


BURNOUT: A PERVASIVE CHALLENGE THREATENING WORKPLACE WELL-BEING AND ORGANIZATIONAL SUCCESS

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ARTICLE INFO	ABSTRACT
<p>Article history: Received: January, 22nd 2024 Accepted: March, 22nd 2024</p>	<p>Objective: This study aims to tackle the increasing prevalence of employee burnout by introducing a novel hybrid methodology employing Bayesian networks and fuzzy logic. This approach seeks to identify and address burnout risks comprehensively.</p>
<p>Keywords: Human Resources; Burnout; Bibliometric Analysis; Predictive Analysis; Fuzzy Bayesian.</p>	<p>Theoretical Framework: Drawing from burnout theories alongside Bayesian networks and fuzzy logic, this research establishes a robust foundation for understanding burnout complexities and evaluating the efficacy of the proposed hybrid approach.</p> <p>Method: The methodology encompasses a model development phase utilizing OpenMarkov and FisPro to integrate Bayesian networks and fuzzy logic. Data collection involved a multifaceted approach including surveys, expert interviews, and a thorough review of literature focusing on workload, work environment, psychology, and other pertinent factors influencing burnout.</p>
	<p>Results and Discussion: Findings indicate that burnout tends to manifest at lower levels in scenarios characterized by weak communication, high workload, and low obstacles, while it escalates in situations marked by weak communication, occasional workload spikes, and moderate obstacles, among other contributing factors. These results are analyzed within the context of the theoretical framework, emphasizing their implications for individual well-being and organizational success.</p> <p>Research Implications: This study provides actionable insights for companies, particularly human resources managers, to bolster employee psychological support systems and advance organizational objectives. Proactively addressing burnout risks can enhance both employee well-being and overall organizational performance.</p> <p>Originality/Value: By proposing a hybrid methodology that merges Bayesian networks and fuzzy logic to comprehensively tackle burnout risks, this research contributes to the existing literature. The innovative methodology and practical implications underscore the significance and applicability of this study for organizations striving to mitigate burnout within their workforce.</p> <p>Doi: https://doi.org/10.26668/businessreview/2024.v9i4.4597</p>

BURNOUT: UM DESAFIO GENERALIZADO QUE AMEAÇA O BEM-ESTAR NO LOCAL DE TRABALHO E O SUCESSO ORGANIZACIONAL

RESUMO

Objetivo: Este estudo visa abordar a crescente prevalência do esgotamento profissional entre os funcionários, introduzindo uma metodologia híbrida inovadora que utiliza redes Bayesianas e lógica difusa. Este enfoque busca identificar e abordar de forma abrangente os riscos de esgotamento profissional.

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Quadro Teórico: Com base em teorias sobre esgotamento profissional juntamente com redes Bayesianas e lógica difusa, esta pesquisa estabelece uma base sólida para compreender as complexidades do esgotamento profissional e avaliar a eficácia da abordagem híbrida proposta.

Método: A metodologia abrange uma fase de desenvolvimento de modelo utilizando o OpenMarkov e FisPro para integrar redes Bayesianas e lógica difusa. A coleta de dados envolveu uma abordagem multifacetada que incluiu pesquisas, entrevistas com especialistas e uma revisão abrangente da literatura focada em carga de trabalho, ambiente de trabalho, psicologia e outros fatores relevantes que influenciam o esgotamento profissional.

Resultados e Discussão: Os achados indicam que o esgotamento profissional tende a manifestar-se em níveis mais baixos em cenários caracterizados por comunicação fraca, alta carga de trabalho e obstáculos baixos, enquanto se agrava em situações marcadas por comunicação fraca, picos ocasionais de carga de trabalho e obstáculos moderados, entre outros fatores contribuintes. Esses resultados são analisados no contexto do quadro teórico, enfatizando suas implicações para o bem-estar individual e o sucesso organizacional.

Implicações da Pesquisa: Este estudo oferece insights práticos para empresas, especialmente para gerentes de recursos humanos, para fortalecer os sistemas de apoio psicológico dos funcionários e avançar nos objetivos organizacionais. Abordar proativamente os riscos de esgotamento profissional pode melhorar tanto o bem-estar dos funcionários quanto o desempenho organizacional como um todo.

Originalidade/Valor: Ao propor uma metodologia híbrida que combina redes Bayesianas e lógica difusa para abordar de forma abrangente os riscos de esgotamento profissional, esta pesquisa contribui para a literatura existente. A metodologia inovadora e as implicações práticas destacam a relevância e a aplicabilidade deste estudo para organizações que buscam mitigar o esgotamento profissional em sua força de trabalho.

Palavras-chave: Recursos Humanos, Esgotamento Profissional, Análise Bibliométrica, Análise Preditiva, Bayesiana Difusa.

BURNOUT: UN DESAFÍO PERVASIVO QUE AMENAZA EL BIENESTAR LABORAL Y EL ÉXITO ORGANIZACIONAL

RESUMEN

Objetivo: Este estudio tiene como objetivo abordar la creciente prevalencia del agotamiento laboral entre los empleados mediante la introducción de una metodología híbrida novedosa que emplea redes Bayesianas y lógica difusa. Este enfoque busca identificar y abordar de manera integral los riesgos de agotamiento laboral.

Marco Teórico: Basándose en teorías sobre el agotamiento laboral junto con redes Bayesianas y lógica difusa, esta investigación establece una sólida base para comprender las complejidades del agotamiento laboral y evaluar la eficacia del enfoque híbrido propuesto.

Método: La metodología abarca una fase de desarrollo de modelo utilizando OpenMarkov y FisPro para integrar redes Bayesianas y lógica difusa. La recopilación de datos involucró un enfoque multifacético que incluyó encuestas, entrevistas a expertos y una exhaustiva revisión de literatura centrada en carga de trabajo, ambiente laboral, psicología y otros factores pertinentes que influyen en el agotamiento laboral.

Resultados y Discusión: Los hallazgos indican que el agotamiento laboral tiende a manifestarse en niveles más bajos en escenarios caracterizados por una comunicación débil, alta carga de trabajo y obstáculos bajos, mientras que se agrava en situaciones marcadas por una comunicación débil, picos ocasionales de carga de trabajo y obstáculos moderados, entre otros factores contribuyentes. Estos resultados se analizan en el contexto del marco teórico, enfatizando sus implicaciones para el bienestar individual y el éxito organizacional.

Implicaciones de la Investigación: Este estudio proporciona ideas prácticas para las empresas, especialmente para los gerentes de recursos humanos, para fortalecer los sistemas de apoyo psicológico de los empleados y avanzar en los objetivos organizacionales. Abordar proactivamente los riesgos de agotamiento laboral puede mejorar tanto el bienestar de los empleados como el rendimiento organizacional en general.

Originalidad/Valor: Al proponer una metodología híbrida que combina redes Bayesianas y lógica difusa para abordar de manera integral los riesgos de agotamiento laboral, esta investigación contribuye a la literatura existente. La metodología innovadora y las implicaciones prácticas subrayan la importancia y aplicabilidad de este estudio para las organizaciones que buscan mitigar el agotamiento laboral dentro de su fuerza laboral.

Palabras clave: Recursos Humanos, Agotamiento Laboral, Análisis Bibliométrico, Análisis Predictivo, Bayesiano Difuso.

1 INTRODUCTION

In the 21st century, the pace of life has been accelerated, affecting all individuals, including employees. One of the biggest challenges of this acceleration is to keep the fight in terms of occupational stress and burnout.

Since 2018, there has been a significant call to pay attention to the connections between three potential variables: burnout, work-related stress, and biological parameters. It also indicates that there was a significant relationship between the limbic system and the burnout (Chow et al., 2018). Burnout has become a critical and worsening issue worldwide, with a notable increase from 60% of employees experiencing burnout based on reports from the American Psychological Association in 2021 to a concerning 77% in 2023 according to Deloitte. This rise underscores the urgent need to address the pervasive problem. Burnout does not only affect individuals by decreasing productivity and impacting mental and physical well-being but also has significant repercussions for organizations. It can lead to overall decreased workforce productivity, compromised efficiency, and a negative impact on an organization's reputation, affecting employee recruitment and retention.

Burnout is characterized as a condition of physical, emotional, and mental fatigue, frequently triggered by prolonged and intense stress, especially within the professional environment. (Gaur & Jindal, 2023). This definition guide to consider burnout as a psychological condition impacted by various factors, such as demographics, organizational elements, and personality traits.

Burnout exerts various detrimental impacts on an organization, manifesting as heightened absenteeism, reduced commitment to work, increased staff turnover, diminished performance and productivity, and a rise in unsafe working practices and workplace accident rates, as evidenced by studies (Ahola et al., 2014; Kumareswaran, 2023; Ridzuan et al., 2018). Moreover, individuals experiencing burnout are prone to transmitting their stress to others within the organization, as indicated by research (Kumareswaran, 2023; Leka & Kortum, 2008).

At the individual level, burnout has far-reaching implications for physical, psychological, and social well-being. Physically, individuals experiencing stress may face elevated cholesterol levels, cardiovascular diseases, asthma, allergies, compromised immunity, anemia, ulcers, and even an increased risk of cancer. Moreover, stress can contribute to musculoskeletal diseases, cardiovascular disorders, the onset of Type 2 diabetes, and new cases of coronary heart disease (Ahola et al., 2014; Hakanen & Bakker, 2017).

Psychologically, burnout can manifest as anxiety disorders, agitation, an inability to relax, lack of focus, intolerance, indecisiveness, depression, and insomnia (Kumareswaran, 2023; Ridzuan et al., 2018). Physiologically, burnout may lead to gastrointestinal disorders, new cases of coronary heart disease, and the onset of Type 2 diabetes. Socially, stressed individuals may experience job dissatisfaction, job indifference, and exhaustion (Ahola et al., 2014; Hakanen & Bakker, 2017).

Traditional methods for assessing burnout often fall short due to the complexity and interconnectedness of contributing factors (Mikołajewska et al., 2022). This study addresses this limitation by employing OpenMarkov, a software platform for probabilistic graphical models, and FisPro, a fuzzy inference system tool.

This article navigates the evolving landscape of burnout research, starting with the growth in literature and progressing to the integration of computational approaches. It intricately dissects workplace dynamics, exposing interconnected factors impacting burnout. Methodologically, it introduces the potent fusion of Bayesian networks (El Haji et al., 2014) and fuzzy logic (KhaliIssa et al., 2013) through the fuzzy Bayesian approach. It concludes with the tangible application of this methodology, providing a quantified grasp of burnout variables.

2 LITERATURE REVIEW

Over the years, the annual publication rate of publication related to burnout has consistently climbed (Mann & Rawat, 2021), indicating a growing body of knowledge and a deepening understanding of employee burnout. To have the full picture, and to detect the extent and severity of the phenomenon, the computational approaches began to show up for problems like burnout even they stay not ultimately successful. As an example, in order to understand how occupational stress and burnout impact the neurophysiological, a model was developed using a computational model based on Artificial Intelligence (AI). This model has two types of factors: exogenous and endogenous. The exogenous ones are related to work and the endogenous are the personal ones (Mikołajewski et al., 2023).

Algorithms based on machine learning have a big value when exploring interrelations between different variables. Bayesian networks (Kerouich et al., 2022) is considered as one of the powerful tools even they have some limitations such as the size of the sample and the data. In order to analyze three outcomes variables (exercise limit, workability, and stress), a Bayesian

networks has been elaborated with one input (exhaustion), and three intermediate inputs (depression, disengagement, and work-life balance) (Lee et al., 2019).

This upward trend is evident in the provided Figure 1, which shows a clear increase in the number of publications on this topic based on a bibliometric analysis of Scopus. This increase in publications suggests that burnout is gaining recognition as a significant workplace issue, warranting further investigation and exploration.

This growth of articles using the fuzzy Bayesian approach includes different points such as the human errors (Karthick et al., 2020), the employees performance (Kabir et al., 2018), the delay risk (Bouhadi et al., 2022), the prevention of accidents (Benallou et al., 2023), and many other subjects related to human resources. Moreover, it is present in different sectors: industry (Kamal & Aydın, 2022; Yazdi & Kabir, 2017), healthcare (Li et al., 2023), finance (Lamrani Alaoui & Tkiouat, 2019), and other sectors.

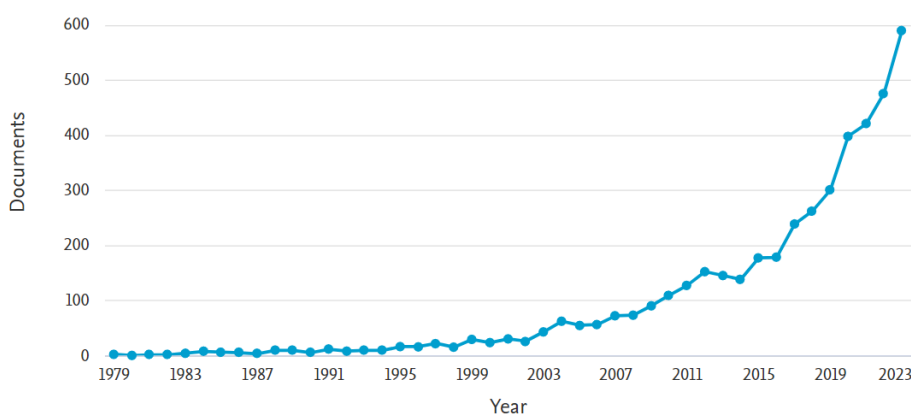
3 BIBLIOMETRIC ANALYSIS

3.1 OVERVIEW

The intricate dynamics of the workplace environment play a pivotal role in influencing employees' well-being and job satisfaction. A comprehensive exploration of the literature reveals a multitude of relationships among various factors that significantly impact the work experience, especially that the number of articles has grown exponentially as elaborated in Figure 1.

Figure 1

Growth of articles about burnout from 1979 to 2023



Source: Author's elaboration based on Scopus

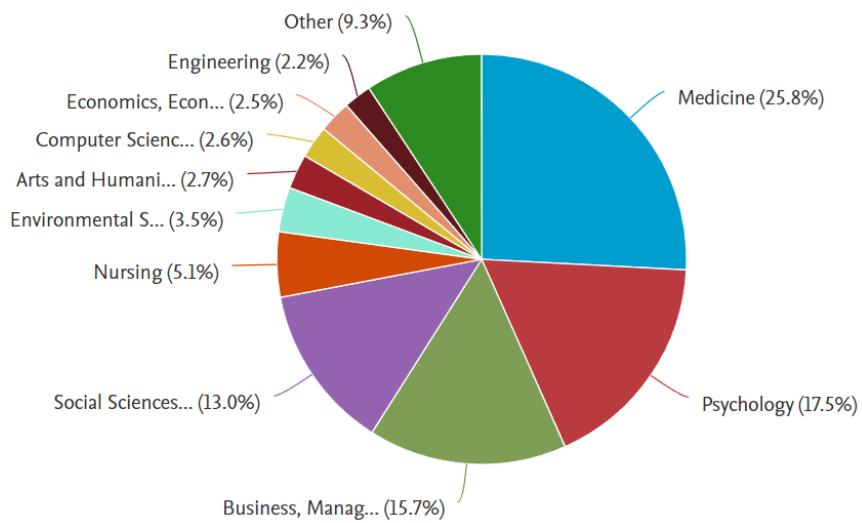
Figure 2 that the scientific production related to burnout is most prevalent in the field of Medicine, which accounts for a significant portion (25.8%) of the research. Psychology is the next most significant contributor, with 17.5% of the studies, reflecting the condition's mental and emotional aspects. Business and Management (15.7%) and Social Sciences (13.0%) also make substantial contributions, which could be due to the interest in the impacts of burnout on workplace efficiency and social dynamics. The fields of Nursing, Environmental Science, Arts and Humanities, Computer Science, Economics, and Engineering present with smaller percentages, indicating a more niche focus within those disciplines.

Figure 3

Figure highlights a rich tapestry of interconnected relationships among various factors contributing to the phenomenon under investigation. Numerous studies have delved into the complex web of interactions between these factors, shedding light on the multifaceted nature of the phenomenon. These studies collectively form a mosaic of insights, providing a nuanced understanding of how different elements converge and influence the overarching dynamics of the phenomenon in question.

Figure 2

Documents by subject area



Source: Author's elaboration based on the output from Scopus

Figure 3

Tree Map of employees' burnout



Source: Author's elaboration based on the output from Biblioshiny

3.2 RELATIONSHIPS

The multitude of findings within the literature attests to the multifactorial nature of the subject, emphasizing the need for a holistic and integrative perspective to unravel the complexity of these relationships. These relationships are vividly exemplified in various studies. Table 1 summarizes the main ideas.

Table 1

Variables relationship

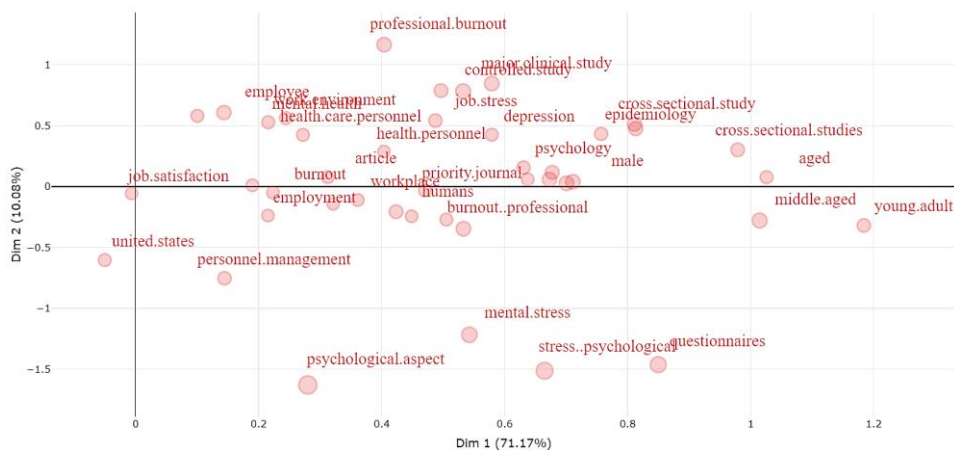
<i>Article</i>	<i>Idea</i>
(Hussain et al., 2023)	Workload could make employees feel stress, anxiety, and frustration.
(Cottin-Marx, 2023)	Work-life balance helps employees to take the time they need to rest, to be with their family, and to have a healthy life-style. Human resources must take care of their health, their body, and they must take time to relax when they are facing hard situations.
(Boucherit & Mazouz, 2023)	At work, employees can be victims of harassment and stress. Those situation could guide them to depression, which will lead them to be incapable to do their work.
(Akowoura & Livian, 2023).	At work, conflicts could appear due to different causes. Conflicts arise more frequently in the workplace regarding working conditions, respect, and a lack of respect.
(Akowoura & Livian, 2023).	Generally speaking, status and salary are the most present in the public and administrative sector.
(Cottin-Marx, 2023)	At work, the dependencies of tasks could have a bad impact, making employees out of control because they must wait until things are done. Either dependent tasks have generally a sense of inefficacy.
(Cottin-Marx, 2023).	Employees satisfaction, a low salary, a recognition, and self-esteem are all important factors while talking about conflicts.

(E. Gomes, 1992)	Usually, conflicts appear when employees are not satisfied and when relations are hostile.
(Cottin-Marx, 2023)	Conflicts are not always taken seriously, and this situation could create many other problems.
(Delahaie, 2022)	In the workplace, tensions guide to pression and pression itself causes stress and a feeling of not having control.
(Delahaie, 2022)	Tension has increased after the pandemic crisis.
(Adier & Gernet, 2023; Cottin-Marx, 2023)	In order to make a good environment at work, organization seems necessary (Adier & Gernet, 2023). Having many tasks to do and a little time or not much resources could make it hard, pushing employees to sacrifice their free time while trying to accomplish the goals they have and facing workload.
(Boucherit & Mazouz, 2023; Gounaris, 2008)	Workload, tension, pression, conflicts, and stress make employees out of the edge of comfort at work, suffering physiologically and psychologically, conducting them to burnout.

From Figure 4, it's clear that there are potential relationships between various factors related to workplace dynamics. Notably, burnout is prominently featured and is closely associated with terms like professional burnout and job stress, suggesting a strong connection within the dataset. The proximity of job satisfaction to the opposing side implies it is inversely related to burnout. Stress can be indirectly inferred from associated terms like mental stress and psychological stress. However, specific terms like communication, overload, obstacles level, anxiety, pression, work environment, tension, personal problems, frustration, and work-life balance achievement are not directly visible on the plot. Therefore, their presence and interrelationships would require further analysis of the underlying data or a more detailed biplot where these factors are labeled.

Figure 4

Factorial analysis



Source: Author's elaboration based on the output from Biblioshiny

4 METHODOLOGY

This section presents an overview of the fuzzy Bayesian approach, which combines fuzzy logic theory and expert knowledge via Bayesian networks modeling to facilitate risk prediction in complex systems.

4.1 BAYESIAN NETWORKS

Bayesian networks is an important tool that help in taking decisions while talking about uncertainty. It is a combination between both probability theory (Fellaji et al., 2014; Lamaakchaoui et al., 2014) and graphs theory to make a probabilistic graphical model (Kitson et al., 2023). This graph is created based on the dependence relations between different variables, named nodes. Those variables could be input variables, intermediate variables, or output variables. Bayesian networks are considered as a probabilistic study and the power of using this type of methods is in the possibility of including an explicit representation, even with some uncertainties, and that it is based on the logical relationships between variables (Krause & Bokinala, 2023).

4.2 FUZZY LOGIC

Either, fuzzy logic, is used when facing uncertainty and imprecision. It achieves this by defining each fuzzy set through a linguistic variable and a membership function, offering a more nuanced way to represent data (Diabagate et al., 2014). Due to its relevance for qualitative variables, it was implemented to generate conditional probabilities following three steps: fuzzification, inference, and defuzzification (Pop et al., 2020; Sattar et al., 2019). The first step is fuzzification. It is about converting the inputs variables into fuzzy variables. To do so, fuzzy linguistic values and membership functions are used. The second one is named inference. It is about combining the fuzzy rules obtained in order to make conclusions which determine the output of the system. The last step is defuzzification and it is about transforming the results gotten from the second step into numerical values.

The most common methods used for inference are: Mamdani and Sugeno. Their primary distinction lies in how they deduce crisp output from fuzzy inputs. When Mamdani relies on the defuzzification process for fuzzy outputs, Sugeno calculates the result values through a

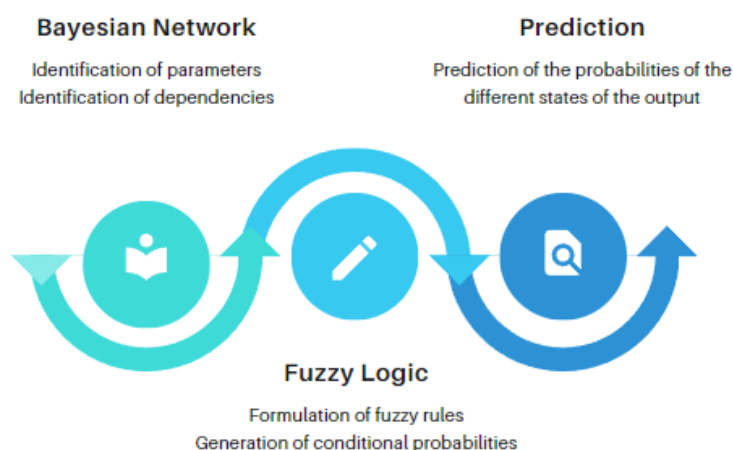
weighted average. (Bian & Zhang, 2009; Khalfaoui et al., 2023). In this study, the use of Sugeno method is chosen in order to have less processing time, enabling the generation of conditional probabilities with only the first two steps.

4.3 FUZZY BAYESIAN

Fuzzy Bayesian networks result from the fusion of Bayesian networks and fuzzy logic theory, a strategy commonly used to tackle problems involving uncertain variables or to represent causal dependencies among these variables (Benallou et al., 2023; Zarei et al., 2019). While fuzzy Bayesian networks are well-suited for addressing the specified problem, conducting inference in these networks can be resource-intensive, particularly in terms of computation time and computational resources. This challenge becomes pronounced for networks of substantial size or those with numerous states, imposing limitations on their practicality for achieving real-time responses or handling frequent updates due to the associated computational complexity. Figure 5 elaborate the application steps followed in the next section.

Figure 5

Fuzzy Bayesian Approach



Source: Author's elaboration based on the literature

5 APPLICATION

This section is about applying the fuzzy bayasian network methodology to the burnout problem.

5.1 BAYESIAN NETWORK

To apply the Bayesian Networks methodology, the first step is to determine all the variables and the dependencies that exist between them. This can be done by brainstorming, interviewing experts, or analyzing data. Once the variables and dependencies have been identified, they can be represented in a directed acyclic graph (DAG). The nodes in the DAG represent the variables, and the edges represent the dependencies. The direction of the links indicates the causal relationship between the variables. Many variables are related to employee's burnout. By understanding those variables, organizations can take steps to prevent and reduce burnout among their employees. This can lead to a more productive, engaged, and satisfied workforce. Table 2 presents all the variables used in this study with a brief description based on the literature.

Table 2

Variables description

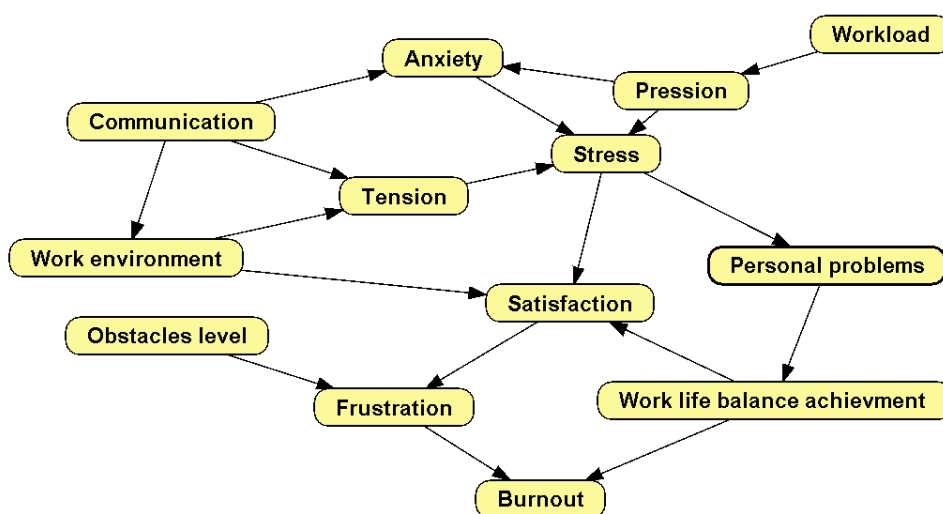
<i>Variable</i>	<i>Description</i>
Communication	Communication refers to the flow of information, messages, and directives from the management or higher levels of an organization down to the employees. It includes formal channels of communication, such as company announcements, memos, meetings, and messages from supervisors. It has a relation with the quality and strength of connections among employees and their freedom to express opinions, suggestions, concerns, and feedback (Prouska et al., 2023).
Overload	Overload is about employees being burdened due to excessive work and tasks (Andrews et al., 2023).
Obstacles level	The obstacles level depends on many factors such as workloads, temptations around the office and time constraints. When it is very high, it could create a lack of engagement in adopting healthy lifestyles (Lopes et al., 2023; Mazzola et al., 2017)
Anxiety	Anxiety is about the nervousness related to future uncertainties or stressful situations (Hussain et al., 2023).
Pression	The pression is a result of long hours of work, mass tasks to do, and even some negative relations (Bakker & Demerouti, 2007) (Boucherit & Mazouz, 2023; Gaudet, 2023).
Work environment	Conflicts are about disputes, disagreements between employees or a group of employees. In companies, different aspects can be the source of conflicts (Akowoura & Livian, 2023).
Tension	Frustration is about having a feeling dissatisfaction or irritation that an employee could face when the level of obstacles or challenges is high (Hussain et al., 2023).
Stress	Stress is a psychological or an emotional state that an employee can experience due to challenging work, high demand, or even external pressures (Boucherit & Mazouz, 2023; Gaudet, 2023).
Satisfaction	Job satisfaction is about the perception employees have according to their jobs (Maggino, 2020).
Personal problems	Individual challenges or personal issues are factors that can significantly impact an employee's well-being and performance. Addressing personal problems is crucial for fostering a supportive work environment and promoting the overall health and satisfaction of employees.
Frustration	Frustration is about having a feeling dissatisfaction or irritation that an employee could face when the level of obstacles or challenges is high (Hussain et al., 2023).

Work-life balance achievement	Balance is about achieving a harmonious integration of work and personal life. Not having a balance in life could take rest time (Cottin-Marx, 2023).
Burnout	Burnout is a state of pervasive exhaustion stemming from prolonged and excessive stress, frequently encountered in demanding work environments (Gaur & Jindal, 2023).

Based on the dependencies that exist on many variables as found in the literature, a graph (Figure 6) was elaborated to visualize the most common variables that impact the burnout.

Figure 6

Bayesian networks of the employee's burnout.



Source: Author's elaboration by using OpenMarkov

5.2 FUZZY LOGIC

To apply the fuzzy logic, the first step consists on determining the linguistic values of all the inputs, the intermediate inputs and the output, to determine the values for each variable, to precise the membership function, the fuzzy rules, and the activated ones. The determination of linguistic values for inputs (Table 3), intermediate (Table 4), and output (Table 5) is a crucial step in fuzzy logic applications. This process involves assigning linguistic labels to numerical values, enabling the system to handle imprecision and uncertainty in a meaningful way.

All variables were represented as percentages (%), with a range from 0 to 100, to encompass all the possible values. The decision to use Gaussian as the membership function for different nodes in the graph is grounded in its superior ability to minimize errors compared to alternatives like triangular and trapezoidal functions (Bouhadi et al., 2022; Mandal et al., 2012). Fuzzy rules are a powerful tool for modeling complex systems and making decisions.

They are especially useful when the relationships between variables are not fully understood or when the data is noisy and uncertain, showing a high level of flexibility (Velo et al., 2023), reliability (Dong & Duan, 2023), and easy interpretation (Vasilakakis & Iakovidis, 2023).

In this case, burnout was designated as the output, with frustration and work-life balance achievement serving as input variables. Different values for burnout were then defined in this context. Figure 7 shows the obtained results under 9 rules. Activated rules in fuzzy logic refer to the specific rules that are triggered and applied during the inference process of a fuzzy logic system. These rules are determined based on the input values and the defined fuzzy sets and membership functions.

The Sugeno method for determining the different probabilities is implemented. From all the rules, four activated rules were found as shown in Figure 8, and we implemented the Sugeno method to determine the different probabilities.

Table 3

Input variables linguistic values

<i>Inputs</i>	<i>Linguistic values</i>		
Communication	Weak	Medium	High
Overload	Rare	Occasional	Frequent
Obstacles level	Low	Medium	High

Table 4

Intermediate variables linguistic values

<i>Intermediate inputs</i>	<i>Linguistic values</i>		
Anxiety	Minimal	Moderate	Severe
Pression	Low	Medium	High
Work environment	Poor	satisfactory	Excellent
Tension	Low	Medium	High
Stress	Minimal	Manageable	Overwhelming
Personal problems	Rare	Occasional	Frequent
Frustration	Minimal	Occasional	Frequent
Work life balance achievement	Not achieved	Partially achieved	Achieved

Table 5

Output variable linguistic values

<i>Output</i>	<i>Linguistic values</i>		
Burnout	Low	Medium	High

Figure 7

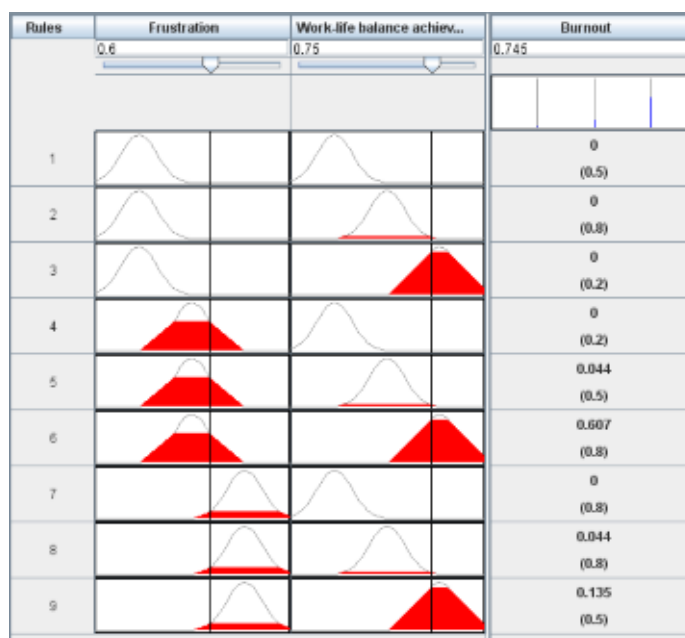
Fuzzy rules for burnout based on frustration and work-life balance

Rule	Active	IF Frustration	AND Work-life balance...	THEN Burnout
1	✓	minimal	not achieved	0.5
2	✓	minimal	partially achieved	0.8
3	✓	minimal	achieved	0.2
4	✓	occasional	not achieved	0.2
5	✓	occasional	partially achieved	0.5
6	✓	occasional	achieved	0.8
7	✓	frequent	not achieved	0.8
8	✓	frequent	partially achieved	0.8
9	✓	frequent	achieved	0.5

Source: Author's elaboration by using FisPro

Figure 8

Activated Rules for Burnout



Source: Author's elaboration by using FisPro

The lowest value of 0.001 was tolerated in the case in which the possibility was 0. Burnout values are assigned according to the following criteria: Burnout (Low) is set at 0.001; Burnout (Medium) is determined by selecting the maximum value between 0.044 and 0.135, resulting in a value of 0.135; Burnout (High) is calculated as the maximum between 0.607 and 0.044, yielding a value of 0.607.

6 RESULTS

The findings of this study have several implications for organizations. First, organizations should strive to maintain open and effective communication with their employees. This can help to reduce the risk of burnout by ensuring that employees feel heard and understood. Second, organizations should identify and address potential obstacles that employees may face. This could include things like unrealistic deadlines, unclear expectations, and lack of resources. Third, organizations should provide support to employees who are experiencing burnout. This could include things like employee assistance programs, flexible work arrangements, and mental health resources.

Table 6 shows that there is a positive correlation between communication overload, obstacle level, and burnout. As communication overload and obstacle level increase, burnout also increases. This is consistent with previous research that has shown that these factors can contribute to burnout.

It also shows that communication effectiveness can moderate the relationship between communication overload and burnout. In the scenarios with weak communication, burnout is higher than in the scenarios with medium or high communication. This suggests that effective communication can help to mitigate the negative effects of overload and obstacles level.

Table 6

Burnout results

	<i>Communication</i>	<i>Overload</i>	<i>Obstacles level</i>	<i>Burnout</i>
1	Weak	Rare	Low	Medium
2	Weak	Rare	Medium	Medium
3	Weak	Rare	High	High
4	Weak	Occasional	Low	High
5	Weak	Occasional	Medium	High
6	Weak	Occasional	High	High
7	Weak	Frequent	Low	High
8	Weak	Frequent	Medium	High
9	Weak	Frequent	High	High
10	Medium	Rare	Low	Medium
11	Medium	Rare	Medium	Medium
12	Medium	Rare	High	High
13	Medium	Occasional	Low	High
14	Medium	Occasional	Medium	High
15	Medium	Occasional	High	High
16	Medium	Frequent	Low	High
17	Medium	Frequent	Medium	High
18	Medium	Frequent	High	High
19	High	Rare	Low	Medium
20	High	Rare	Medium	Medium
21	High	Rare	High	High

22	High	Occasional	Low	High
23	High	Occasional	Medium	High
24	High	Occasional	High	High
25	High	Frequent	Low	High
26	High	Frequent	Medium	High
27	High	Frequent	High	High

By taking these steps, organizations can help to create a more supportive and healthy work environment for their employees. This can lead to reduced burnout, increased productivity, and improved employee morale.

Here are the key elements found in this research: burnout is lowest when communication is strong, and obstacles are low, it is highest when communication is weak, and obstacles are high, and it is more likely to occur when communication is occasional, and obstacles are medium. These observations suggest that organizations should focus on improving communication and reducing obstacles in order to prevent burnout.

7 CONCLUSION

This research highlights the critical need for organizations to proactively address burnout by navigating the intricate web of factors that contribute to this pervasive issue.

The study challenges the simplistic view that workload alone determines burnout levels, shedding light on the complex interplay of elements such as communication effectiveness, workload patterns, and the presence of obstacles. Recognizing these nuances, the research advocates for a comprehensive approach to burnout prevention, encompassing initiatives related to organizational culture, work-life balance, and psychological support for employees.

The proposed Bayesian networks and fuzzy logic approach introduced in this study emerge as invaluable tools for researchers. These tools not only enable a deeper exploration of the intricacies of burnout but also empower scholars to devise targeted interventions. By unraveling the contributing factors, the research equips academics to meaningfully contribute to the development of healthier and more productive work environments.

Within the burnout landscape, interconnected variables such as communication, overload, obstacle levels, anxiety, pressure, work environment, tension, stress, satisfaction, personal problems, frustration, and work-life balance achievement come into play. It is imperative to address these factors holistically, recognizing their interconnectedness, to formulate effective strategies for alleviating burnout and nurturing overall well-being in the workplace.

This research not only adds to the ongoing scientific discourse on burnout but also paves the way for further investigation and the implementation of evidence-based interventions. Emphasizing that burnout should not be worn as a badge of honor, the study advocates for a healthier approach to work. Prioritizing mental and physical health can lead to increased productivity, enhanced job satisfaction, and overall life contentment. The key takeaway is the importance of individuals and organizations acknowledging the significance of well-being and fostering environments that support a balanced and sustainable approach to work.

ACKNOWLEDGEMENTS

The support for this research is provided by the Ministry of Higher Education, Scientific Research, and Innovation, as well as the Digital Development Agency (DDA) and the National Center for Scientific and Technical Research (CNRST) of Morocco, under the Smart DLSP Project - AL KHAWARIZMI IA-PROGRAM.

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