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EPICARE

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ABSTRACT

EPICARE is a management system focused on occupational safety, with the objective of optimizing the administration of Personal Protective Equipment (PPE) and occupational exams, aiming to ensure the health and safety of employees and the compliance of companies with legal regulations. Using a mixed research methodology, which includes quantitative and qualitative analysis, the study explores how the implementation of software can transform security management, improve the regularity of exams and reduce operational costs. The Software offers an integrated solution that automates the control of PPE and exams, generating detailed reports and automatic alerts to ensure compliance with labor standards. The impact of the system was evaluated in companies from different sectors, demonstrating that its adoption contributes significantly to the reduction of non-conformities and improvement of health and safety indicators at work. The study also suggests that, in addition to simplifying processes and promoting a safety culture, EPICARE could, in future iterations, integrate artificial intelligence and machine learning functionalities, making the system even more efficient and proactive in detecting risks. The survey concludes that technology plays a key role in modernizing occupational safety management, being essential for companies that want not only to comply with legal obligations, but also to ensure the integrity and well-being of their employees.

Keywords: Occupational Safety. PPE management. Occupational Health. Management Software.

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INTRODUCTION

Effective occupational health and safety management at work is essential for companies that seek not only to comply with legal regulations, but also to ensure the well-being and safety of their employees. In the current context, marked by rapid technological changes and growing awareness of the importance of health and safety in the workplace, organizations face the challenge of finding efficient and sustainable solutions that ensure the physical and psychological integrity of their employees, while optimizing resources and reducing operating costs. According to this, Chiavenato wrote that:

> All materials need to be properly managed. Its quantities must be planned and controlled so that there are no shortages that paralyze production, nor excesses that increase operating costs unnecessarily. Neither less nor more. Materials management consists of having the necessary materials in the right quantity in the right place, at the right time, at the disposal of the organs that make up the company's production process. (CHIAVENATO, 2005, p.124)

This principle, when applied to the management of Personal Protective Equipment (PPE) and Occupational Health Checks, highlights the need for a systematic and well-structured approach to ensure that resources are available efficiently and at the right time. Despite this, many companies continue to face difficulties due to the reliance on outdated methods. The absence of automated tools often results in inconsistencies in records, missed critical deadlines, and inadequate management of PPE inventories, which ultimately exposes workers to unnecessary risks. In addition, the lack of compliance with regulatory standards not only compromises the safety of employees, but also entails high financial costs for organizations, whether through fines and lawsuits, or by the interruption of activities due to the absence of equipment or mandatory exams.

Faced with this challenging scenario, the development of specialized technological solutions becomes not only an opportunity, but a strategic necessity for organizations. Systems that automate the management of PPE, occupational examinations, and training offer a proactive approach to addressing contemporary challenges. This software allows you to centralize information, generate automatic alerts for expirations, monitor employee health history, and ensure the availability of essential resources for a safe work environment. In addition, the digitalization and integration of these solutions facilitate alignment with current regulations, significantly reducing the risk of penalties.

More than meeting legal obligations, these tools have the potential to transform organizational culture, promoting more transparent and safety-oriented management. By

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integrating processes, from PPE control to occupational health monitoring, specialized software provides a holistic view, allowing managers to make data-driven decisions and prioritize worker protection. This integrated approach also contributes to improving communication between different departments, optimizing workflows and eliminating redundancies.

The implementation of these technologies is not limited to solving operational problems. It reflects a commitment of companies to the health and safety of their employees, aligning with the expectations of an increasingly demanding market. Investing in technological solutions demonstrates an innovative and responsible attitude, capable of attracting qualified professionals and strengthening the corporate image. In addition, the positive impact on employee motivation and productivity can result in a significant return for organizations, creating a virtuous cycle where safety and performance go hand in hand. Therefore, the development of specialized software for occupational health and safety management represents a transformative opportunity for companies. These systems offer practical and effective tools to promote safer and healthier work environments, while helping to reduce costs, optimize resources, and ensure regulatory compliance. By adopting these solutions, organizations not only respond to the demands of the present, but also position themselves strategically to face the challenges of the future, consolidating their sustainability and competitiveness in the global market.

METHODOLOGY

Occupational safety management has become an increasing priority for companies, not only for legal compliance reasons, but also for reasons of sustainability and social responsibility. With the advancement of inspections and the toughening of penalties in case of non-compliance, companies are pressured to implement effective systems that ensure the safety of their employees and meet current standards.

In Brazil, occupational safety legislation is largely regulated by the Regulatory Standards (NRs), which establish mandatory guidelines, issued by the Brazilian Ministry of Labor and Social Security, for the health and safety of workers. Among the most relevant are NR 6, which deals with the mandatory provision of adequate Personal Protective Equipment (PPE), and NR 7, which regulates the performance of occupational medical examinations. The current scenario, especially after the COVID-19 pandemic, has highlighted the need for a more rigorous and efficient management of safety at work, due to

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the increase in inspections by the Ministry of Labor and Social Security (MTP) and other inspection agencies. The standards bring the obligation with the following items in the standards:

> Provide the employee, free of charge, PPE appropriate to the risk, in perfect condition and functioning, in the situations provided for in sub-item 1.5.5.1.2 of Regulatory Standard No. 01 - General Provisions and Management of Occupational Risks, observing the hierarchy of prevention measures. (Regulatory Standard 06 – Personal Protective Equipment, 2022, p 02, item 6, subitem 6.5.1)
>
> The PCMSO must include the mandatory performance of medical examinations: admission; periodic; return to work; change in occupational risks; dismissal. (Regulatory Standard 07 – Occupational Health Medical Control Program, 2022, p 03, item 7, subitem 7.5.6)

These standards have the function of creating standards that minimize or eliminate risks to the health and safety of workers, specifying, for example, which preventive measures should be adopted in different situations, which PPE is necessary for each function, and what the physical work environment should be like.

NRs are essential to protect both workers and companies. For employees, they ensure that the risks inherent to work activities are minimized, preventing accidents, injuries and occupational diseases. For companies, compliance with these standards reduces the possibility of accidents and health problems at work, which can generate high costs with indemnities, leaves and fines for non-compliance with the legislation.

According to data from the Observatory of Safety and Health at Work of the Public Ministry of Labor (MPT), Brazil recorded more than 623 thousand occupational accidents in 2022, which demonstrates the urgent need for preventive measures and efficient management of occupational risks. Companies that do not maintain adequate control over PPE, occupational examinations, and other safety measures are increasingly exposed to severe fines and sanctions.

INSPECTIONS AND PENALTIES

The inspection of working conditions is carried out by labor inspectors, linked to the MTP. They verify that companies comply with the standards established in the NRs and, in case of irregularities, they can fine the company, resulting in fines, embargoes or even stoppage of activities. NR 28 establishes the inspection criteria and penalties for non-compliance with NRs.

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Statistics published by the Radar of the Secretariat of Labor Inspection (SIT) highlight that in 2020 there were more than 248 thousand inspections and 236,312 notifications or irregularities related to OSH were registered.

Figure 1 \u2012 Statistics of Occupational Safety Inspections

Source: https://onsafety.com.br/fiscalizacoes-de-seguranca-do-trabalho-como-funcionam (2024).

Failure to comply with NRs can result in heavy sanctions. In addition to financial fines, which can be significantly high depending on the size of the company and the number of workers affected, companies are also at risk of interdictions or embargoes of activities, especially in cases of fatal accidents. In addition, the absence of good occupational safety and health management can result in lawsuits, brought by injured workers or their families.

Fines vary according to the degree of the infraction and the number of employees exposed to the risk. The company can be fined, for example, if it does not provide adequate PPE or if it does not perform the mandatory medical exams, such as periodic, admission and dismissal, as determined by NR 7. The amount of fines can vary between R$ 402.53 to R$ 6,000.00 per infraction, depending on the severity and recurrence. Liability for accidents can also directly impact the company's image in the market and society, affecting not only its finances, but also its reputation and credibility.

IMPACTS ON THE COMPANY

Occupational safety management plays a crucial role in a company's finances, not only for the protection of the health and physical integrity of employees, but also for the ability to prevent fines, reduce accidents, and optimize operating costs. Compliance with legal regulations, such as the Regulatory Standards (NRs) of the Ministry of Labor and

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Employment, is mandatory and its negligence can result in severe penalties, which directly affect the company's cash.

As described by Martins (2012), the choice of Personal Protective Equipment (PPE) should be based on the specifics of the activity performed. The cost of this equipment for each worker is calculated according to the level of consumption of each item. For this, it is necessary to take into account the position, the workload, and other variables that influence the choice of appropriate PPE. With this information, it becomes feasible to estimate the amount of PPE needed per employee, considering the useful life and wear and tear of each piece of equipment.

Efficient management of occupational safety contributes directly to cost optimization. By automating and properly managing the control of PPE and medical exams, it is possible to avoid unnecessary expenses with premature replacement of equipment or over-the-date exams. In addition, safety management systems help predict when PPE needs to be replaced, preventing overpurchasing and reducing wasted resources.

Another positive financial aspect is the reduction of work accidents. Companies that maintain a safe work environment, with the correct use of PPE and periodic medical examinations, have fewer leaves and lower employee turnover. This directly impacts productivity and, consequently, the company's revenue, since healthy employees are more productive and miss work less.

The ideal scenario for companies, according to current regulations, is one where there is full compliance with NRs and proactive management of occupational safety. This includes providing adequate PPE, conducting periodic occupational medical examinations, and maintaining a safe and controlled environment for employees. The Ministry of Labor and inspection agencies expect companies to implement accident prevention policies, conducting periodic training and internal audits. In the ideal scenario, an automated PPE and occupational exam management system can be used to monitor the expiration date of equipment, issue automatic alerts for renewal, and ensure that all employees are always equipped and in safe working conditions. This automated control helps avoid fines for non-compliance, prevents accidents, and reduces labor liabilities, generating significant savings for the company's cash. Therefore, efficient occupational safety management not only avoids financial losses, but also transforms the company into a safer, more productive and, ultimately, more profitable environment.

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PROCEDURES IN DEVELOPMENT

The development of the EPICARE software was conducted in a structured manner, following a clear and objective methodology that allowed the creation of a robust and effective solution for the management of PPE and occupational exams. The first stage of the process involved a comprehensive literature review, with the objective of identifying the best market practices and the most advanced technologies for the management of occupational safety and health. This initial survey provided a solid theoretical basis, ensuring that the development of EPICARE was aligned with the current requirements and challenges of the sector. Next, a survey of requirements was carried out through interviews and questionnaires applied to occupational safety and health professionals. This step was essential to understand the main difficulties faced by companies in the management of PPE and exams, as well as to identify the most relevant functionalities to be incorporated into the software. The feedback obtained from the professionals allowed to adjust the scope of the system according to the real demands of the market, ensuring that EPICARE met the practical needs of its users.

Based on the requirements raised, a prototype was developed using agile methodologies, such as Scrum, which provided flexibility and an iterative approach in the development of the software. This strategy allowed continuous improvements to be applied throughout the process, ensuring quick adaptation to new demands or fault corrections. The prototype included essential modules for PPE stock control, distribution management, and monitoring of equipment validity, as well as functionalities aimed at monitoring, monitoring, and validating occupational medical exams.

Figure 2 – Epicare software logo

Source: The Authors (2024).

Based on the requirements raised, a prototype of the EPICARE system was developed, using agile methodologies that combined elements of Scrum and Kanban, forming the Scrumban approach. This strategy provided flexibility and efficiency in project

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management, allowing incremental deliveries of features and a quick adaptation to changing requirements throughout development. The use of Scrumban proved to be ideal to meet the demands of a dynamic and complex project, ensuring the continuous delivery of improvements and the correction of failures, in addition to allowing greater control over the progress of activities (RUBIN, 2012).

EPICARE is designed to directly address the needs of companies in the integrated management of occupational health and safety. In a scenario of high demand for compliance and security, the software automates processes previously carried out manually, optimizing managers' time and reducing the incidence of human errors. The system includes essential modules for PPE inventory control, distribution management, monitoring of equipment validity, and functionalities aimed at monitoring and validating occupational medical exams. Automating these processes avoids delays in replacing equipment and performing exams, ensuring that employees are always protected and compliant with regulations. To ensure robustness and efficiency in the development of the system, modern technologies were used in both the front-end and the back-end. On the front-end, the combination of HTML, CSS, and JavaScript allowed for the creation of intuitive and responsive interfaces, making it easier to navigate and improving the user experience. While HTML structured the content of web pages, CSS was responsible for styling and JavaScript added interactivity, creating dynamic functionalities such as form validation and real-time content updates.

On the backend, Python was chosen as the primary language due to its simplicity, versatility, and vast library of modules. Using Django REST Framework, it was possible to create a robust API to manage business logic, data processing, and integration with the SQL database. This structure ensures the performance and safety needed to handle critical information about PPE, occupational exams, and system users. Communication between the front-end and back-end has been facilitated by the API, ensuring efficient data exchange and a well-integrated architecture.

Choosing a cloud-based solution was strategic to handle the large volume of data that the system needs to process. The cloud offers significant advantages, such as scalability, flexibility, and security, as well as a pay-as-you-go model, eliminating the need for high upfront investments in physical infrastructure. Not only does this model reduce operational costs, but it also offers advanced security and backup features that would be costly to implement on-premises. In addition, the cloud makes it easier to manage project

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versioning and prototyping, with the use of Git for version control. This tool ensures code integrity by tracking changes and allowing you to revert to previous versions when necessary.

A key feature of EPICARE is the ability to generate detailed reports and provide automatic notifications, allowing managers to monitor the status of PPE and occupational examinations in real time. These features significantly reduce operating costs and increase efficiency in strategic safety management, promoting a culture of risk prevention. Instead of reacting to problems, companies can focus their efforts on mitigating risks and creating a safer work environment.

By adopting modern technologies and agile methodologies, EPICARE is designed to be a scalable, secure, and efficient solution, aligning with the needs of companies seeking not only to meet legal obligations but also to foster a culture of continuous safety. In this way, the system contributes to the health and well-being of employees, while improving operational efficiency and reducing costs, consolidating itself as an indispensable tool in occupational health and safety management.

EPICARE SCREENS

The software will initially be worked on in the Web version, that is, it is accessed and executed directly through an internet browser. Software screens play a crucial role in the usability and efficiency of the system, allowing users to carry out their activities quickly and accurately.

The software's home screen offers an overview of the services offered by the software, as well as navigation areas for information on the operation of the site, a support area and a registration and login area for companies that will make use of the services offered.

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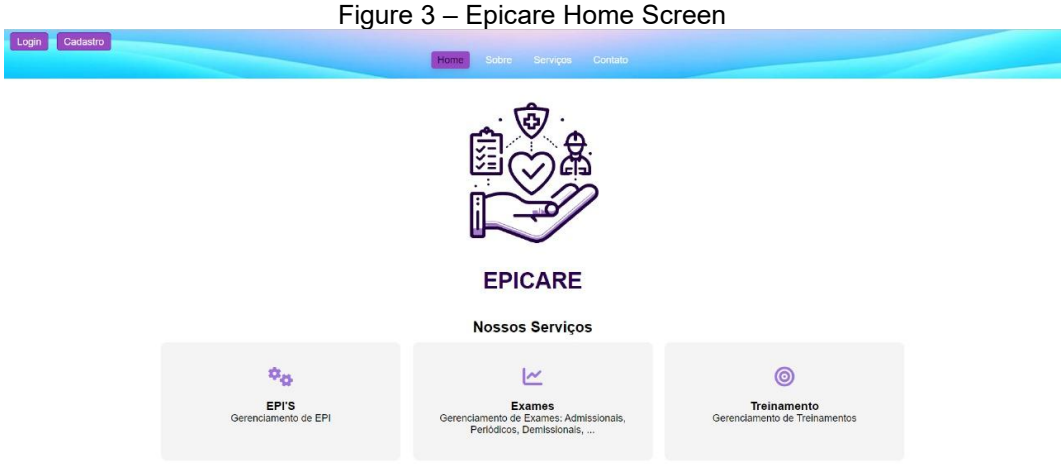
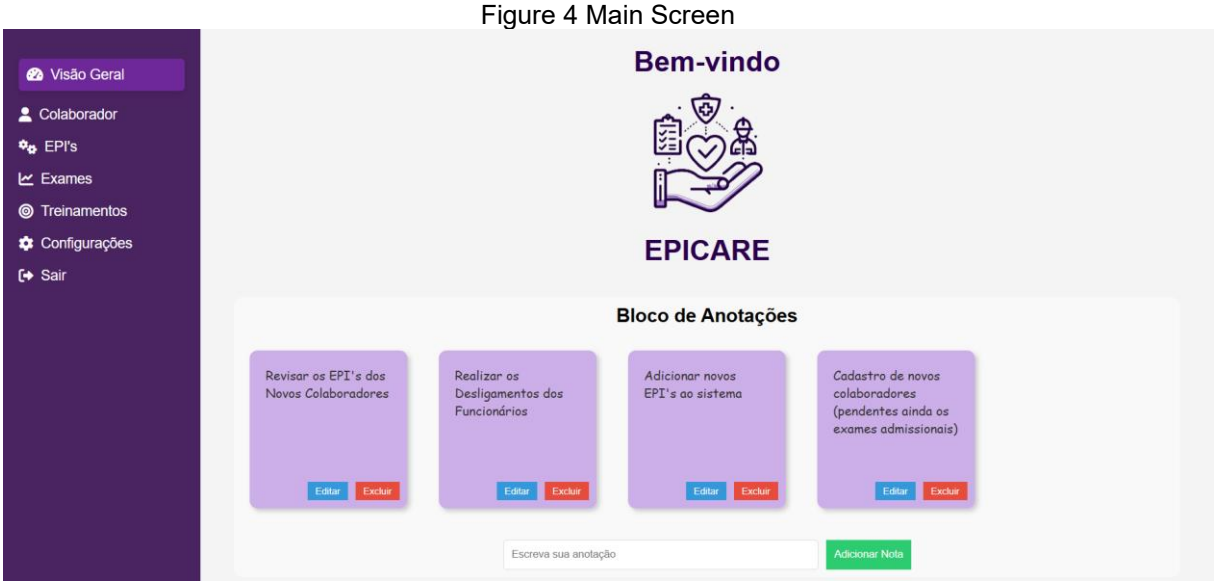
Figure 3 – Epicare Home Screen



Source: The Authors (2024).

Companies can obtain access to the services offered, after registering, they log in to have this access, and will be redirected to the main screen of the software, where there will be a navigation menu for the services offered and a notebook for reminders, and notes that the user wants.

Figure 4 Main Screen



Source: The Authors (2024).

The navigation of the EPICARE software was developed to offer an intuitive and functional interface, facilitating the management of PPE and occupational exams. Below, the main navigation topics of the system that is accessed through the side menu are presented, detailing each section and its applicability in the control of health and safety at work.

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The system has specific sections to facilitate the management of PPE, exams and employees. The Overview Section displays registered data and alerts about PPE or exam expirations, informing managers about related employees. The Employee Section allows you to access existing records, register new employees and link PPE, ensuring control and traceability. In the PPE Section, it is possible to consult registered equipment, verify links with employees and register new PPE based on the Certificate of Approval (C.A.), including the expiration date. The Exams Section centralizes occupational exams, indicating related employees and allowing the registration of new exams with expiration dates, ensuring legal compliance. The Training Section organizes information about training required by regulatory standards and their periodicities, while the Settings Section allows you to adjust registered data, access the help center and the system manual. Finally, the Sign Out Section securely ends the user's session by redirecting them to the site's home screen.

SOFTWARE TESTING

To carry out the tests effectively, we did it in a practical way and had the help of 3 companies that allowed us to work within their units and implement the software in the occupational safety sector. Each company was selected using criteria such as: interest in the software through the company, an intern from the security area was provided in each of them, as he would assist us in the implementation of the software. Different companies were selected, which work in different areas of activity, have different shifts and shift schedules that differ between them.

Company "A" is a company in the grain area and contains an average of 188 employees, the test was carried out in the shift that starts at 08:00 am (Brasília time) and ends at 18:00 hours (Brasília time), in this period we have 102 employees performing some type of activity in the company.

Company "B" is an industry in the area of manufacturing frozen food for bakery and contains an average of 425 employees, the test was carried out in the shift that starts at 06:00 am (Brasília time) and ends at 15:00 hours (Brasília time), in this period we have 136 employees performing some type of activity in the company.

Company "C" is a factory of metal profiles and metal parts and contains an average of 86 employees, the test was carried out in the shift that starts at 07:30 am (Brasília time) and ends at 17:30 hours (Brasília time), in this period we have the 88 employees

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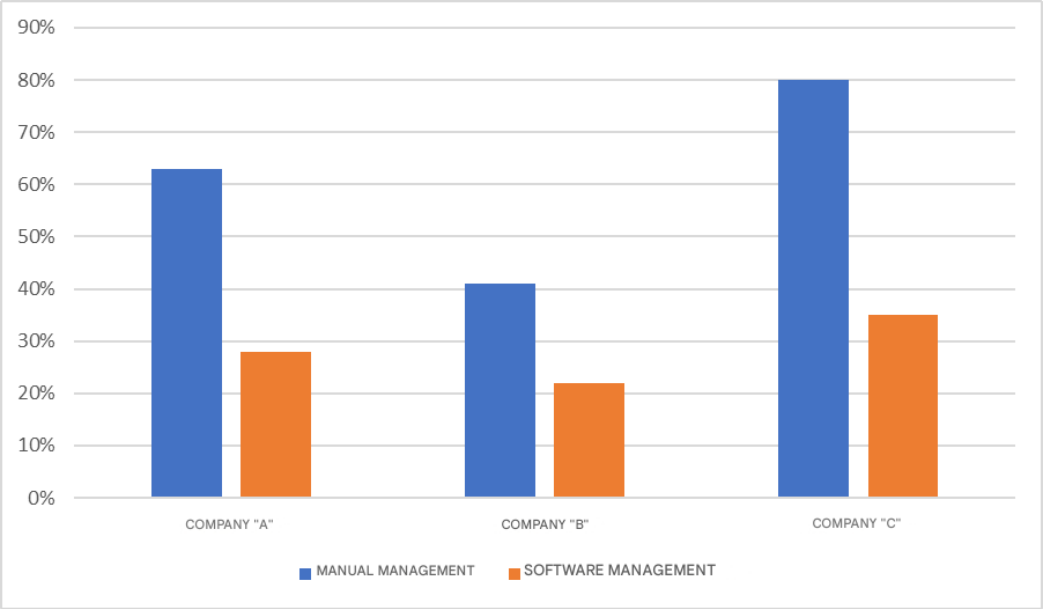
performing some type of activity in the company, because this company works in only one shift.

The duration of our test was 4 months, monitoring the companies remotely and assisting the security sector in the implementation and use of EPICARE, the results obtained in this time were unique to each one because they are companies framed in different profiles.

RESULTS

After the implementation of the EPICARE software in several companies from different sectors, tests were carried out with the aim of evaluating the impact of the system on the management of PPE and occupational examinations. The companies involved in the tests presented common challenges in terms of monitoring the validity of PPE, controlling distribution, and scheduling medical exams, these being critical points in maintaining compliance with regulatory standards for occupational safety. The results obtained demonstrated significant improvements in safety management processes, with a direct impact on the reduction of non-conformities, increased operational efficiency and greater regularity in the performance of occupational examinations.

Graph 1 - Reduction of Non-Conformities



Source: The Authors (2024).

The graph presented shows a significant reduction in the percentage of non-conformities related to the use of expired or inadequate Personal Protective Equipment

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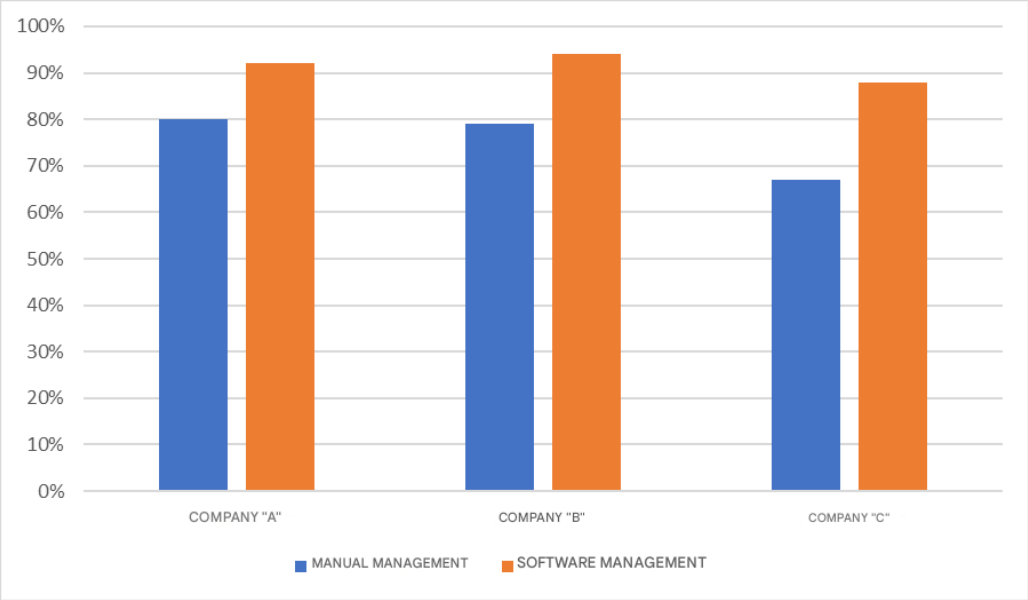
(PPE) after the implementation of the EPICARE software compared to manual management. This improvement is attributed to the automatic alerts functionality, which notifies managers of the proximity of the expiration of PPE, enabling early replacement and ensuring compliance with safety regulations.

In Company "A", the percentage of non-conformities fell from approximately 60% in manual management to about 20% with the use of software, demonstrating a significant reduction of 40 percentage points. Similar results were observed in Company "B", where the percentage of non-conformities was reduced from 40% to 15%. Company "C", which had the highest rate of problems in manual management (80%), achieved a notable improvement, reducing non-conformities to 25% after adopting EPICARE.

These results highlight the effectiveness of EPICARE in providing tighter, more automated control of PPE, minimizing operational failures and maximizing efficiency in safety management. In addition, the reduction of non-conformities directly reflects on the reduction of risks to employees, promoting a safer work environment in line with regulatory requirements. Thus, the software not only contributes to operational improvement, but also reinforces the culture of prevention and safety in the companies analyzed.

Graph 2 - Regularity of Examinations



Source: The Authors (2024).

The graph presented shows a significant increase in the adherence of employees to occupational examinations within the deadlines stipulated by the regulatory standards, after the implementation of the EPICARE software. Comparing manual management with

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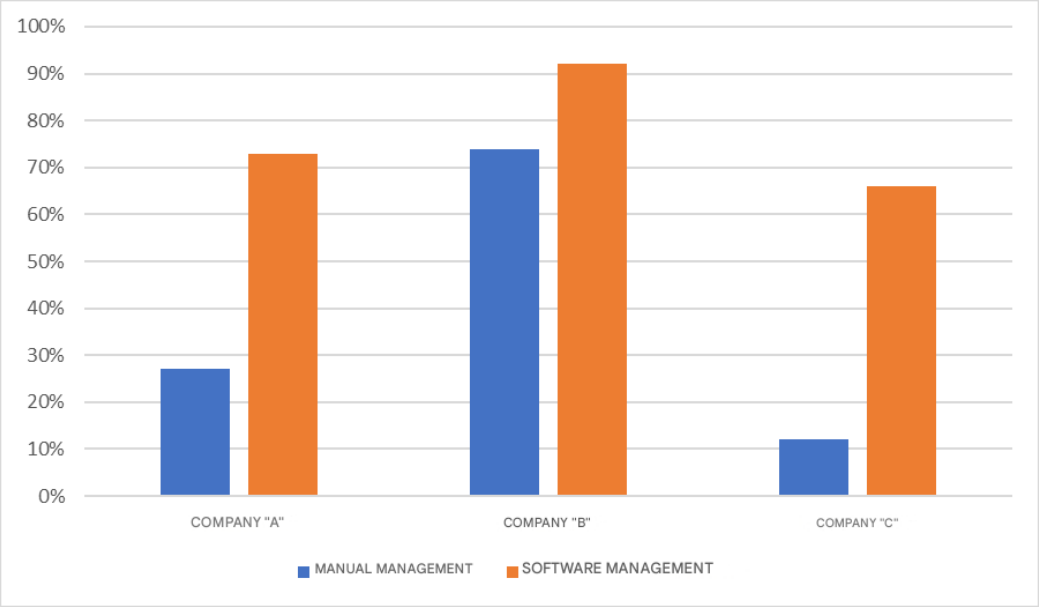
management automated by software, a consistent improvement is observed in the three companies analyzed, highlighting the positive impact of the automation of scheduling and notifications.

In Company "A", adherence to the performance of the exams within the deadlines went from approximately 80% in manual management to about 90% with the use of the software. Similar results were observed in Company "B", where the percentage rose from 75% to 85%, and in Company "C", which recorded an increase from 70% to 85%. This data reflects the effectiveness of EPICARE in keeping managers and employees informed about exam deadlines, avoiding delays and improving compliance.

The automation provided by EPICARE eliminates the need for manual controls that are more susceptible to failures, allowing for continuous and reliable monitoring. This improvement not only ensures compliance with regulations, but also reduces risks to employee health, promoting a safer and more productive work environment. The results underscore how technology can be an essential tool to optimize occupational health management and ensure greater operational efficiency.

Graph 3 - Cost Reduction



Source: The Authors (2024).

The graph presented shows a significant reduction in the operating costs of companies that have adopted the EPICARE software for the management of PPE and occupational examinations, compared to manual management. The automation of

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processes, promoted by the system, eliminated the need for manual document handling, optimizing resource control and reducing waste.

In Company "A", the costs associated with manual management were high, due to the inadequate storage of PPE and the lack of efficient control over expiration dates. With the implementation of the software, expenses were significantly reduced, since the system prioritized the use of PPE with closer expiration dates, avoiding waste and reducing the need for emergency replacements.

Company "B" also reported a substantial optimization in operating costs, reflected in the chart by the transition to more structured and proactive management. The software allowed the efficient control of the PPE hierarchy and ensured that exams were performed only when necessary, avoiding redundant or out-of-date exams.

Finally, Company "C", which had a high operating cost due to manual management, achieved a level of efficiency comparable to the other companies tested. The use of EPICARE ensured that expired or near-expiring PPE was replaced in a planned manner, while occupational examinations were carried out in accordance with regulatory requirements, eliminating unnecessary expenses.

These results confirm EPICARE's ability to promote smarter and more cost-effective management, prioritizing the rational use of resources and ensuring compliance with regulatory standards. The positive financial impact is evident, with the reduction of costs associated with manual management, aligned with greater operational efficiency and employee safety.

DISCUSSION

The implementation of EPICARE has demonstrated significant results in the modernization and efficiency of occupational safety management. The system, by integrating functionalities such as automated PPE control, management of occupational exams and issuance of management reports, responded efficiently to the needs of the companies tested, meeting labor regulations and reducing non-conformities. These results highlight the importance of technology in occupational health management, especially in complex scenarios with a large volume of data. Participating companies reported direct positive impacts, such as the reduction of fines and penalties associated with non-compliance with Regulatory Standards (NRs). In addition, the automation of processes has minimized the risk of human errors, common in manual controls, and increased the

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regularity of occupational examinations, an essential factor to ensure the health and safety of employees. EPICARE's ability to generate automatic notifications and detailed reports enabled continuous monitoring, allowing for preventive rather than reactive actions.

Another relevant point is the scalability and flexibility provided by the use of the cloud, which ensured security and efficiency in data management. This infrastructure has reduced operating costs related to hardware and software maintenance, in addition to offering advanced backup and data protection features, in line with the requirements of the General Data Protection Law (LGPD). The use of Git for version control also contributed to the integrity of the project, allowing for greater collaboration and agility in the development and maintenance of the system. The choice of languages such as Python for the back-end and HTML, CSS, and JavaScript for the front-end was essential to ensure robustness, interactivity, and ease of use. This technical approach ensured that the system was intuitive for managers and accessible to employees, making it easier for companies to adopt the software.

Although the results are promising, some limitations were observed during the tests, such as the need for initial training for users and specific adjustments to meet the unique demands of each sector. These issues, however, reinforce the importance of continuous support and adaptation of the software to the particularities of companies.

In this way, EPICARE has proven to be a strategic solution for companies seeking not only to comply with legal obligations, but also to promote a culture of safety at work. The integration of additional functionalities, such as artificial intelligence, can further increase the effectiveness of the system, allowing for proactive risk detection and even more accurate and predictive management. Thus, EPICARE consolidates itself as an indispensable tool for companies committed to the health, safety and well-being of their employees.

CONCLUSION

The implementation of EPICARE demonstrates that the use of advanced technologies in occupational safety and health management is an effective solution to the challenges faced by companies in complying with regulatory standards. By automating essential processes, such as PPE control and medical exam management, the system offers an integrated approach that not only reduces the incidence of errors and non-conformities, but also optimizes operational and financial resources.

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The results obtained in different organizational scenarios reinforce the relevance of EPICARE in promoting a safer and more productive work environment. The system allows for greater regularity in the performance of exams, efficient replacement of protective equipment and issuance of detailed reports, providing managers with strategic data for preventive and assertive decision-making. In addition, by automating notifications and generating alerts, EPICARE ensures that companies meet legal requirements, minimizing the risk of sanctions and fines.

In the social sphere, the software contributes significantly to the construction of an organizational culture focused on preventing accidents and valuing the health and safety of employees. In the financial sphere, the benefits include the reduction of operating costs, greater efficiency in the management of resources and mitigation of labor liabilities. In the long term, the adoption of solutions such as EPICARE positions companies as socially responsible organizations aligned with the best market practices.

Finally, the technological advancements incorporated into EPICARE open up possibilities for future expansions, such as the integration of artificial intelligence and machine learning, which can make the system even more proactive in identifying and mitigating risks. Thus, EPICARE consolidates itself as an indispensable tool for companies that wish to modernize their occupational safety and health management, promoting the well-being of their employees and the sustainable success of their operations.

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REFERENCES

1. Brasil, Ministério do Trabalho e Emprego. (2020, March 9). Norma Regulamentadora nº 01 - Disposições gerais e gerenciamento de riscos ocupacionais. MTE, Brasília, DF. Available at: https://www.gov.br/trabalho-e-emprego/pt-br/acesso-a-informacao/participacao-social/conselhos-e-orgaos-colegiados/comissao-tripartite-partitaria-permanente/normas-regulamentadora/normas-regulamentadoras-vigentes/nr-1. Accessed on: April 30, 2024.

2. Brasil, Ministério do Trabalho e Emprego. (2022, December 20). Norma Regulamentadora nº 06 - Equipamento de proteção individual - EPI. MTE, Brasília, DF. Available at: https://www.gov.br/trabalho-e-emprego/pt-br/acesso-a-informacao/participacao-social/conselhos-e-orgaos-colegiados/comissao-tripartite-partitaria-permanente/normas-regulamentadora/normas-regulamentadoras-vigentes/norma-regulamentadora-no-6-nr-6. Accessed on: April 30, 2024.

3. Brasil, Ministério do Trabalho e Emprego. (2020, March 10). Norma Regulamentadora nº 07 - Avaliação e controle das exposições ocupacionais à agentes físicos, químicos e biológicos. MTE, Brasília, DF. Available at: https://www.gov.br/trabalho-e-emprego/pt-br/acesso-a-informacao/participacao-social/conselhos-e-orgaos-colegiados/comissao-tripartite-partitaria-permanente/normas-regulamentadora/normas-regulamentadoras-vigentes/norma-regulamentadora-no-7-nr-7. Accessed on: April 30, 2024.

4. Brasil, Ministério do Trabalho e Emprego. (2023, October 24). Norma Regulamentadora nº 28 - Fiscalização e penalidades. MTE, Brasília, DF. Available at: https://www.gov.br/trabalho-e-emprego/pt-br/acesso-a-informacao/participacao-social/conselhos-e-orgaos-colegiados/comissao-tripartite-partitaria-permanente/normas-regulamentadora/normas-regulamentadoras-vigentes/norma-regulamentadora-no-28-nr-28. Accessed on: April 30, 2024.

5. Brasil, Decreto-Lei no 5.452, de 1º de maio de 1943. Aprova a Consolidação das Leis do Trabalho. Diário Oficial da República Federativa do Brasil, Poder Executivo, Rio de Janeiro, RJ, August 9, 1943. Art. 166-167. Available at: https://www.planalto.gov.br/ccivil_03/decreto-lei/del5452.htm. Accessed on: April 30, 2024.

6. Brasil. (2022, January). Balanço 2021 - Fiscalização do trabalho divulga resultados das ações. Available at: https://www.gov.br/trabalho-e-emprego/pt-br/noticias-e-conteudo/2022/janeiro/fiscalizacao-do-trabalho-divulga-resultados-das-acoes. Accessed on: June 3, 2024.

7. Brasil. (n.d.). Portal da Inspeção do Trabalho. Available at: https://sit.trabalho.gov.br/radar/. Accessed on: June 3, 2024.

8. Brasil. (n.d.). Fiscalizações de segurança do trabalho. Available at: https://onsafety.com.br/fiscalizacoes-de-seguranca-do-trabalho-como-funcionam/. Accessed on: June 3, 2024.

Revista ARACÊ
ISSN: 2358-2472

9. Martins, J. (2024, July 23). Entrevista realizada com Luiz Paulo Zuppani Ballista, superintendente de engenharia da Construtora Ferreira Guedes. Available at: http://equipedeobra.pini.com.br/construcao-reforma/53/equipamentos-de-protecao-aprenda-a-calcular-o-custo-e-272071-1.aspx. Accessed on: July 23, 2024.

10. Chiavenato, I. (2004). Introdução à teoria geral da administração (3rd ed., rev. and updated). Rio de Janeiro: Elsevier: Campus.

11. Mendes, R. W., & Amaral, F. G. (2016). Occupational health and safety management: A comprehensive review. Safety Science.

12. Graveling, R. A., & Pilkington, A. (2018). Protecting the health of healthcare workers: A global perspective. Occupational Medicine.

13. Rubin, K. S. (2012). Essential Scrum: A Practical Guide to the Most Popular Agile Process. Addison-Wesley Professional.

14. Maldonado, V., & Blum, R. (2021). LGPD – Lei Geral de Proteção de Dados Pessoais Comentada. São Paulo: Editora Revista dos Tribunais. Available at: https://www.jusbrasil.com.br/doutrina/lgpd-lei-geral-de-protecao-de-dados-pessoais-comentada/1198081131. Accessed on: June 15, 2024.