Application of chatbot technology for enhancing knowledge management and ISO standards compliance

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***Abstract* — Knowledge management is a key success factor for modern organizations, especially in environments that require a high degree of compliance with internal and external standards. This paper explores the use of chatbot technology as a tool for improving the availability and distribution of organizational knowledge, aiming to enhance process efficiency and compliance. The focus is on digital assistants that provide access to internal procedures, policies, and regulations, thereby facilitating the consistent application of standardized processes in daily operations. A case study in a real-world organization analyzes the effects, benefits, challenges, and recommendations for further development. Special attention is given to chatbot integration in environments governed by ISO standards.**

Keywords — chatbot technology, knowledge management, ISO standards

I. INTRODUCTION

In modern organizations, knowledge management is a key element for maintaining competitive advantage and achieving business efficiency. Knowledge, as a necessary resource, must be adequately collected, stored and available to employees at the right moment, in order to enable consistent application of business processes and compliance with regulatory requirements [1]. The digital transformation of business has opened up new opportunities for improving knowledge management using modern technologies, among which chatbot systems stand out [2].

Chatbots, as interactive digital assistants, enable employees to quickly and easily access information using natural language, thus accelerating the finding of relevant data, reducing reliance on traditional sources and raising the level of internal communication [1].

This paper examines the role of chatbots as a tool to support knowledge management within an organization. The goal is to show how chatbot technology can contribute to more efficient storage and use of knowledge, as well as to analyze its effects, advantages and challenges in specific organizational application.

Knowledge management and chatbot technology

Knowledge management involves strategically organizing people, processes, technologies, and structure within an organization to stimulate innovation and ensure effective reuse of knowledge, ultimately enhancing overall performance. [3, 1]. In this way, employees are enabled to access relevant information in an efficient and effective manner, which is especially important in complex and regulated business environments.

To efficiently manage knowledge, organizations utilize a range of digital tools that support the collection, organization, and dissemination of information. These tools help establish a coherent KM system that improves workflows, encourages creativity, and assists decision-making processes[4].

Technologies based on artificial intelligence (AI) and machine learning (ML) are being progressively incorporated into knowledge management systems to streamline tasks like tagging content, retrieving information, and analyzing data. These technologies can identify patterns and trends in large datasets, providing valuable insights and supporting decision-making. AI-powered chatbots and virtual assistants also enhance knowledge accessibility by providing instant responses to employee queries [4].

In the Chatbot technology, computer program has been developed for the Chat with the human user. It can distinguish questions and provide automatic responses. Contemporary chatbot systems are powered by sophisticated branches of AI, including deep learning and natural language processing, allowing them to interpret user inputs and respond with contextually appropriate, human-like replies.It can interact with human users through the visual languages, in written and spoken form [5, 6, 7]. Chatbot technologies function like human-computer interaction, but it is based on artificial intelligence. Chatbots are commonly referred to by various terms, such as virtual assistants, conversational agents, intelligent bots, or automated dialogue systems [7].

The application of chatbots in business processes not only increases the efficiency of access to knowledge, but also contributes to the reduction of errors and increases compliance with internal and external regulations. In

addition, the integration of chatbot technology with databases and knowledge management systems represents a significant step towards the digital transformation of organizations [8].

Application of chatbots to support knowledge management related to ISO standards in the organization

In the global market, in order to remain competitive, modern organizations must operate efficiently, transparently and in accordance with several international standards. To reach this goal, digital technologies play a key role in improving the knowledge management process. One of the most practical and increasingly present tools in the field of knowledge management is a chatbot – a software agent capable of providing automated answers to user questions in real time.

Recent studies show that AI-based chatbots significantly improve user experience, task success rates, and access to relevant knowledge in regulated environments [9].

By using chatbots, organizations centralize access to knowledge and thus provide employees with current information about internal procedures and ensure a consistent understanding of the requirements prescribed by various standards.

In the context of standardization and compliance, organizations often rely on international standards (International Organization for Standardization ISO) that define requirements for quality, information security and privacy protection. Although the architecture of the standards is not detailed in this paper, their application directly requires efficient storage and availability of knowledge, which supports the need for tools that facilitate access to that information (ISO 9001, ISO 27001, ISO 27701) [10, 11, 12]. Such chatbots are increasingly being integrated into secure digital repositories with role-based access control, enabling scalable and controlled knowledge distribution [13].

Considering the volume of documentation related to the application of ISO standards in organizations, there is a need for systematic storage and access to this documentation through a suitable digital repository. The documentation must be organized chronologically, with the possibility of monitoring changes over time, which enables its visibility and availability to all relevant users.

Within the company, it is necessary to differentiate access to documentation in accordance with the level of authority of the employees. Namely, part of the documentation should be available to all employees, while a certain set of confidential and sensitive documents must be reserved for employees with valid internal verifier (internal auditor) certificates. Accordingly, the digital repository must be implemented with clearly defined access levels, in order to ensure the security and integrity of the information.

It is essential for employees to be informed about the ways of applying ISO standards in their organization. This need can be met by posting relevant documentation on the company's internal intranet portal. More confidential documents intended for certified internal verifiers can be stored on a protected internal server, with the application of additional authentication and access control measures.

As the documentation is in electronic form and dynamically expands - due to the introduction of new standards and updates of existing ones - it becomes crucial to provide employees with a more efficient way of accessing relevant information. This encourages continuous professional development and improvement of knowledge. One of the modern approaches to this challenge is the integration of chatbot technology, which allows users to quickly access precise and contextually relevant information through simple queries. A chatbot, connected to a digital repository, can significantly contribute to better usability of documentation, reduction of time resources needed for searching, and greater employee engagement in quality assurance and compliance processes.

The implementation of such a system contributes not only to a better organization of documentation, but also to the strengthening of an organizational culture based on knowledge, transparency and responsibility.

Below is a concrete application of chatbots, with the aim of supporting the implementation and daily application of ISO standards through improved knowledge management. For this reason, a chatbot tool was implemented with the aim of facilitating access to information related to internal procedures and requirements arising from various ISO standards (Figure 1).

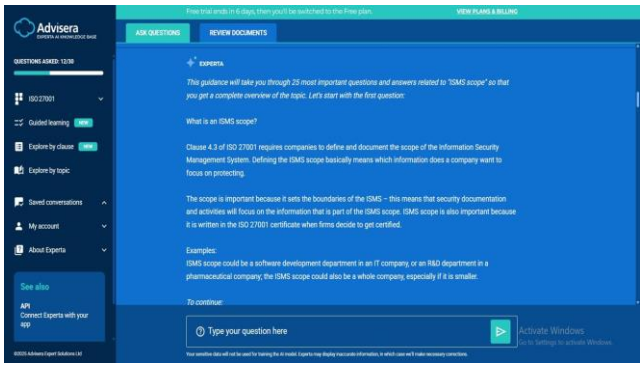

Figure 1. Chatbot tool for ISO standards [14]

Using a chatbot, each employee, by asking a question, quickly receives (Figure 2.) [14]:

- Adequate response,
- Referral to a specific procedure
- Additional recommended questions which further complete the knowledge.

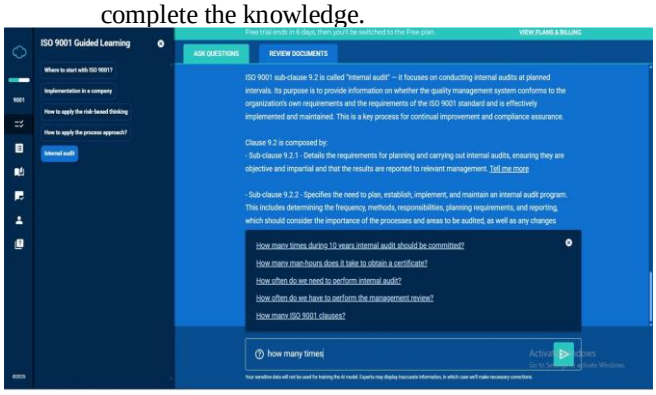

Figure 2. Display of questions and answers using chatbot technology [14]

In this way, the chatbot functions as a centralized system for storing and distributing knowledge, which contributes to a more consistent implementation of standardized procedures and reduces the risk of non-compliance. The ultimate goal of this chatbot is to help employees improve their knowledge of

the application of ISO standards through continuous, interactive learning (Figure 3). Chatbots improve efficiency and encourage a more interactive and engaged approach to ISO compliance by allowing questions to be asked and answers to be received, thereby enabling "conversation with documents". This technology empowers employees at all levels to engage more deeply in data protection, quality, and information and cybersecurity management processes. In doing so, they foster organizational culture and goal achievement across the organization.

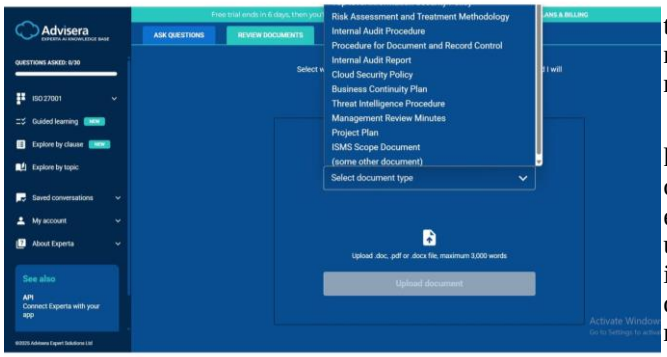

Figure 3. The possibility of adding a document [14]

The implementation of a chatbot contributes to the following benefits:

- Increases the efficiency of access to key information, shortening the time of finding answers
- Improves understanding and implementation of standards among employees through a simple interface and natural language responses
- Supports constant education and updating of knowledge about processes and procedures
- Reduces errors and potential sanctions that may arise from non-compliance with standards
- Especially in the area of implementation and application of ISO standards - such as standards for quality management, information security, privacy and anti-corruption - a chatbot can significantly contribute to improving compliance and reducing operational risks.

Limitations and challenges:

- Chatbot systems that operate on the basis of fixed rules are not capable of providing precise answers to complex and ambiguous questions related to standards, which can lead to partial or inaccurate information [5]. This is a known limitation of rule-based systems, which rely heavily on keyword matching and cannot interpret nuanced or contextual queries [13].
- Since the standards and internal procedures of the organization are subject to changes, it is necessary to continuously maintain and refresh the content available through the chatbot, so that the system remains accurate and relevant
- Potential over-reliance of employees on technology, which may lead to limitations requiring deeper interpretation. Advanced AI-based chatbots may occasionally produce plausible-sounding but inaccurate responses ("hallucinations"), requiring careful human oversight and validation of critical outputs [15, 16].

Despite these challenges, carefully planned implementation and integration of chatbots into a knowledge management system can significantly contribute to compliance and efficiency, if the technology is used to support – rather than replace – human knowledge and judgment.

This application is a concrete example of how digital tools, such as chatbots, can be integrated into knowledge management systems to achieve better compliance with regulatory requirements and internal policies.

The application of chatbot technology to support knowledge management in accordance with ISO standards confirms the findings of previous research on the effectiveness of digital tools in facilitating access and understanding of complex processes. In addition, the importance of such solutions has been highlighted within the digital transformation of organizational knowledge management [8].

The integration of chatbot technology into knowledge management systems within organizations, especially when used to support the implementation of ISO standards, raises important issues related to ethics, privacy protection and legal compliance. Given that such systems can process sensitive internal documentation and personal data of employees, it is necessary that their implementation be carried out in a responsible and safe manner.

One of the key concerns relates to the privacy of employee interactions with the chatbot system. When handling sensitive queries like internal audits or personal certifications, chatbot systems must operate in line with privacy laws, including the GDPR (General Data Protection Regulation) in the EU or similar national regulations, ensuring user data is protected and processed lawfully[17].

- In the context of ISO standards, it is necessary to take measures regarding the processing of personal data, access control and recording of system activities, all in accordance with the requirements prescribed in ISO/IEC 27001, ISO/IEC 27701 and ISO 9001. Chatbot systems used to distribute knowledge related to ISO standards should [12]:
- Minimize the collection and storage of personal and sensitive data (data minimization principle),
- Explain to users in a transparent way how data is collected, used and stored,
- Enable secure authentication mechanisms when accessing confidential documentation.

They function within a clearly defined legal and organizational framework.

From an ethical point of view, it is necessary to ensure that chatbot systems do not introduce bias, do not deny access to important information, or replace human supervision in situations where expert judgment is required regarding compliance with standards. Employees must be

aware that they are interacting with an automated system and clearly understand its limitations.

Additionally, legal risks can arise if a chatbot provides inaccurate or outdated information, especially in regulated industries. Therefore, it is important to establish a human-in-the-loop system, regularly check the accuracy of the content and clearly emphasize the advisory role of chatbot technology [12,15.18].

This model of knowledge access and ISO standardization support via chatbot technology can be replicated across various industries, particularly those with high compliance demands such as finance, healthcare, and manufacturing.

II. Quantitative indicators of the effectiveness of chatbot technology

Although chatbot technology is recognized as a useful tool for improving knowledge management and compliance with ISO standards, its application must be supported by concrete quantitative indicators that confirm its effectiveness in practice.

In an experimental study conducted in a laboratory environment with 52 participants, the effectiveness of an LLM (Large Language Model)-based chatbot was compared with a classic, properly-based "intent-based" system. The results showed a significantly better performance of the LLM chatbot [19]:

- The task completion success rate was 1.00 compared to 0.88 for the classic system,
- The average score on the System Usability Scale was 59.9 compared to 44.9,
- Overall user experience score was +1.10 compared to +0.08, with a statistically significant difference ($p < 0.001$)

In the context of the application of ISO standards, especially ISO 9001, significant benefits were also observed in terms of time savings during the internal audit process. For example, in a study conducted at an educational institution in Asia, implementing a chatbot using the Long Short-Term Memory model to recognize and classify findings achieved an accuracy of 82.15%, while the chatbot successfully identified the appropriate ISO clause in 70% of cases. In complex organizations, this automation has enabled savings of over 100 hours per individual internal audit [20].

These data clearly show that chatbot technology, when properly implemented and integrated into business processes, not only improves user experience and availability of knowledge, but also directly contributes to more efficient implementation and monitoring of standardized procedures.

III. Conclusion

The introduction of chatbot technology as a tool to support the use of ISO standards in the organization shows significant potential for improving knowledge management and compliance of business processes. The chatbot facilitates access to relevant information, allowing employees to quickly and easily get answers to questions related to standards.

This digital innovation contributes to more efficient implementation of standardized procedures, reduction of errors and increased awareness of the importance of compliance. Also, the application of chatbots supports the continuous education of employees and improves internal communication within the organization.

Further research can focus on quantitatively evaluating the impact of chatbot systems on compliance performance and user satisfaction, as well as on the possibilities of integration with other knowledge management systems and process automation.

However, it is important to point out the limitations of this technology. Chatbot systems that rely on predefined rules are often unable to provide accurate answers to complex, ambiguous or context-sensitive questions, which can lead to misinterpretations. Also, if the content behind the chatbot is not regularly updated, there is a risk of distributing outdated or incorrect information. Over-reliance on technology, without adequate human oversight, can further compromise the quality of decision-making.

For chatbot systems to be effectively used in ISO-compliant environments, their implementation must be guided by clear ethical principles, strong data privacy safeguards, and adherence to relevant legal frameworks to ensure responsible and secure usage.

Future developments may include integration of chatbot systems with learning management systems (LMS), document management systems (DMS), and enterprise resource planning (ERP) platforms to ensure seamless knowledge flow within the organization.

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