AN AI APPROACH TO ANALYZING AND ENHANCING EMPLOYEE WELLBEING AND PRODUCTIVITY

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Abstract:

This paper explores the complex concept of well-being, emphasizing its significance in both personal and professional contexts. Well-being encompasses physical, mental, emotional, social, spiritual, financial, career, occupational, intellectual, digital, and environmental dimensions. The COVID-19 pandemic has intensified global awareness of mental and physical well-being, prompting organizations to prioritize these aspects. Effective well-being strategies enhance productivity, resilience, and overall organizational success. Remote work, a growing trend, offers flexibility and improved work-life balance. However, it also presents challenges such as social isolation and the blurring of boundaries between personal and professional life. By understanding the evolution of remote work and implementing strategies to support employee well-being, organizations can foster a harmonious and productive work environment. Artificial intelligence is emerging as a powerful tool for increasing employee performance, enabling more accurate analysis and prediction of work trends. This paper explores the importance of personalized well-being approaches, recognizing that individual needs vary, for which generic solutions are not appropriate. Ultimately, prioritizing employee well-being leads to sustainable personal and professional growth.

Keywords:

well-being, flexibility, resilience, remote work, artificial intelligence.

JEL Classification:

I31, M54, O15

INTRODUCTION

Since the emergence of the first welfare officers in the early 20th century workplace, workers' health and safety have been recognized as a good indicator of effective employment relations. In recent years, a more holistic approach has developed – one that extends beyond health and safety to encompass overall employee well-being. This brought an increasing awareness of the value of supporting individual well-being both within and beyond the workplace. As a result, the HRM function plays a crucial role in establishing the well-being agenda by ensuring that senior leaders regard it as a priority, and that employee well-being practices are embedded in the organization's daily operations (Benett *et al.*, 2020).

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Nowdays, well-being is a multifaceted aspect of our private and professional life and following the outbreak of COVID-19 pandemic in 2020, it received a significant attention. The World Health Organization defines well-being as a mental state in which "every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" (Benett *et al.*, 2020). Simply put, well-being reflects the overall quality of life and functioning at the individual, organizational, community, and national levels, and the sustainability of these conditions over time.

From a personal perspective, people who focus on preserving their well-being tend to live longer, pursue happier lives, and are easier to work with (Cooper *et al.*, 2018). Likewise, organizations with proper management that prioritize employee well-being policies tend to foster more positive work-place experiences, which are often associated with increased profitability and enhanced stock market performance (De Neve *et al.*, 2025; Benett *et al.*, 2020).

Nonetheless, the most fundamental characteristic of well-being is its inherently personal nature. What benefits one employee may not necessarily benefit another. People have unique needs, so any well-being expert who claims to know exactly what each employee needs is likely mistaken. Even well-intentioned initiatives and solutions can actually increase stress if one fails to integrate them into daily lives. One of the primary causes of workplace stress appears to be a workload, and a typical organizational response is to add more tasks, webinars, apps, and even fruit bowls. This approach, while seemingly sensible and logical, may not effectively address the issue (Hopkins, R., 2024).

One way to overcome these differences in traditional approaches is through the advanced possibilities offered by the comprehensive development of artificial intelligence (AI) that use agile and intelligent approaches with its boundless potential (Ćormarković *et al.*, 2022). The emergence of machine intelligence that replicates human cognitive abilities offers numerous benefits for human resources (HR) professionals, allowing them to concentrate more effectively on key elements of the HR management (HRM) process amid the ongoing Fourth Industrial Revolution (Jovanović *et al.*, 2025). Machine learning (ML) methods have proven to improve various problems of real-world use cases, and employee well-being is an important topic that could benefit from such methods. While AI is becoming mainstream in the tech industry, this topic remains insufficiently explored. The lack of datasets regarding employee information is scarce, as almost every company requires signing a non-disclosure agreement (NDA) which covers the needed data to explore this topic. In this paper the potential of ML for human resource-related objectives is recognized and explored to provide further insight as well as help predict the satisfaction of employees.

LITERATURE REVIEW

The importance of effective workforce well-being plans is crucial for business success. An effective approach to well-being leads to key outcomes such as enhanced productivity and performance. Additionally, it contributes to organizational effectiveness, resilience at both individual and organizational levels, reduced absenteeism, higher morale, and a motivated workforce. By continuously focusing on professional development, practitioners can connect well-being with leadership, ethics, and integrity, ensuring that business remains competitive while upholding a strong commitment to social responsibility (Cooper & Hesketh, 2019).

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In contemporary organizational settings, both individuals and institutions increasingly prioritize workplace happiness as a central component of overall well-being. The question of what makes people happy is ancient and multifaceted. Post-World War II, Western societies sought to forget war horrors and overcome hardships, prioritizing economic prosperity and a more optimistic future. The 1968 European student revolts and the US peace movement introduced values like political participation and democracy, challenging material goals. Despite the rise of environmental and civil rights movements in the 1970s and 1980s, the pursuit of higher income and better living conditions persisted. In Europe, ecological awareness has increased over time; however, the deeply rooted pursuit of material wealth has persisted, continuing to shape societal behaviors and policy priorities to this day (Weimann *et al.*, 2015).

Individual Well-being

Physical well-being refers to an individual's state of health and fitness. It encompasses aspects like strength, flexibility, or freedom from illness, while also involving the promotion of healthy lifestyle choices, providing access to fitness facilities, ergonomic workspace and health screenings. It is a vital component of overall well-being, as a healthy body contributes to a fulfilling life. An important part of physical well-being is disease prevention, which includes having regular medical check-ups and screenings that should be carried out by HR in organizations.

The first step to incorporating physical activity into a daily routine is to allocate time for it and plan it in advance. Many people find it challenging to make time for regular exercise, especially when juggling work and other life commitments. This is particularly true for those who work from home or in a hybrid setting. As a result, achieving the widely recommended benchmark of 10.000 steps per day has become increasingly unattainable for many. For some individuals, reaching as few as 1.000 steps is regarded as a successful day (Hopkins, 2024). Hence, individuals are encouraged to increase physical activity, adopt healthier dietary habits, and eliminate tobacco use. While alarming public health statistics underscore the urgency of these behavioral changes, they offer limited insight into the mechanisms required to effectively motivate and empower individuals to adopt and sustain them (Putnam, 2015).

Physical well-being directly influences energy levels, productivity, and long-term resilience. While individuals are responsible for their own health choices, organizations have a unique opportunity to create environments that encourage and support physical well-being. Companies can take several practical steps to promote physical health among employees. Providing ergonomic workstations helps reduce physical strain and prevent musculoskeletal issues, especially for those who spend long hours at a desk. Access to fitness facilities, for example gym memberships can motivate employees to stay active. Additionally, offering healthy food options in the workplace and organizing regular health screenings contribute to a culture of well-being.

Mental well-being encompasses the overall state of a person's psychological health. It refers to the cognitive and psychological aspects of well-being and involves the way individuals think, perceive and process information (Keyes, 2002; Ryff & Keyes, 1995). It includes factors such as cognitive functioning, self-esteem, resilience, and the absence of mental health disorders. It is related to how individuals think, reason, and make decisions, as well as their ability to cope with stress, manage emotions, and maintain a positive outlook (Danna & Griffin, 1999). Mental health support is crucial, including access to counselling services, stress management programs, and creating a culture that reduces stigma around mental health issues (Robertson & Cooper, 2011; Harter *et al.*, 2002). Employers can foster a supportive environment through open communication and mental health awareness initiatives.

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Psychological well-being (PWB) is a component of mental well-being that specifically focuses on psychological state. PWB is linked to various outcomes, including job performance, physical health, life success, and problem-solving abilities (Luthans *et al.*, 2007; Dodge *et al.*, 2012). The PWB levels of individuals within business units are correlated with the overall performance of these units, encompassing customer satisfaction and even the enterprise's share price. (Cooper *et al.*, 2018; Harter *et al.*, 2002).

Emotional well-being focuses on the state of a person's emotions and emotional health. It relates to the awareness, understanding, and management of one's emotions. Emotional well-being involves being in touch with one's own emotions, having a range of emotional experiences and being able to express and regulate emotions in a healthy and balanced manner. It encompasses factors such as emotional awareness, emotional resilience, emotional intelligence, understanding and acceptance of own emotions, and the ability to cope with and navigate through different emotional states.

Fear, crises, and misinformation increasingly dominate news and social media, drawing continuous public attention. The rise of doom-scrolling, compulsive engagement with negative news has been linked to elevated stress and anxiety. This reflects a growing dependence on the 24-hour news cycle, prompting critical reflection on whether such constant exposure is truly beneficial to individual well-being. Contemporary news media often prioritize sensationalism over factual reporting, aiming to capture attention in what has become a global attention economy. In this competitive landscape, alarming headlines tend to overshadow positive news, as stories of conflict and crisis generate greater engagement. While staying informed is important, it is equally essential to manage media consumption in ways that protect mental health and overall well-being (Hopkins, 2024).

Financial well-being encompasses an individual's economic stability and security, including the capacity to meet basic needs, maintain savings, and plan effectively for the future. Achieving financial well-being involves effective budgeting, managing debt, and saving for long-term goals. It is a critical component of overall well-being, as financial security and independence contribute to peace of mind and the freedom to pursue one's aspirations. While increased income does not directly lead to greater happiness, financial resources can enhance well-being by enabling personal autonomy and choice. Research also indicates that spending on experiences tends to yield greater and more lasting happiness than spending on material possessions (Dunn & Courtney, 2020). Still, people tend to overestimate the impact of wealth on happiness. Research shows that well-being increases with income up to around $75.000, after which additional earnings yield minimal gains so that incomes of $150.000 annually do not necessarily correlate with greater happiness (Kahneman, 2022; Mack, 2018). Even when wealthier individuals within a society tend to report higher levels of happiness, the overall increase in a nation's wealth does not always lead to a proportional increase in the overall happiness of its citizens. Over time, as a country's average income increases, the average happiness of its population does not follow in the same way. This paradox challenges the assumption that economic growth and increased income will always lead to greater well-being and happiness for a population (Easterlin, 2021; Weimann, 2015).

Effects of Technology on Well-being

In remote or hybrid work settings, physical well-being can be more difficult to maintain. Employers can support their teams by encouraging regular movement breaks, sharing wellness resources, and even offering stipends for home fitness equipment, like Microsoft. Virtual wellness challenges, such as step-count competitions or guided stretching sessions that are applied in EY can foster engagement and promote healthy habits (Vantage Fit, 2025).

Organizations can support employees' mental well-being by fostering a psychologically safe work environment, offering access to counselling services like Oliver Wyman, mindfulness sessions from Unilever, employee assistance programs employed in Johnson & Johnson and promoting open communication about mental health in UKG and Pinterest. Flexible work arrangements and regular mental health awareness initiatives also contribute to reducing stigma and encouraging self-care (RippleMatch, 2022). Artificial intelligence can enhance these efforts by enabling early detection of stress patterns through sentiment analysis and behavioural data.

Leadership plays a critical role. When managers and executives model healthy behaviours, such as taking breaks, prioritizing sleep, and engaging in physical activity, they send a powerful message that well-being is valued and supported. Organizations can support emotional well-being by offering training in emotional intelligence, and encouraging open dialogue. For example, SAP runs an internal program called Global Mindfulness Practice (SAP, 2025), which includes guided meditation and emotional resilience training. Unilever offers emotional well-being workshops and peer support networks (Unilever, 2025), while Salesforce provides access to emotional fitness tools and encourages leaders to model vulnerability (Salesforce, 2024).

Artificial intelligence (AI) offers new possibilities for supporting physical well-being in the workplace. AI-powered health applications can analyse data from wearable devices to provide personalized recommendations for exercise, sleep, taking appropriate amount of water and healthy eating. These tools help individuals make informed decisions based on their unique health profiles. AI can also be used to monitor patterns that may indicate health risks, such as prolonged inactivity or irregular sleep. By identifying these trends early, organizations can intervene with targeted support, reducing the likelihood of burnout or chronic health issues.

Virtual assistants and chatbots can remind employees to take breaks, hydrate, or stretch during the workday. These small nudges, delivered consistently, can lead to meaningful improvements in physical well-being over time (Jovanović *et al.*, 2025). AI-powered chatbots can provide immediate support: by leveraging machine learning, they match employees with tailored care plans, including therapy and coaching. These technologies, such as Headspace Health or Lyra Health, help scale mental health support and make it more accessible across diverse workforces (Dommeti, 2025).

Organizations tend to be most proactive in supporting financial well-being when their employees are engaged in relatively short career spans, such as in professional sports or military service. Companies can support by offering education, counselling, and access to financial tools and resources. The National Football League (NFL) provides tailored financial wellness programs through its Total Wellness initiative, helping players and staff navigate budgeting, investments, and life after football (NFL Total Wellness, 2025). Similarly, the U.S. Army runs a comprehensive Financial Readiness Program, offering interest-free loans, financial counselling, benefit calculators, and educational resources to support soldiers and their families in achieving long-term financial stability (U.S. Army, 2025).

Finally, AI enables companies to evaluate the effectiveness of wellness programs using real-time data. By analyzing participation rates, health outcomes, and employee feedback, organizations can refine their strategies to better meet the needs of their workforce. AI tools such as mood-tracking apps and sentiment analysis platforms can help identify emotional distress early, enabling timely support and personalized interventions.

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Environmental Effects on Well-being

Social well-being relates to individual's interactions and connections with others. It implies the quality of relationships, social support and sense of belonging to a community or group. Human beings are inherently social, with the need for connection emerging early in life. Social isolation is a major risk factor for physical and mental health issues, comparable to hypertension, obesity, and physical inactivity. In contrast, individuals who feel socially connected report lower levels of anxiety and depression, higher self-esteem, and greater empathy and trust, fostering reciprocal social bonds (Cook, 2021).

Organizations can foster social well-being by encouraging team collaboration, organizing social events, and supporting peer networks. Companies like Google (CEO Today, 2025) and Zappos (Strixus, 2023) are known for cultivating strong workplace cultures through community-building activities and inclusive environments. AI tools can further enhance social well-being by analyzing communication patterns to identify isolation risks and by facilitating virtual team-building experiences that connect remote employees.

Community well-being reflects the collective quality of life within a shared environment, shaped by access to resources, social cohesion, and civic participation. Organizations can contribute by supporting local initiatives, encouraging employee volunteering, and investing in inclusive infrastructure. For example, Patagonia actively engages in environmental and social advocacy, empowering employees to participate in grassroots movements. These efforts strengthen communities and also foster a sense of purpose and belonging among employees (Patagonia, 2009). It also encompasses factors like safety, civic participation, and the overall quality of the community's social and physical infrastructure (Roy & Farmer, 2022).

Environmental well-being refers to the state of the natural environment and its ability to sustain life and provide resources for human well-being. It encompasses the health and balance of ecosystems, the availability and quality of natural resources such as air, water, and land, and overall ecological sustainability (Boston University, 2022). It recognizes the interdependence between humans and the natural environment and emphasizes the importance of preserving and protecting it for the benefit of both current and future generations.

Career well-being is the long-term satisfaction and fulfillment derived from a person's career as a whole. It goes beyond the boundaries of a specific job or occupation and looks at the individual's overall career trajectory and development. Career well-being includes personal growth, professional development, alignment of one's values and skills with their career path, opportunities for advancement and a sense of purpose and meaning in one's chosen field (Gallup, 2025).

Digital well-being involves establishing healthy habits and boundaries in the use of technology to ensure a balanced and positive experience in the digital world. It involves setting boundaries for time spent on digital devices and practicing digital hygiene, such as taking regular breaks while working on the computer or cleaning and organizing digital files. Another important activity to keep one's digital well-being is focusing on quality content online and limiting time spent on unproductive activities. Simply put, people need breaks from digital media, to reduce stress and anxiety.

Technology has revolutionized work, making it easier to stay connected and work from anywhere. On the other hand, technology has blurred the lines between work and personal life, making it hard to find a healthy balance (Hopkins, 2024).

Resilience

Resilience is a multidimensional concept that covers various definitions and perspectives (Masten, 2014; Luthans, 2002). According to Haglund *et al.* (2007), resilience is the ability to adapt successfully to stressors successfully, maintaining psychological well-being in the face of adversity.

Masten (Masten, 2014) expands on this idea by describing resilience as the capacity of a dynamic system to adapt successfully to disturbances that threaten its function, viability, or development. This perspective emphasizes the adaptability of systems, whether they are individuals, organizations, or communities, in response to external threats.

Luthans (Luthans, 2002) describes resilience as a positive psychological capacity to rebound or bounce back from adversity, uncertainty, conflict, failure, or even positive change, progress, and increased responsibility. This definition highlights the ability to recover and thrive despite various challenges.

Resilience can be viewed in two aspects. The first aspect is the ability to cope with everyday stressors, those constant minor challenges people routinely face. This form of resilience is influenced by various factors, including minor setbacks. The second aspect is the capacity to handle major traumatic events/ situations where something goes drastically wrong, testing emotional stability to its limits. Ideally, if the resilience is strong, people can endure these life events and recover to a functional state. According to the American Psychological Association, resilience is "the process of adapting well in the face of adversity, trauma, tragedy, threats, and even significant sources of stress." (Cooper & Hesketh, 2019).

METHODS

This work recognizes a research gap in the use of modern techniques for well-being. While modern challenges have arisen with the technological advancements, well-being still remains an under-researched topic. Firstly, the initiatives in the organizational structure are analyzed, followed by ML approaches that provide much needed aid to this issue.

Organizational initiatives

Well-being initiatives do not always lead to improved outcomes and may, under certain conditions, even negatively impact well-being in both personal and workplace settings. Research from Oxford University's Well-being Research Centre in 2023 evaluated common workplace well-being initiatives, such as apps, mindfulness, relaxation products, coaching, courses, and volunteering (Fleming, 2023). The study found that many of these initiatives can also harm mental well-being, worsening individual subjective well-being. Offering generic solutions does not address systemic issues of working conditions and work-induced stress. Despite common claims, evidence supporting the benefits of these interventions is minimal. Among them, volunteering appears to be the most beneficial – likely because a sense of belonging is a fundamental driver of well-being in the workplace. Such initiatives are not inherently ineffective, but they often fall short when underlying organizational stressors remain unaddressed. Even well-intentioned solutions fail to succeed if individuals lack time and capacity for self-care. Effective well-being strategies must prioritize creating space and acknowledging time constraints to align with individuals' actual circumstances (Hopkins, 2024).

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Since the outbreak of COVID-19 pandemic, remote work has become an indispensable business strategy, having a significant impact on well-being. It offers flexibility, reducing commute stress, enabling better diet and allowing for a better work-life balance (Kornadt *et al.*, 2025). However, it can also lead to feelings of isolation and blurred boundaries between work and personal life (van Dick *et al.*, 2024). In an office setting, the workday is typically more structured, especially regarding time, with activities synchronized among employees. In-person work typically involves more frequent and casual interactions with colleagues, making it inherently more social than remote work. Working in person facilitates the absorption of organizational culture and relationship building. During the COVID-19 pandemic, employers found that remote onboarding took about a month longer than in-person onboarding and was not always successful.

Conversely, remote work offers more flexibility in the workday, with fewer strict start and end times and the absence of commuting, which can provide well-being and financial benefits. Communication is primarily technology-driven, with fewer distractions, enhancing focus and productivity for some employees. However, remote work can be more isolating due to digital interactions, potentially losing important social aspects of work. From a career perspective, remote work can be less visible, requiring employees to find new ways to demonstrate their success (Dale, 2022). Hence, effective remote work strategies, such as maintaining regular communication and setting clear boundaries, are essential to enhance overall well-being and productivity.

Machine learning

Properly selecting initiatives that will have a positive effect on the employees appears to be a harder task than it seems at first. Unfortunately, a large number of employers applies meaningless initiatives, including those that negatively affect their employees. Hence, a novel approach is required, that can offer higher precision and more insight into this problem. As for many similar problems that require pattern recognition, AI has proven to yield significant improvements for the said matters.

This work exploits a publicly available dataset that was downloaded from https://www.kaggle.com/datasets/davidepolizzi/hr-data-set-based-on-human-resources-data-set. The data is synthetically generated since real-world data is hard to obtain, and when available, often lacks detail or has key information redacted. The dataset consists of very detailed information about the employees, which would never be possible to be released to the public. However, this is a model study and the principles shown here can be applied by the employees and the companies they work for. Two biases are inserted into the dataset.

The AI approach chosen for this work is the Auto-Weka (Kotthoff, 2017). This is an automatic ML (auto-ML) model developed by the University of British Columbia. It is important that ML-ops is a trend that is gaining momentum. The Auto-Weka is a plugin for the Weka software that is developed by the Waikato University (Frank, 2016). Its goal is to make running AI methods more easily as well as visualizing and preprocessing the data. The Weka software offers a wide variety of pre-implemented algorithms that can be run from the graphical interface. This approach was chosen due to the limited research in this area and is used to setup further research. This is due to the fact that the ML predictions require a lot of trial-and-error, which in this field takes too much time to achieve anything meaningful. For every new dataset, even if it is on the same topic, an ML method needs to be empirically chosen. Hence, the same data is used to test multiple algorithms which are compared in performance and the best one is used for prediction. This is due to the no free lunch (NFL) theorem, which suggests that there is no single approach that can equally solve all problems. Auto-Weka cuts this time as it can test the data against all the different algorithms in its implementation and returns the best algorithm as the result.

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The algorithms were tasked with predicting the employee satisfaction, a part of employee well-being regarding employees' fulfillment with their job roles rather than holistic state of an individual health, which is based on various job-related information including different performance metrics for employees. The employee satisfaction in this dataset has 5 classes labelled from 1 to 5, where 5 indicates the most satisfaction. However, the data is imbalanced that was done on purpose to replicate real-world conditions, and the class distribution can be observed from Figure 1. As the data suggests, only a very small percentage of employees will self-asses their satisfaction below mark 3. For a further study, marks 1, 2, and 3 could be grouped as a dissatisfied employee and the marks 4 and 5 as satisfied, for a more objective analysis.

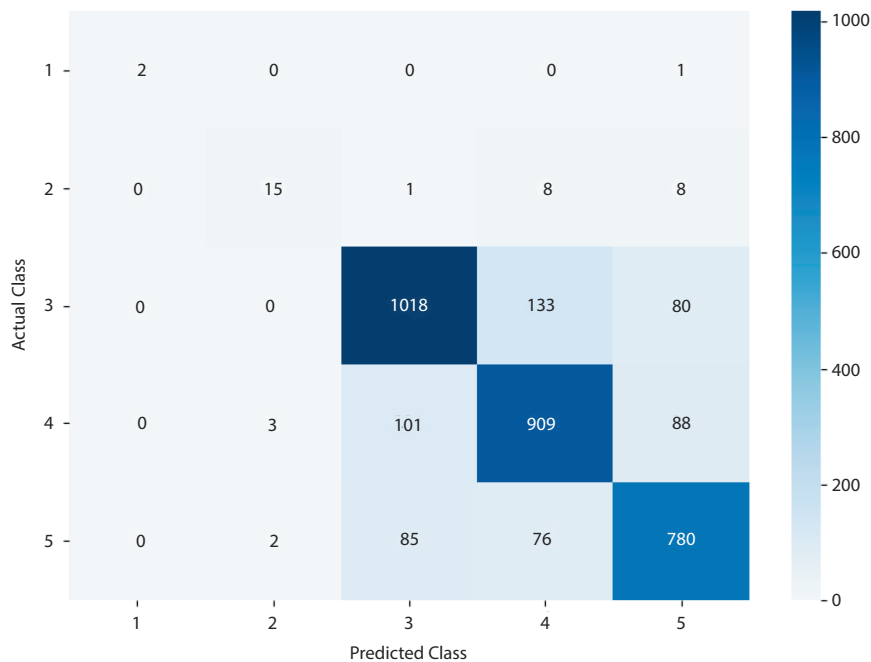**Figure 1.** Employee satisfaction distribution
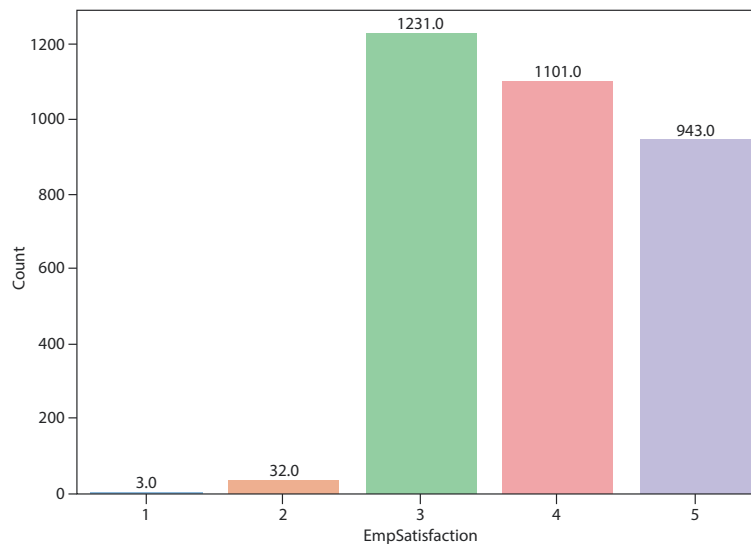
The metric used to evaluate the performance of the models that Auto-Weka trained is the f-measure due to a high-class imbalance. The score of f-measure of the best model was 0.79365, while the accuracy was 82.3%. Considering that this is an approach which was determined automatically, this is a very good score which indicates that the further tuning of the random forest algorithm, which scored 0.79365, can yield even better results. Considering that the extreme gradient boosting (XGBoost) (Chen & Guestrin, 2016) relies on the same principles as the random forest algorithm, this is a prominent solution to be explored in further studies.

Individual effects of features have not been analyzed in the scope of this work, and this topic will be explored in further research. While this is a relevant topic, it is also important to note that the goal of application of AI methods in this work is to explore prominent algorithms that will be analyzed in more detail later, as the task is extremely computationally intensive.

More precise information on the performance models can be found in Figure 2. A confusion matrix for all 5 classes is shown. When taking into account that there are very few classes 1 and 2, it can be observed that both cases of class 1 have been identified correctly, while only 5 out of 20 cases of class 2 have been misclassified, of which 2 as a class 5, and 3 as a class 4. This is particularly interesting, as it implies that the dissatisfaction of these employees could come from factors not accounted for in the model, which interpreted their data as indicating a much higher satisfaction level. As for the remaining predictions, the model demonstrates high precision, correctly classifying the majority of cases.

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Figure 2. Confusion Matrix

CONCLUSION

Well-being significantly influences all aspects of private and professional life, shaping the overall quality of life and productivity. Physical well-being ensures that one has the energy and health to engage in daily activities, while mental and emotional well-being help individuals manage stress, build resilience, and maintain positive relationships. Social well-being fosters a sense of community and belonging, which is essential for both personal happiness and professional collaboration. Financial well-being provides stability and reduces stress, allowing employees to focus on their goals without the constant worry of financial insecurity. Career well-being, through opportunities for growth and development, enhances job satisfaction and motivation in the workplace. To provide a broader perspective, this paper showed how applied artificial intelligence techniques could contribute to gaining a deeper insight into the issue of well-being. With the use of such techniques it is possible to reveal previously hidden trends that can help management provide better informed decisions. By nurturing these different aspects of well-being, employees can achieve a balanced and fulfilling life, both at home and at work.

Hence, well-being should not be treated as a reactive measure addressed only when problems arise. No digital application, webinar, or training can substitute for the consistent, personal commitment required to sustain well-being. Prioritizing oneself by identifying and honoring daily non-negotiables is essential for well-being. The notion of work-life balance can be misleading, as it implies separation between life and work, whereas work is merely one aspect of life, but not its central component. Establishing clear boundaries is a necessary precursor to achieving any meaningful sense of balance.

From an organizational perspective, remote work has become a crucial factor in influencing employee well-being in today's dynamic work environment. By understanding the definition and evolution of remote work, recognizing its effects on psychological and physical health, appreciating its benefits and challenges, and implementing strategies to enhance well-being, organizations and individuals can thrive in a remote work setting. Embracing remote work and prioritizing employee well-being can help organizations create a balanced and productive work environment that supports both personal and professional growth.

This research provides a broad scope of analysis of different factors on employee well-being. This only confirms the complexity of the problem itself and the challenges that come along with it. The question is rooted deeper in psychology, where something that is an excellent well-being initiative for some employees might appear as a nightmare to others. Hence, this problem seems impossible to tackle. However, with the use of novel methods, such as AI, new insights into individuals' needs can be uncovered. Further research will include more ways in which AI can aid this process, as well as improve the solutions proposed in this work.

REFERENCES

Bass, B. (1985). *Leadership and Performance Beyond Expectations*. Free Press. New York.

Bennet, T., Saundry R., Fisher, V. (2020). Managing employee relations. Kogan Page.

Berry, L. L., Mirabito, A. M., & Baun, W. B. (2010). *What's the hard return on employee wellness programs*? Harvard Business Review, 12.

Black, C. (2008). Working for a Healthier Tomorrow. HM Government.

Boston University. (2022). Environmental Well-being. What is Environmental Well-being | Student Well-being.

Chen, T., & Guestrin, C. (2016). XGBoost: A scalable tree boosting system. *Proceedings of the 22nd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, 785–794. https://doi.org/10.1145/2939672.2939785

CEO Today. (2025, June 26). Google's Wellness Ecosystem: Cultivating Talent Beyond the Tiers. Retrieved from CEO Today: https://www.ceotodaymagazine.com/2025/06/googles-wellness-ecosystem-cultivating-talent-beyond-the-tiers/

Cohn, M., & Fredrickson, B. (2009). Positive emotions. In S. J. Lopez & C. R. Snyder (Eds.), Oxford handbook of positive psychology. Oxford: Oxford University Press.

Cook, S. (2021). well-being in the Workplace: A Guide to Resilience for Individuals and Teams. Publisher: IT Governance.

Cooper, C., Hesketh, I. (2019). Well-being at Work: How to Design, Implement and Evaluate an Effective Strategy. Publisher: Kogan Page. London, UK.

Cooper, C. L., Johnson, S., Robertson, I. (2018). well-being: *Productivity and Happiness at Work*. Palgrave Macmillan Ltd.

Ćormarković, T., Dražeta, L., & Njeguš, A. (2022). The levels of Artificial Intelligence Application in Human Resource Systems. *The European Journal of Applied Economics,* 28-42.

Dale, G. (2022). How to Work Remotely: Work Effectively, No Matter Where You Are, 1st Edition. Kogan Page.

Danna, K., & Griffin, R. W. (1999). Health and well-being in the workplace: A review and synthesis of the literature. *Journal of Management, 25*(3), 357–384. https://doi.org/10.1177/014920639902500305

De Neve, J. E., Kaats, M., & Ward, G. (2025). The Top HR Articles of 2024: Enhancing Employee Experience and Well-being. LinkedIn post (retrieved May, 2025).

Dodge, R., Daly, A. P., Huyton, J., & Sanders, L. D. (2012). The challenge of defining well-being. *International Journal of Well-being, 2*(3), 222–235. https://doi.org/10.5502/ijw.v2i3.4

Dommeti, M. (2025, September 9). Top 20 Mental Health Tech Companies. Retrieved from The Connects: https://thecconnects.com/top-20-mental-health-tech-companies/

Dunn, E., & Courtney, S. (2020). Does More Money Really Make Us More Happy? *Harvard Business Review*.

Easterlin, R. A., & O'Connor, K. J. (2021). The Easterlin Paradox. In: Zimmermann, K.F. (eds) *Handbook of Labor, Human Resources and Population Economics*. Springer, Cham. https://doi.org/10.1007/978-3-319-57365-6_184-1

EJAE 2025 ✧ 22(2) ✧ 27-41

JOVANOVIĆ. S., PETROVIĆ. A., DRAŽETA. L. ✧ AN AI APPROACH TO ANALYZING AND ENHANCING EMPLOYEE WELLBEING AND PRODUCTIVITY

Fleming, W. (2023). Estimating effects of individual-level workplace mental well-being interventions: Cross-sectional evidence from the UK.

Frank, E., Hall, M. A., & Witten, I. H. (2016). The WEKA workbench [Online appendix]. In Data mining: Practical machine learning tools and techniques (4th ed.). Morgan Kaufmann. https://ml.cms.waikato.ac.nz/weka/Witten_et_al_2016_appendix.pdf

Gallup. (2025). Career well-being | Gallup Topic.

Hardy, B., Graham, R., Stansall, P., White, A., Harrison, A., Bell, A., & Hutton, L. (2008). Working Beyond Walls: The government workplace as an agent of change. DEGW/Office of Government Commerce, London.

Harter, J. K., Schmidt, F. L., & Keyes, C. L. M. (2002). well-being in the workplace and its relationship to business outcomes. In C. L. M. Keyes & J. Haidt (Eds.), *Flourishing: Positive psychology and the life well-lived* (pp. 205–224). American Psychological Association.

Hopkins, R. (2024). 52 Weeks of Well-being—A No-Nonsense Guide to a Fulfilling Work Life. Kogan Page. London, UK.

Isen, A. M. (2009). A role for neuropsychology in understanding the facilitating influence of positive affect on social behaviour. In S.J. Lopez and C.R. Snyder (eds), *Oxford Handbook of Positive Psychology*. Oxford: Oxford University Press.

John Lehrer. (2009). Blame It on the Brain. *Wall Street Journal,* December 26.

Jovanović, S., Dražeta, L., Dražeta, B., & Petrović, A. (2025). Business perspective on exploring the intriguing vistas of artificial intelligence. *The European Journal of Applied Economics*, 1-17.

Judge, T. A., & Bono, J. E. (2000). Five-factor model of personality and transformational leadership. *Journal of Applied Psychology, 85*(5), 751–765.

Kahneman, D., & Deaton, A. (2010). High income improves evaluation of life but not emotional well-being. Center for Health and well-being, Princeton University, Princeton.

Keyes, C. L. M. (2002). The mental health continuum: From languishing to flourishing in life. *Journal of Health and Social Behavior, 43*(2), 207–222. https://doi.org/10.2307/3090197

Kivimäki, M., & Kawachi, I. (2015). Work stress as a risk factor for cardiovascular disease. *Current Cardiology Reports, 17*(9), 74.

Kornadt, A. E., Bowen, C. E., Lepinteur, A., *et al.* (2025). Working from home and well-being during the pandemic and beyond: a longitudinal analysis in five countries. *BMC Public Health, 25*, 1183. https://doi.org/10.1186/s12889-025-22349-4

Kotthoff, L., Thornton, C., Hoos, H. H., Hutter, F., & Leyton-Brown, K. (2017). Auto-WEKA 2.0: Automatic model selection and hyperparameter optimization in WEKA. *Journal of Machine Learning Research, 18*(25), 1-5.

Lau, J. Y. F. (2011). An Introduction to Critical Thinking and Creativity: Think More, Think Better. Wiley. Hoboken, NJ.

Lehrer, J. (2009). Blame It on the Brain. *Wall Street Journal*, December 26.

Luthans, F. (2002). The need for and meaning of positive organizational behavior. *Journal of Organizational Behavior, 23*(6), 695–706. https://doi.org/10.1002/job.165

Luthans, F., Youssef, C. M., & Avolio, B. J. (2007). Psychological capital: Developing the human competitive edge. Oxford University Press.

Mack, E. (2018). The Exact Amount of Money it Takes to Make a Person Happy Just Got an Update. Inc.

Mäkikangas, A., Kinnunen, U., Feldt, T., & Schaufeli, W. (2016). The longitudinal development of employee well-being: A systematic review. *Work & Stress, 30*(1), 46-70.

Masten, A. S. (2014). Global perspectives on resilience in children and youth. *Child Development, 85*(1), 6–20. https://doi.org/10.1111/cdev.12205

Milligan-Saville, J., et al. (2017). Workplace mental health training for managers and its effect on sick leave in employees: A cluster randomised controlled trial. *Lancet Psychiatry, 4*, 850–858.

EJAE 2025 ✧ 22(2) ✧ 27-41

JOVANOVIĆ. S., PETROVIĆ. A., DRAŽETA. L. ✧ AN AI APPROACH TO ANALYZING AND ENHANCING EMPLOYEE WELLBEING AND PRODUCTIVITY

NFL Total Wellness. (2025, September 8). NFL Total Wellness. Retrieved from NFL Total Wellness: https://totalwellness.nfl.com/

Parke, M. R., Seo, M. G., & Sherf, E. N. (2015). Regulating and facilitating: The role of emotional intelligence in maintaining and using positive affect for creativity. *Journal of Applied Psychology, 100*(3), 917-934.

Patagonia. (2009, November 19). Miracle Grants Gets Employees Involved in Giving. Retrieved from Patagonia: https://eu.patagonia.com/hr/en/stories/miracle-grants/story-19617.html

Penney, L. M., David, E., & Witt, L. A. (2011). A review of personality and performance: Identifying boundaries, contingencies, and future research directions. *Human Resource Management Review, 21*(4), 297-310.

Peters, S. (2012). The Chimp Paradox. Vermilion, London.

Putnam, L. (2015). Workplace Wellness That Works: 10 Steps to Infuse well-being and Vitality into Any Organization. John Wiley & Sons.

Rafinejad, D. (2017). Sustainable Product Innovation: Entrepreneurship for Human well-being. J. Ross Publishing.

Rathus, S. A. (2012). Psychology: Concepts and connections (10th ed.). Wadsworth, Belmont, CA.

RippleMatch. (2022, May 12). 17 Companies That Prioritize the Mental Health of Their Employees. Retrieved from RippleMatch: https://ripplematch.com/career-advice/companies-that-prioritize-the-mental-health-of-their-employees-ebec5754

Robertson, I. T., & Cooper, C. L. (2011). well-being: Productivity and happiness at work. Palgrave Macmillan.

Roy, M., & Farmer, J. (2022). Social Enterprise, Health, and Well-being: Theory, Methods, and Practice. Taylor and Francis.

Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology, 69*(4), 719–727. https://doi.org/10.1037/0022-3514.69.4.719

Salesforce. (2024, December 10). Salesforce. Retrieved from Well-being at Work: 4 Salesforce Employee Benefits Explained: https://careers.salesforce.com/en/salesforce-stories/well-beingbenefits/well-being-at-work-4-salesforce-employee-benefits-explained/

SAP. (2025, September 7). https://www.sap.com/india/about/user-groups.html. Retrieved from SAP: https://www.sap.com/india/about/user-groups.html

Seligman, M. (2003). Authentic Happiness: Using the new positive psychology to realize your potential for deep fulfillment. Nicholas Brealey, London.

Seligman, M. (2011). Flourish: A new understanding of happiness and well-being – and how to achieve them. Nicholas Brealey, London.

SightsIn Plus. (2024, February 23). How Deloitte Fosters Employee Well-being, Health and Success. Retrieved from SightsIn Plus: https://sightsinplus.com/news/industry-news/how-deloitte-fosters-employee-well-being-health-and-success/

Sinek, S. (2009). Start with Why. Penguin. London.

Stoewen, D. L. (2017). Dimensions of wellness: Change your habits, change your life. *Can Vet J., 58*(8), 861-862. PMID: 28761196; PMCID: PMC5508938.

Strixus. (2023, June 6). The WOW Factor: Zappos and the Company Culture Others Want to Copy. Retrieved from Strixus: https://strixus.com/entry/the-wow-factor-zappos-and-the-company-culture-others-want-to-copy-18202

Tauber, B., Wahl, H., & Schröder, J. (2016). Personality and life satisfaction over 12 years. *GeroPsych, 29*, 37-48.

U.S. Army. (2025, September 8). U.S. Army. Retrieved from MyArmyBenefits: https://myarmybenefits.us.army.mil/Benefit-Library/Federal-Benefits/Financial-Readiness-Program-(FRP)#:~:text=The%20Army%27s%20Financial%20Readiness%20Program%20teaches%20Soldiers%20in,goals%2C%20debt%20elimination%20strategies%2C%20and%20saving%20for%20e

Unilever. (2025, September 6). Employee health and well-being. Retrieved from Unilever: https://www.unilever.com/sustainability/responsible-business/employee-well-being/

EJAE 2025 ✧ 22(2) ✧ 27-41

JOVANOVIĆ. S., PETROVIĆ. A., DRAŽETA. L. ✧ AN AI APPROACH TO ANALYZING AND ENHANCING EMPLOYEE WELLBEING AND PRODUCTIVITY

Vaillant, G. (2003). Aging Well: Surprising Guideposts to a happier life. Little, Brown and Company, New York.

Vacharkulksemsuk, T., & Fredrickson, B. L. (2013). Looking back and glimpsing forward: The Broaden-and-Build theory of positive emotions as applied to organizations. In *Advances in positive organizational psychology* (pp. 45-60). Emerald Group Publishing Limited.

van Dick, R., Baethge, A., & Junker, N. M. (2024). Editorial: Implications of remote work on employee well-being and health. F*ront. Organ. Psychol., 2*, 1498944. https://doi.org/10.3389/forgp.2024.1498944

Vantage Fit. (2025, June 26). 28 Stellar Corporate Wellness Programs from Top Companies. Retrieved September 8, 2025, from https://www.vantagefit.io/en/blog/companies-with-corporate-wellness-programs/

Weimann, J., Knabe, A., & Schöb, R. (2015). Measuring Happiness: The Economics of well-being. The MIT Press. What Works Well-being.

EJAE 2025 ✧ 22(2) ✧ 27-41

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PRISTUP VEŠTAČKE INTELIGENCIJE ZA ANALIZU I JAČANJE BLAGOSTANJA ZAPOSLENIH I PRODUKTIVNOSTI

Rezime:

Ovaj rad istražuje složen koncept blagostanja (engl. *well-being*), naglašavajući njegov značaj kako u ličnom, tako i u profesionalnom kontekstu. Blagostanje obuhvata fizičke, mentalne, emocionalne, socijalne, duhovne, finansijske, karijerne, profesionalne, intelektualne, digitalne i ekološke dimenzije. Pandemija kovida 19 povećala je svest o mentalnom i fizičkom blagostanju, podstičući organizacije da daju prioritet ovim aspektima. Efikasne strategije za unapređenje blagostanja zaposlenih doprinose većoj produktivnosti, otpornosti i ukupnom uspehu organizacije.

Rad na daljinu, kao rastući trend, nudi fleksibilnost i bolji balans između poslovnog i privatnog života, ali donosi i izazove poput izolacije i nejasnih granica između posla i privatnog vremena. Razumevanjem evolucije rada na daljinu i primenom strategija za podršku blagostanju zaposlenih, organizacije mogu stvoriti harmonično i produktivno radno okruženje.

Veštačka inteligencija postaje ključni alat za povećanje radne efikasnosti zaposlenih, a ovaj rad istražuje takve pristupe radi boljeg razumevanja i predviđanja radnih trendova. Ovaj rad posebno ističe važnost personalizovanih pristupa blagostanju, prepoznajući da se potrebe pojedinaca razlikuju i da generička rešenja često nisu dovoljna. Konačno, davanje prioriteta blagostanju vodi ka održivom ličnom i profesionalnom razvoju.