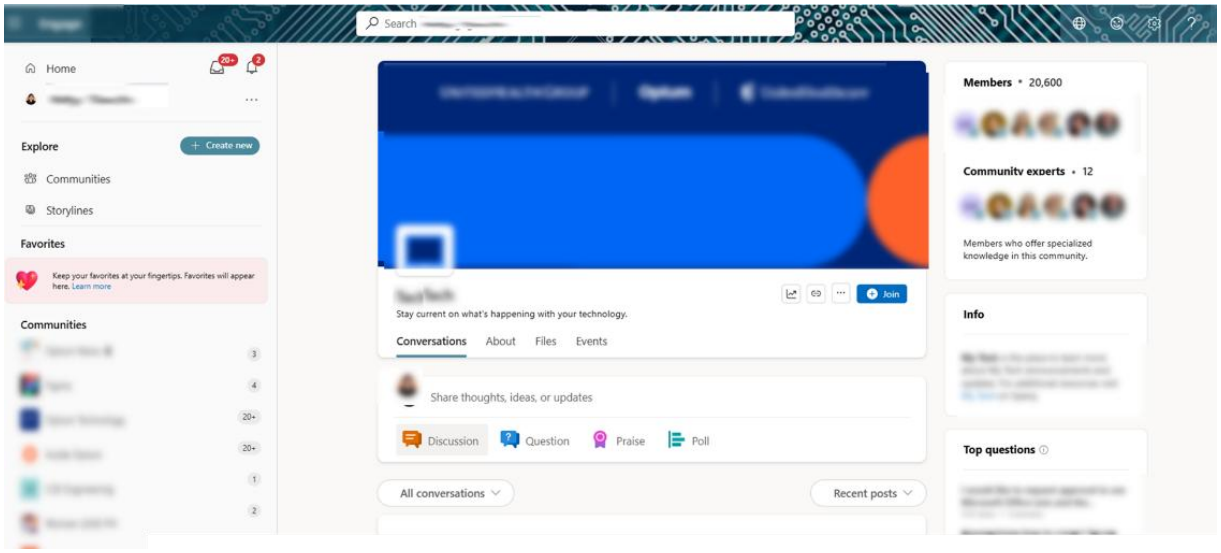
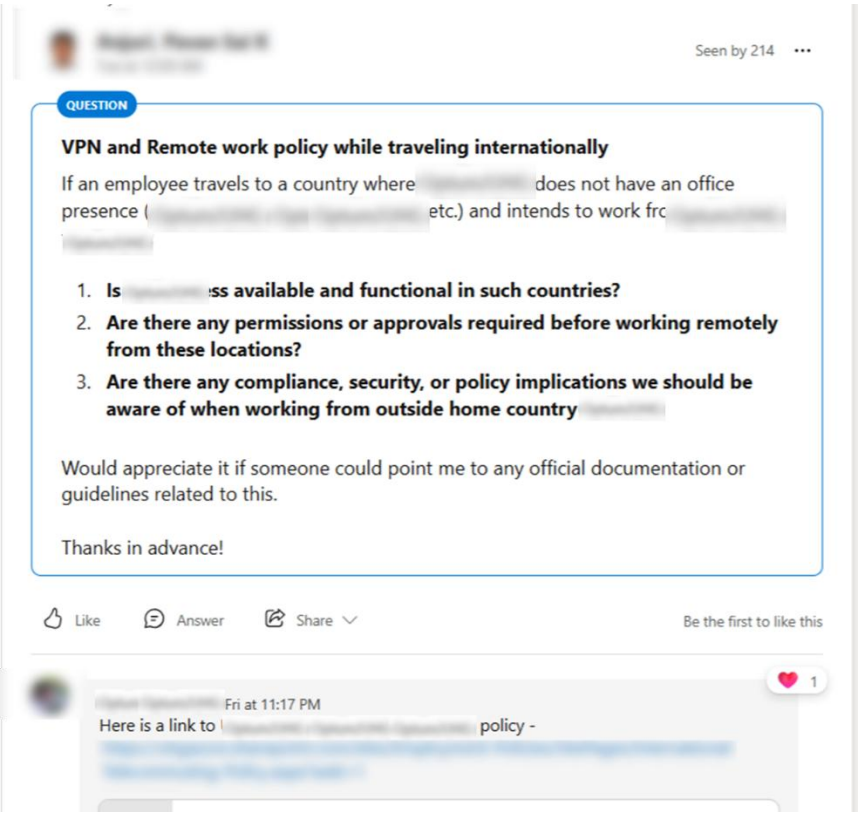


Figure 5.19. Website showing a question posted by an employee with a comment from another employee.



2. Real-Time Engagement via Notifications

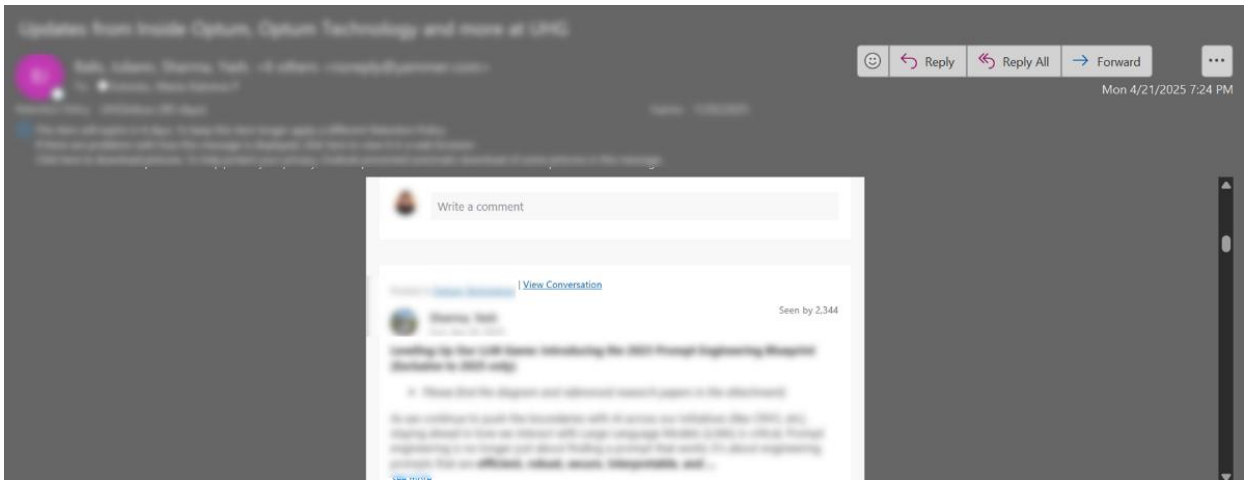
One of the things that keeps this system genuinely useful is how it sends updates straight to your inbox. Whether someone replies to a thread you're in, tags you, or adds something new to a conversation you follow, you get notified right away—no need to keep checking back.

This is especially helpful for teams working across time zones or those who can't always be online at the same time. Even if you're not actively participating in a thread, you stay in the loop and can jump back in when you're ready. That kind of flexibility really matters when you're juggling tasks or working on rotating shifts.

What's great is that this setup allows conversations to unfold naturally over time. People need not to be online all at once just to interact. Instead, they can put a comment or a clarification whenever available, and others can just follow up later. That way, discussions keep moving, and nothing gets lost just because someone wasn't around when the conversation started.

Whether it is just a quick clarification about a tech issue, an outage, or a deeper discussion around a policy update, the notifications keep people connected. They help everyone follow the flow, stay updated, absorb information at their own pace, and stay engaged, despite the differences in time zones and schedules, particularly that the organization is in different geographies.

Figure 5.20. Email notification informing users of replies or updates to discussion threads they follow from the Technology Resource website.



3. Peer-contributed Repository Management

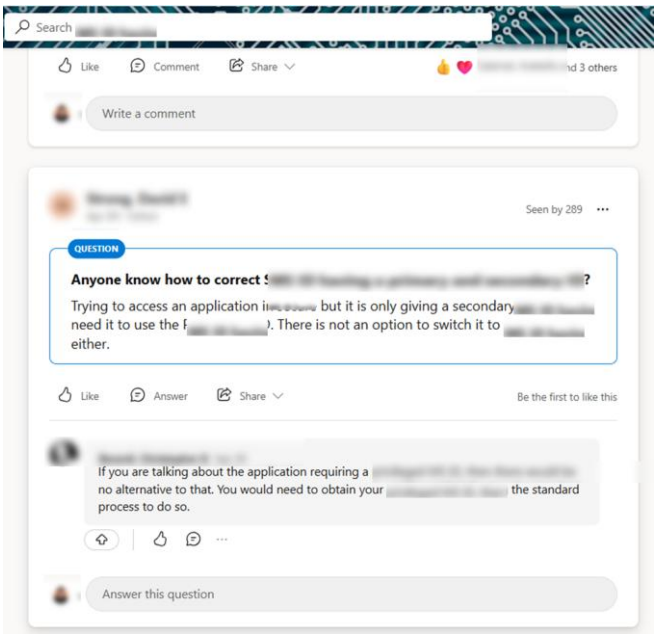
When someone posts a question or an answer that helps in a thread, the system quietly records it. Not anything flashy, just saving tiny fragments of what others contribute. Eventually, these small interactions start to build into something bigger where it becomes a collection of data that people hold in real time.

The unique thing about this tool is that it is not full of polished documentation like the typical one. Instead, it is based on actual occurrences, like suggestions being offered when working a late shift or solutions to complicated issues. The data remains updated, applicable, reliable since it records events as they happen.

As more people contribute, these threads become go-to resources. Folks dealing with the same issue later on don’t just find a solution, but they see how others tackled it, what worked, what didn’t, and why. It becomes a kind of collective memory, shaped by the people who actually do the work, not just those writing policies from above.

This way, the knowledge doesn’t just live in someone's head or get buried in emails. It becomes part of a shared space that is always growing, always being refined because everyone had a hand in building it.

Figure 5.21. Discussion thread demonstrating a question submitted by a user and a peer providing response on the Technology Resource website.



4. **Submitting and acting on feedback survey to improve co-created documentation**

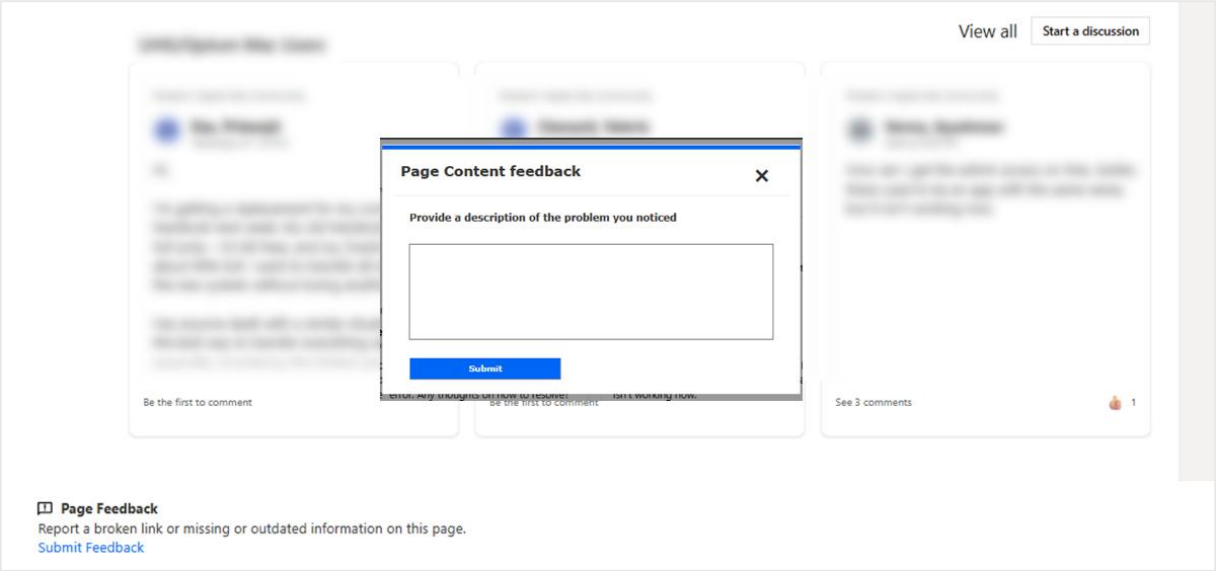
One of the quiet but powerful features built into the platform is the “Submit Feedback” option. It allows users to flag broken links, unclear instructions, outdated materials, or missing content, right from the document or article they’re reading. Instead of feedback disappearing into a void, it goes directly to the IT Support Services (ITSS) team, who review the input and amend content, accordingly, making sure that the information stays accurate and relevant.

This is not just about fixing error but a reflection of something deeper, a participatory form of quality assurance. Users aren’t just passive consumers of information; they become contributors, actively shaping the very system they rely on.

With every suggestion and correction, the gap between content creators and end users narrows. And as users see their feedback reflected in updates, they begin to feel a stronger sense of ownership over the shared repository.

Over time, this process turns the platform into more than just a storage space. It becomes a living resource, adaptive, collaborative, and trustworthy, because it's shaped by the very people who use it.

Figure 5.22. Submit Feedback button clicked on the Technology Resource website; A user reports an issue to help improve repository content.



Remote Work Access Automation Practices

Remote In an increasingly mobile world, the ability to work from anywhere is no longer a just luxury but it has become a necessity. That's where Remote Work Access Automation comes in. This system is designed to make sure employees can securely and efficiently connect to their work tools, platforms, and repositories no matter where they are or what device they're using.

For organizations supporting health research, where professionals often work in hybrid or off-site settings, this kind of flexibility is critical. The system was built with

that in mind, offering access to essential resources like software, technical documentation, and company portals through portable and user-friendly formats. Whether it's a mobile app, a secure browser-based tool, or an auto-installed platform, the goal is to keep work flowing without the hassle of complex setup or heavy IT intervention.

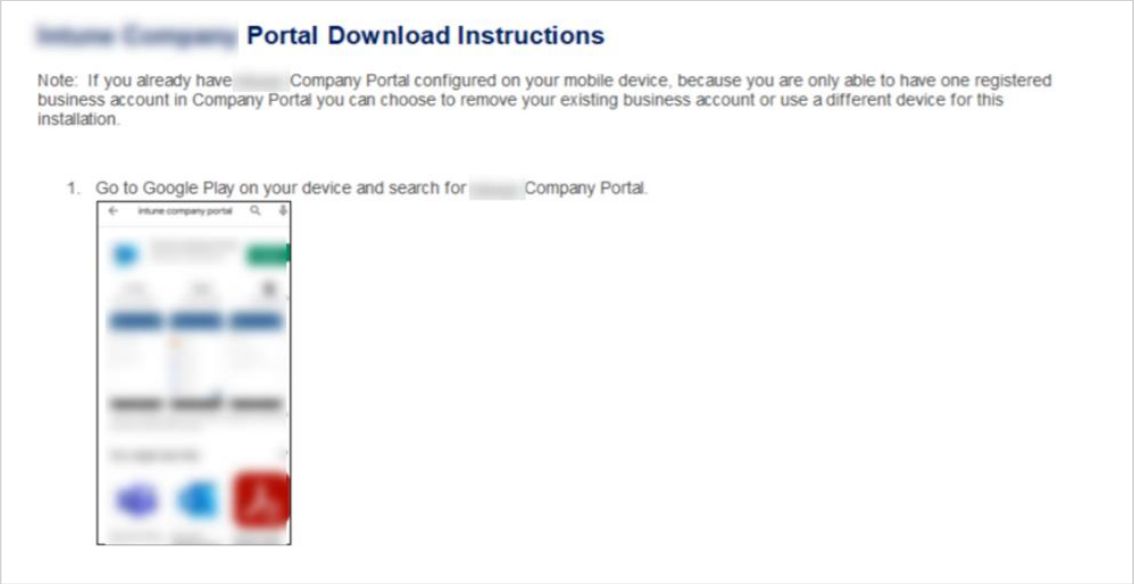
What makes this system particularly effective is its thoughtful design. Installation guides walk users through every step. Multi-factor authentication protects sensitive information. And deployment tools ensure that devices are set up remotely and ready to go. Together, these features create a digital workspace that mirrors the in-office experience, while offering the flexibility and security needed for remote operations.

To better understand how this works in practice, let's take a closer look at specific ways automation supports remote work by enabling access to tools, ensuring compliance, and preparing systems for use across different work environments.

1. **Accessing Work Tools from Any Device**

Imagine being able to log into your company's internal systems from a personal laptop, a tablet, or even a smartphone, no IT team required. With this practice in place, employees install a secure company portal using step-by-step setup manuals. Once installed, the portal acts as a secure gateway to work systems, making it possible to stay connected from just about anywhere. It's a simple but powerful shift that makes work more accessible, no matter where employees are based.

Figure 5.23. Installation guide for the Company Portal on a mobile device; The manual provides step-by-step instructions to help users access work tools remotely.



2. Supporting Flexible and Remote Work

Through access to communication platforms, scheduling tools, and collaborative workspaces from almost anywhere, the automation also supports distributed work. Clinicians and researchers can send brief notes, attend meetings, or provide updates either in between site visits or during travel.

A health research worker can review documentation updates on-site or even help with planning via mobile chat. These chores were once postponed until users got back to their desks. Ethnomethodologically, this supports a change in temporal and spatial dimensions of knowledge sharing, what used to be asynchronous and place-bound is now merged into the immediate rhythm of mobile work.

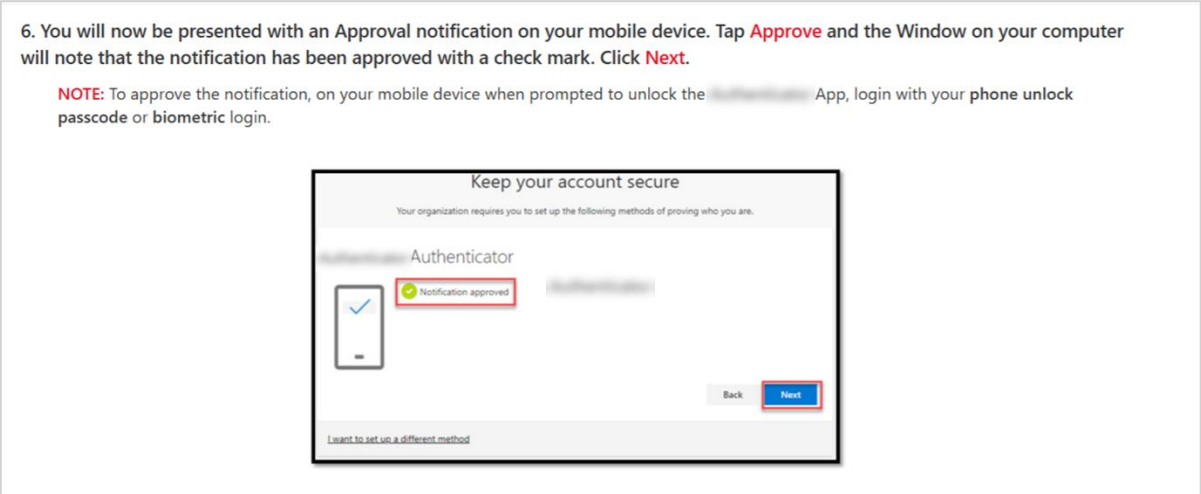
Figure 5.24. Manual for accessing the call and chat app on a mobile device; The guide includes steps for enabling microphone access to support communication features.

3. Automating Security and Compliance

To safeguard data and protect user access points, the system incorporates automated security protocols such as two-factor authentication and device authorization. Users are provided with setup instructions for installing authenticator apps that generate secure login codes, ensuring that only verified users can access internal systems. Once set up, this system quietly does its job, that keeps data secure without getting in the way. The configuration happens just once, and from there, the process becomes smooth, almost invisible to the user. Instead of requiring employees to manually go through lengthy compliance checks, the automation handles it all in the background, enforcing security protocols without interrupting the workflow.

For teams working with sensitive health-related information, this matters a great deal. It creates a protected digital space that aligns with institutional policies and compliance standards, but without slowing people down. The result provides secure, reliable work environment that protects what matters while allowing the work itself to continue working without any effort.

Figure 5.25. Security setup manual or guide using an authenticator app on a mobile device; The manual provides step-by-step process used on securing access to work data through two-factor authentication.



4. Deploying Managed and Auto-Installed Applications

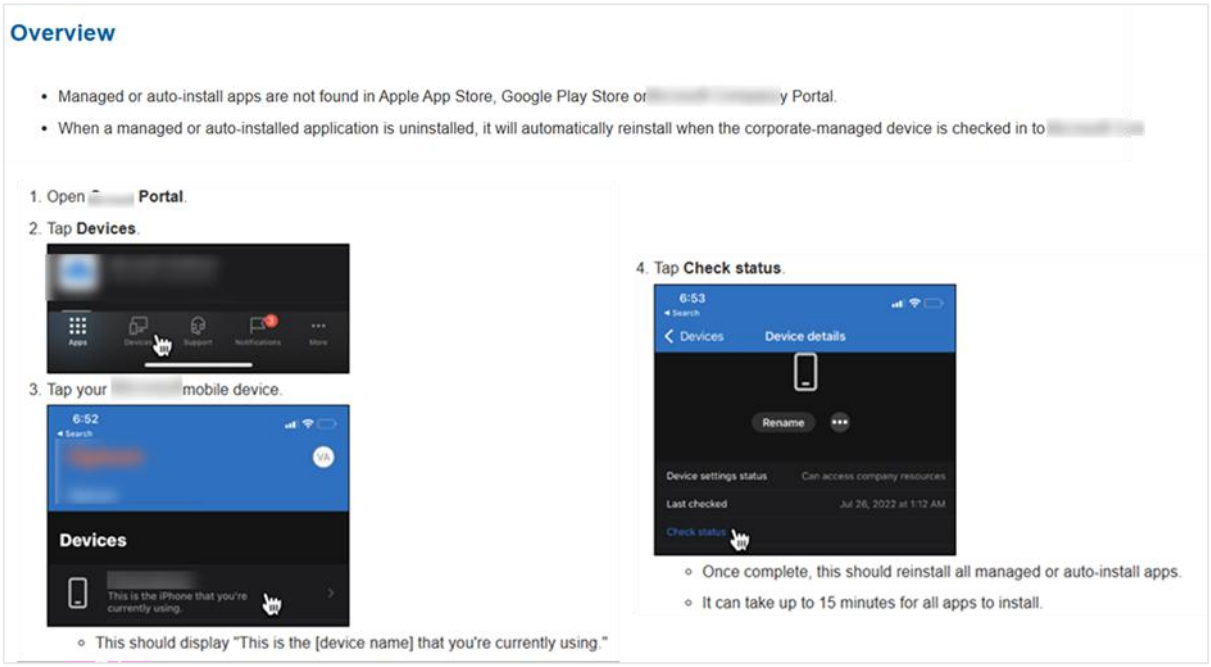
Behind the scenes, the company takes a proactive approach. Applications are either pre-installed or managed remotely, updating themselves automatically, as long as the user stays connected to the company portal. There's no need for employees to worry about version checks or installation steps. The tools simply stay current, ready whenever they're needed.

This becomes especially important for those working remotely or in the field. Imagine a health research staff member out on home visits, no time to call IT, no stable office connection. Even in that setting, they can rely on the tools already

installed on their device to log data, communicate with colleagues, or access essential files. Everything works as intended, no extra steps required.

By removing the friction of manual updates and ensuring tools are always up to date, this system strengthens the digital backbone of a distributed workforce. No matter where someone is working from, they can stay focused, stay productive, and trust that their tech won't hold them.

Figure 5.26. Instructions to install or update a work mobile application.; The guide users keep access to essential tools by ensuring apps are up to date.



Underlying perspectives of the automation practices of repository management in knowledge sharing

While automation in repository management is often viewed through a technical or efficiency-focused lens, the practices identified in this study have revealed deeper, underlying perspectives that mold how these systems are understood, used, and become sustainable. These perspectives help explain not only how automation is implemented but why it takes on particular forms in an R&D

support environment. They expose the values, assumptions, and situated reasoning that inform the automation of knowledge sharing in science and technology (S&T)-driven contexts.

This section surfaces three key perspectives:

(1) Automation as Situated Infrastructure, clearly illustrated in how chatbot systems handle support tasks in context, adapting to the organization's workflow,

(2) Knowledge as Co-Constructed and Contextual, particularly in the way technology support systems evolve through real-time collaboration and shared use, and

(3) Flexibility and Situated Adaptation, stand out in the case of remote work automation, where tools are designed to fit the realities of working across locations and device.

Taken together, these perspectives help us understand that automation isn't just about making tasks faster or smoother. It also plays a deeper role in shaping how people share knowledge, learn from one another, and sustain organizational growth. Within the larger scope of R&D management, automation becomes both a technical solution and a living part of collaborative, institutional practice.

Chatbot Automation: Automation as Situated Infrastructure

The chatbot does more than just sort support requests, it has become a part of the daily rhythm of how people work. It's not just a tool that operates in the background; it's a system woven into users' routines, shaped by their expectations, decisions, and judgments. Depending on the situation, users might choose to follow self-help prompts, escalate a ticket, or go straight to live support. These choices aren't random, they reflect how people weigh urgency, clarity, and even past

experiences with the tool. What emerges is a sense of agency: users aren't simply following what the system dictates, they're actively navigating it.

Even the simplest features, like a thumbs-up or a smiley face, carry weight. These aren't just design extras, they're touchpoints that let users give feedback in real time. Through these small but meaningful interactions, the system adjusts and learns. It becomes responsive, not static. This kind of give-and-take echoes what Suchman (2007) describes as the dialogic nature of technology—where meaning is co-created through use. In this light, the chatbot isn't just a functional tool; it's a dynamic knowledge interface, whose value is continually shaped through everyday practice.

This aligns with Saludadez and Garcia's (2001) assertion that knowledge systems are interpreted and negotiated, and not universally objective but shaped by local logics. The underlying perspective here is that automation works only to the extent that it is locally intelligible, adaptable, and embedded in a human-centered logic of decision-making.

Technology Resource and Support Automation: Knowledge as Co-Constructed and Contextual

The technology resource platform reflects an epistemological shift from hierarchical knowledge distribution to peer-led, situated learning. Employees contribute tips, raise clarifications, and co-develop solutions through threaded discussions, indicating that knowledge is not centrally authored but collectively constructed.

This knowledge repository doesn't behave like traditional documentation, which often treats information as fixed and final. Instead, it grows and shifts through

real-time practice and ongoing conversation. It's a space where knowledge isn't simply stored, it's shaped, questioned, and refined. This reflects what Gherardi (2012) calls knowing-in-practice, where knowledge isn't something prepackaged, but something that takes form through participation and lived experience.

At the heart of this system is a collaborative way of knowing. Even something as routine as troubleshooting becomes a moment of sense-making, an opportunity for people to align, adjust, and learn together. In this light, the repository is not a static archive. It's a living document, constantly reworked and reinterpreted, built on shared interactions and negotiated understanding.

Remote Work Access Automation: Flexibility, Autonomy, and Situated Adaptation

Remote work access tools reflect more than just technical convenience, they reveal a deeper perspective rooted in institutional trust, personal autonomy, and flexible, adaptive practice. Employees work across different devices, navigate varying internet speeds, and shift between environments throughout the day. Instead of using the system in a rigid or uniform way, they adjust their engagement based on what each moment calls for sometimes choosing speed, sometimes reliability, or simply finding workarounds that help them get things done.

This lived flexibility speaks to what Orlikowski (2000) describes as the representation of technology, where tools don't just get used, they become meaningful and functional through how people adapt and respond to them in real-world settings. Whether it's accessing the system on a phone, delaying updates until a better connection is available, or switching devices mid-task, each choice reflects

how users co-shape automation to fit their work realities. Security protocols and auto-installers, while technically designed to standardize, become interpreted artifacts, which are sometimes accepted, bypassed, or delayed depending on perceived risk or workload. The underlying perspective here is that automation is not autonomous, it requires human flexibility, judgment, and creativity to be effective.

In this context, the organization delegates not just access, but also responsibility for negotiating use, signaling a trust-based logic. As Saludadez and Garcia (2001) noted, this reflects a decentering of control, where users are both subjects and agents of knowledge systems, enacting automation in ways that often diverge from original design.

Co-constructed Trust in Situated Automation

Across the different automation systems examined in this study: chatbot, technology support platforms, and remote access tools, a common thread emerges, automation becomes meaningful because it is co-constructed through everyday use and trusted in situated contexts. Users do not simply follow system logic, they engage, adapt, give feedback, and make choices based on what works in real-life scenarios. Over time, these experiences build a sense of reliability and trust, not in a generic way, but trust that is situated, responsive, and shaped by actual work conditions.

This trust is neither blind nor passive. It is nurtured through continuous interactions through which automation exhibits practicality, convenience, and alignment with user requirements. When people opt to use the chatbot instead of sending an email, when they respond to a peer thread instead of waiting for formal

documentation, or when they rely on auto-installed tools while in the field, they're expressing confidence in systems that have proven themselves through lived experience. In these moments, automation becomes a "go-to infrastructure", not because it's mandatory, but because it works.

This perspective ties together the underlying logics surfaced in the previous sections: automation as infrastructure, knowledge as peer-shaped, and flexibility as practice. What unites them is a relational trust, quietly built, socially shaped, and institutionally reinforced. In short, automation gains its value not solely from efficiency, but from the co-constructed trust users place in it to sustain knowledge, solve problems, and keep work moving across time and space.

Accomplishments of practices in repository management in knowledge sharing

The automation and repository practices examined in this study do more than streamline technical support as they facilitate a participatory, evolving approach to knowledge sharing. Below are the core accomplishments categorized by the way they contribute to the organization's knowledge ecosystem

Manual to automated transition

The shift from hotline-based and manual ticketing to chatbot-enabled automation minimized delays in issue reporting. By reducing wait times, this practice allowed employees to resume knowledge work with less interruption, preserving workflow continuity, which is critical in time-sensitive domains like health research.

Automated triage and routing

Automated triage and routing have made one of the biggest early differences. Tickets that used to leap around before landing in the right place now go directly to the right team. As a result, specialized support can step in faster, and users no longer waste time explaining their issue again and again. The system simply knows where things belong.

Real-time automated issue reporting

Users can raise problems the moment they happen. That real-time response gives the ITSS team a better view of what's unfolding across the organization, catching patterns, flagging recurring glitches, and fixing root causes before they escalate. It's not just about resolving tickets anymore but it's about preventing future ones.

Ticket monitoring and parent ticket linking

This has brought in a layer of transparency. Users can now track the progress of their own issues and learn from similar ones that have already been addressed. This visibility encourages not just waiting, but watching, understanding, and learning along the way.

Guided self-help interaction

When it comes to solving things on their own, users now lean on guided self-help interaction. The chatbot offers targeted knowledge articles that walk people through solutions in real time. No long manuals, no back-and-forth emails, just the

answer, when and where it's needed. Over time, this has built user confidence and made the knowledge base a tool for growth, not just support.

User-determined interaction paths

Not everyone learns the same way, and the system reflects that. Through user-determined interaction paths, employees can choose how they want to engage, whether that's self-help, ticket submission, or jumping into a live chat. This kind of flexibility honors different preferences and comfort levels, making support more inclusive across varying degrees of tech fluency.

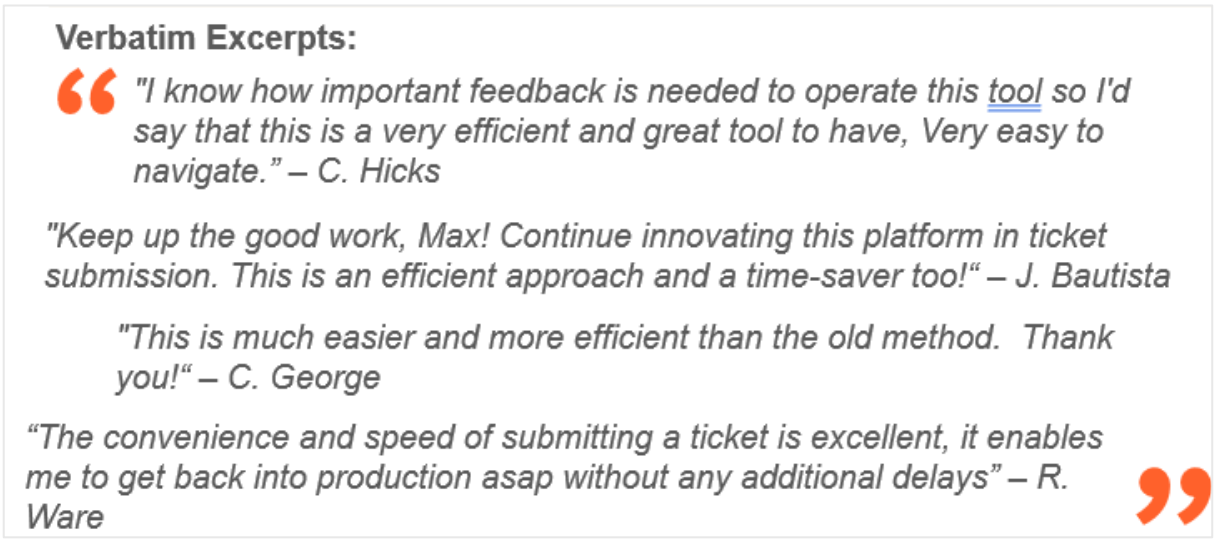
Adaptive decision-making in automation

With adaptive decision-making, the chatbot doesn't just provide answers, it teaches people how to find them. Users move through guided prompts, learning to sort information, weigh options, and take action. It's subtle, but over time, it builds habits of inquiry and digital problem-solving.

Layered satisfaction feedback

Layered satisfaction feedback adds a human touch. Emoticons and reason fields might seem simple, but they give voice to user sentiment in ways that raw data can't. These cues help ITSS refine content not just based on what works, but on how people feel while using it. It turns the system into something responsive that is attuned not only to technical needs, but emotional ones as well.

Figure 5.28. A screen capture of an actual survey verbatim or comment excerpts from the user satisfaction survey report, showing how satisfied users are with the Chatbot.



Peer-led discussion and collaborative problem solving

Some of the richest insights didn't come from manuals but they came from coworkers. Employees would kick off discussion threads to sort out tricky issues, clarify confusing policies, or swap tips on workarounds. These conversations weren't just noise, they became an important complement to formal documentation, capturing how real people navigated real problems in the moment.

Real-time engagement via notifications

Even across different time zones and work schedules, the conversation didn't stop. Email alerts kept people in the loop, allowing them to jump back into discussions when they were ready. This asynchronous flow helped sustain collaboration, making sure that distance or timing didn't become a barrier to solving shared problem.

User-generated repository management

What started as casual back-and-forth often turned into something more lasting. Threads from these discussions were indexed and added to the knowledge base, turning real-time exchanges into structured, searchable content. In effect, everyday dialogue became part of the organization's collective memory.

Submitting and acting on feedback to improve shared documentation

When something in the documentation felt off, maybe a broken link, or an outdated step, users didn't have to stay silent. The "Submit Feedback" feature made it easy to flag these issues. ITSS took this input seriously, updating the content to reflect current realities. Over time, this created a feedback loop that helped everyone keep the knowledge base sharp, accurate, and responsive to real use.

Submitting and acting on feedback to improve shared documentation

Supporting flexible and remote work

Whether someone was on the move or working from a remote location, access to communication tools and collaboration spaces didn't stop. Real-time availability meant users could ask questions, contribute updates, or offer help without needing to be at their desks. This kind of flexibility cut down on delays and made sure knowledge could move just as fast as the work itself.

Deploying managed and auto-installed applications

Ensured that users, especially in remote or mobile setups, had consistent access to required tools without relying on manual installation. This automation

minimized disruptions, streamlined onboarding to knowledge systems, and supported secure access.

Mobile access to work tools and repositories

Empowered employees to engage with knowledge systems even while traveling, during fieldwork, or across multiple devices. This extension of access helped embed knowledge sharing into daily workflows regardless of location.

Synthesis: Linking the Findings to the Literature and the R&DM Perspective

This study explored how automation practices in repository management support knowledge sharing in a BPO organization involved in health research services. The results revealed three distinct automation systems: Chatbot Automation, Technology Resource and Support Automation, and Remote Work Access Automation, each shaping unique practices that reflect how institutional knowledge is created, shared, and sustained. These findings resonate with existing literature on knowledge management, digital transformation, and R&D support services.

Sociotechnical Practices in Automation

The findings affirm that automation is not merely a technical enhancement but a sociotechnical practice, as emphasized by Orlikowski (2007) and Suchman (2007). In particular, the chatbot system functions as situated infrastructure, a perspective echoed in Star and Ruhleder's (1996) theory of infrastructure as relational and embedded in practice. Users navigated the chatbot system with agency, choosing between self-service, ticket escalation, or live support based on familiarity and context, rather than passively accepting system logic. This reflects literature

emphasizing human–machine collaboration (Bai et al., 2021), where users are not replaced but augmented by automation.

Knowledge as Emergent and Peer-Led

The peer-led discussions and collaborative problem-solving enabled by the Technology Resource and Support Automation platform align with Brown and Duguid's (1991) notion of community-based knowledge and Wenger's (1998) theory of communities of practice. Unlike static top-down documentation, employees co-construct meaning by sharing workarounds and troubleshooting advice based on lived experience which reflects a shift toward contextual, emergent knowledge in digital workplaces (Cook & Brown, 1999). These practices reinforce how institutional memory is shaped through interaction rather than formal instruction.

Distributed Collaboration and Mobile Access

The Remote Work Access Automation system underscores the importance of ubiquitous knowledge sharing in distributed and mobile environments. Consistent with Leonardi (2021), who emphasizes digital infrastructure as a condition for flexible R&D work, the platform enabled employees including those supporting health research, to access critical resources and contribute to repository knowledge regardless of time and location. The integration of mobile access and data loss prevention tools shows how automation supports both security and responsiveness in R&D-supporting organizations.

Implications for Research and Development Management

While the study does not examine R&D departments directly, it contributes to the understanding of how support services function as enablers of R&D in BPO settings, particularly within the health research domain. The automation tools

examined here show how knowledge work is stabilized, distributed, and reflexively shaped through digital infrastructures. Repository management is no longer confined to archiving knowledge; it is now a site of real-time sensemaking, collaboration, and institutional learning.

The automation of feedback, access control, and peer discussions ensures that knowledge relevant to health research workflows remains dynamic and accessible, especially in hybrid and remote arrangements. These insights support the view that R&DM must consider not only the creation of scientific knowledge, but also the socio-technical conditions that allow such knowledge to circulate, adapt, and endure (Saludadez & Perlas, 2020).

Moreover, this study echoes Saludadez and Garcia's (2001) argument that dominant institutions often undervalue qualitative, practice-based inquiry in favor of quantifiable metrics. By surfacing how users interpret, adapt, and reshape automation tools in everyday work, the findings affirm the relevance of qualitative perspectives in understanding R&D support processes. These underlying meanings that are often invisible in systems-centric models, demonstrate that innovation and continuity are not only enabled by technology, but also by the situated reasoning and reflexive practices of its users.

CHAPTER VI

RESEARCH SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

This study investigated how automation is enacted in knowledge sharing and repository management within the IT Support Services (ITSS) department of a business process outsourcing (BPO) company that supports health research. The study was guided by the following research questions:

1. What are the automation practices in repository management in a BPO support services for research and development?
2. What are the underlying perspectives of these automation practices?
3. What do these automation practices accomplish in terms of knowledge sharing?

To address these questions, the study adopted a qualitative case study approach, using ethnomethodology as its guiding framework. This approach emphasized the examination of how organizational members make sense of and enact automation practices in their daily work. Data were drawn from system-generated documentation, internal repository interactions, and feedback mechanisms. Thematic analysis (Braun & Clarke, 2006) was used to identify patterns across three major automation systems implemented within the ITSS department: Chatbot Automation, Technology Resource and Support Automation, and Remote Work Access Automation.

The findings revealed that automation is not merely a technical intervention but a situated and socially embedded process. Chatbot Automation facilitated user-

driven triage and real-time issue resolution; Technology Resource and Support Automation enabled peer-led knowledge co-creation and reflexive documentation; and Remote Work Access Automation supported distributed, context-sensitive engagement with institutional knowledge. Collectively, these practices improved access, fostered collaboration, and highlighted user agency in shaping how automation supports knowledge sharing in an R&D-supporting organization.

Conclusion

This study set out to explore the automation practices in repository management and knowledge sharing within a BPO company that supports research functions. What began as an inquiry into automation tools: chatbot, technology resource platforms, and remote work systems, evolved into a deeper examination of how people interact with these systems in ways that make them meaningful, adaptable, and trustworthy.

Over time, people just stopped asking whether or not to use these tools, they simply do. It’s not because they were told to, but because, well, they work. The systems respond, adjust, and make things easier. That kind of confidence doesn’t show up overnight. It builds slowly through use, trial and error, and seeing results firsthand. What started as a helpful option becomes something they rely on without thinking. It’s not simply a matter of things getting done faster. Over time, these tools have worked their way into daily routines, molded by how people actually use them, what they need, and the shortcuts they develop along the way.

People often talk about automation as a technical thing, but this research takes a different view. It looks at how people really utilize these tools and how they fit into real life. It's not only about making things run faster or keeping things in order,

especially in research and development and knowledge-based work. The most important part is if these systems allow individuals work together, adjust to their requirements, and feel safe. It's less about the structure and more about how well they fit into daily routines. What the findings show is that support teams, who usually aren't at the center of innovation discussions, are actually playing a key role in keeping knowledge steady and things running smoothly, especially in setups where everything's built around tech.

Ultimately, the study positions automation not as a static solution, but as a dynamic and relational infrastructure, shaped by users, sustained through trust, and essential to the evolving landscape of digital work in R&D-supporting contexts.

Recommendations

The results of this study lead to the following suggestions to improve the application and sustainability of automation technologies in knowledge sharing and repository management inside BPO systems support services for research and development:

Design Automation Considering Daily Practice

Development of automation systems should be based on actual user interaction in practice as well as on workflow diagrams or ideal use cases. This entails combining knowledge from user comments, seeing actual use cases, and allowing informal routines and decision points. System development should be guided by human-centered design approaches and iterative testing in live environments.

Facilitate Flexible and Contextual Access to Repositories

Automation should enable multi-device, cross-platform, and location-agnostic access considering the growing dependence on remote and mobile work. Employees working in field environments or with limited connectivity should especially be given particular attention to guarantee fair access to common tools and repositories.

Institutionalize Feedback Loops Across All Automation Layers

Post-interaction surveys, report-a-problem tools, and user forums are just a few of the ways system design should include mechanisms for gathering meaningful user comments. These inputs should be handled not only as system diagnostics but also as part of a developing dialogue concerning the meaning of the system for its user.

Recognize Automation as a Strategic Enabler of R&D

Strategic infrastructure should include automation systems derived from support divisions including ITSS. These instruments are absolutely vital in ensuring knowledge continuity, reducing workflow interruptions, and allowing researchers to concentrate on high-value work even if they might not generate research directly. Therefore, investments in automation should be presented as ones in the scientific and technological capacity of the company.

Balance Standardization with Situated Flexibility

Automation should not eradicate local variation or user discretion even while it helps to standardize procedures. Systems should let users change their processes depending on urgency, location, or device and provide several ways for job completion. This adaptability improves acceptance and helps a health research-supporting company to fulfill its several responsibilities.

Continue Research on Practice-Based Automation

Particularly in R&D-related environments, more study is urged to investigate how automation is implemented across several support spheres. Using ethnomethodological and practice-based approaches will help one to examine not only what systems are meant to do but also how they are lived, understood, and changed in context.

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