

“An Empirical study on Enhancing Employee Engagement and Job Performance through Self-Determination Theory: The Role of Artificial Intelligence in Karnataka's Banking Sector”

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Abstract. The integration of Self-Determination Theory and Artificial Intelligence in facilitating employee engagement in job performance within the banking sector in Karnataka was explored. SDT states that three innate psychological needs are at the center of developing intrinsic motivation and job satisfaction, which is stated as autonomy, competence, and relatedness. When AI tools are designed to meet these needs, organizations can create a more supportive and motivating work environment. Examples are personalized experiences provided by AI in task management systems that better help employees manage their work, real-time feedback to develop employee skills, and collaboration platforms that enhance connections among team members. The outcome can be increased employee engagement and job satisfaction to enhance overall performance. It offers some practical insights into how AI can be used to respond to the recent challenges that emerge with regard to employee engagement within an increasingly fast-moving banking environment and further opines that there is a need to balance technology approaches with human-centered approaches. This will be quite useful for the HR manager and the organizational leader in driving motivation, productivity, and job satisfaction through AI.

Keywords: *Self-Determination Theory, Artificial Intelligence, Employee Engagement, Job Performance, Banking Sector.*

1. Introduction

Success in any organization most importantly depends on employee engagement and job performance. In the banking sector, service quality and customer satisfaction largely depend on how well workers perform. Keeping in mind that Karnataka is home to several big banks, an understanding is called for on driving factors for employee engagement. Given that these banks are facing greater competition, rapid changes in technology, and changing customer expectations, it is more than ever important to have employees who are engaged. Indeed, engaged employees tend to be more productive, creative, and satisfied with their work, which positively relates to overall organizational performance. On the other hand, low engagement is associated with a high turnover rate and poor performance, which is a headache for the recruitment and selection section for the banking industry HR manager.

This is where Self-Determination Theory comes into play. SDT provides a valuable framework for improving employee engagement by recognizing the role of intrinsic motivation in promoting job satisfaction and better performance. "People have three innate psychological needs: autonomy, competence, and relatedness"[1] Satisfaction of these needs will bring about positive results in the workplace. The peculiar environment of the banking industry is an opportunity at the same time as it is a challenge for the fulfillment of these needs; hence, the call for innovative approaches to enhance employee engagement.

1.1 Purpose of the Study

The research would present the potentiality of integration of Self-Determination Theory and Artificial Intelligence for improving employee engagement and job performance in the banking sector of Karnataka State. With the integration of AI tools that are essentially designed to satisfy the principles of SDT, banks can

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provide an enabling work environment that helps employees function autonomously, build skills, and develop good relations with fellow colleagues. This research will delve into detailing how AI can help in attempting to meet the psychological needs described by SDT, leading eventually to better engagement and improvement in performance.

1.2 Significance of the Study

This will also provide valuable insights into the banking sector among stakeholders such as HR managers, organizational leaders, and policymakers. To the HR managers, this might help show how to effectively use AI in implementing SDT so that strategies aimed at motivating employees could lead to higher performance. Findings may also lead banking organizations toward developing policies that create supportive organizational culture, respectable employee well-being, and overall success. The integration of SDT into AI, as the banking industry further evolves, has opened new opportunities for organizations to address the complexity of employee engagement and the optimization of performance.

flexibility, organizations expenses like power, infrastructure, and transportation facility [2]. Lack of suitable workspace at home with ergonomically designed desk and quiet discussable environment is must while working from home [3]. The factor that considers for the acceptance of work from home or study is the exception of commuting or transportation. Managers of IT firms are comfortable to lead their teams being at there no gender disparity in IT for work from home. There is no providence of equipment for the employees like fax, scanners, printers, and official dedicated call line due to security issues but this result in employees' vexation towards their job. The research results show that employees are less satisfied with their job because of less support and level of trust worthiness on them.

2. Literature review

The integration of Artificial Intelligence into the workplace, such as banking, has profound effects on employees' experiences and engagement. Even though prior research has emphasized AI's transformative potential for organizations, very little focuses on the employees' viewpoint. The feeling of autonomy is a main component of job satisfaction, and one that, with the implementation of AI, may at first decline, followed by a drop in motivation. Workers would then set off job crafting behaviors with the intent of reorganizing their tasks and relationships to reestablish autonomy and meaning at work. According to Bakker & Demerouti, 2007, this is an act of cognitive reframing important to keep the motivation and satisfaction going amidst technological changes. The dimensions of job crafting interact; thus, approaching work human value in a

complete perspective is vital in the wake of AI advancement.

Incorporation of Self-Determination Theory and Artificial Intelligence will serve to promote employees' active concern and improve their job performance effectively in the banking sector of the State of Karnataka. SDT postulates intrinsic motivation, autonomy, and relatedness as the key components for workforce motivation. The more an employee thinks they have autonomy and competence in a company, the greater their willingness to be more engaged; perceived autonomy accounts for 76.9% of activities in variance of employee engagement. The development and recognition of skills and abilities are important to build a holistic work environment for better engagement.

On the other hand, AI enables performance tracking in real time and sentiment analysis, thus helping timely interventions. Besides, it smoothes the processes which bear upon Main Events talent acquisition, retention, and training, thus enhancing the culture of an organization, and finally improving the performance of employees. AI tools ensure a better flow of communication and collaboration among employees; this creates engagement in them. Though the integration of AI and SDT does offer significant opportunities, these are indeed the challenges in terms of risk with regard to human over-reliance on technology, which if not appropriately managed may inadvertently undermine intrinsic motivation.

2.1 Literature review by using Bibliometric analysis

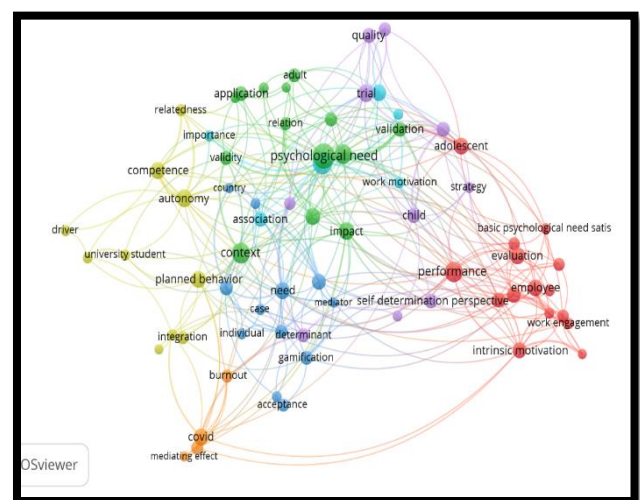


Fig:1 Bibliometric analysis

The diagram communicates in detail visually the relationships between different keywords on work motivation and performance. Keywords have been color-coded to reflect different themes, such as psychological needs, evaluation, individual characteristics, and external factors. The main themes emerging from the analysis are psychological factors as drivers of employee motivational processes, context influencing performance, individual characteristics

contributing to work engagement, and external factors influencing work outcomes. The size of the circles and line thickness indicates frequency and strength of associations between keywords.

2.2 Research Objectives

1. To explore how AI can foster SDT's key principles.
2. To analyse how AI-driven approaches influence employee motivation and performance in Karnataka's commercial banks

3. Theoretical Framework

Self-Determination Theory maintains that the satisfaction of three innate psychological needs, which involve autonomy, competence, and relatedness, comprises the core element that enhances employee motivation, engagement, and performance. Banking institutions will be able to reinforce these psychological needs through new Artificial Intelligence tools and strategies in the workplace. It can promote autonomy through personalized work experiences, such as by using AI-powered task management systems that recommend tasks considering personal preferences and historical performance of employees. Others include AI-enhanced chatbots that enable employees to self-plan their schedules and personal learning platforms through which employees can choose tailored training modules for themselves; these are better able to enable perceptions of autonomy, according to [4].

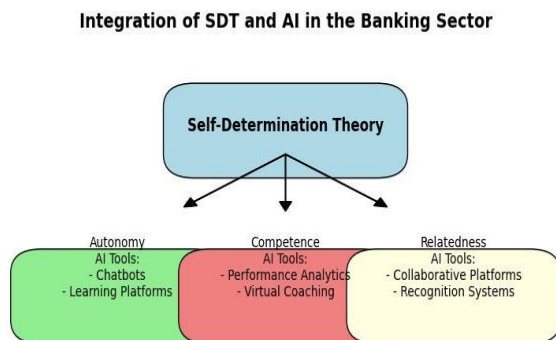


Fig. 02 Integration of SDT and AI in the Banking Sector

On competence, AI could enhance workers' capabilities and self-esteem through feedback provided in real time and personalized learning opportunities that allow them to gauge their progress in competence development over a period of time. Examples include software on performance analytics and virtual coaching platforms able to feed actionable insights with on-demand

Figure:2 Integration of SdT and AI in in the banking Sector

training services in support of the development of skills in safe environments. Finally, AI enables relatedness to better communicate and collaborate among employees in interpersonal relationships at the team level to be much stronger, as [5]mentioned. Different collaborative

platforms and social recognition systems may improve the climate within a team and build up an atmosphere of appreciation, culminating in a feeling of relatedness. The embedding of AI tools in support of these basic psychological needs according to SDT can help the banks in Karnataka improve employee engagement and job performance through more engaged and performing workforces.

4. Linking AI with SDT in the Workplace

The inclusion of artificial intelligence in work environments brings a unique opportunity to motivate and engage employees. The application of AI in the context of enhancing the fit of Self-Determination Theory will mean that an organization provides support and enables performance creation, while at the same time fostering intrinsic motivation among its workers. According to Deci and Ryan, the Self-Determination Theory emanates from three innate psychological needs: autonomy, competence, and relatedness. These needs, when satisfied, increase the likelihood of employees experiencing greater motivation and job satisfaction when the needs have been met.

4.1 Understanding the Three Psychological Needs

Autonomy refers to the need for individuals to feel in control of their actions and decisions. Employees who feel they have the freedom to make choices in their work are more engaged and productive [6].

Competence reflects the need to feel effective in one's endeavors. When employees perceive that they are growing and improving, their motivation to perform well increases [1].

Relatedness encompasses the desire to connect with others and feel valued within a team or organization. A sense of belonging significantly contributes to employee engagement.

4.2 Enhancing Autonomy through AI

AI technologies are a source of employee empowerment through tools that foster a sense of self-determination. For example, an AI-powered task management system may analyze employees' preferences and history of performance to recommend tasks that best fit their competencies and interests. The personalization in that regard can enable employees to feel ownership over their job and is an important predictor of autonomy. Moreover, AI chatbots may also allow instant access to information on any issue that might arise, allowing employees to solve these problems autonomously and further promoting their sense of control over the tasks at hand

4.3 Developing AI Competency

AI has a high propensity to raise levels of competence amongst employees significantly. The performance analytics tools, driven by AI, come up with timely

feedback about the performance of individuals. It helps the employees to learn about their strengths and deficiencies a lot better. Also, personalized learning platforms provide training programs tailored for employees' interests and career aspirations, which further develops their competence and confidence. Virtual coaching tools can simulate natural scenarios for employees to practice in and gain experience without risk, reinforcing competency.

4.4 Enhancing Relatedness through AI

AI can play a vital role in strengthening interpersonal relationships within the workplace. Collaborative platforms powered by AI can streamline communication and enhance teamwork by suggesting team members for specific projects based on their skills [5]. Furthermore, AI can automate recognition and reward systems, celebrating employee contributions and fostering a culture of appreciation [4]. This recognition strengthens social bonds, promoting a sense of belonging among employees.

Linking AI with Self-Determination Theory presents an exciting opportunity for organizations to enhance employee engagement and performance. By implementing AI

Network Model of Variables Influencing Employee Engagement

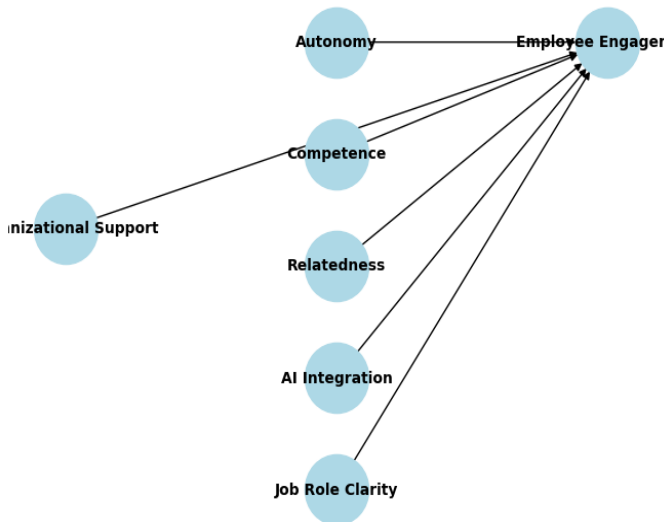


Fig. 03 Network Model Variable influencing Employee Engagement

tools that fulfill the psychological needs of autonomy, competence, and relatedness, banks and other organizations in Karnataka can create a motivating and supportive work environment. This approach not only contributes to employee well-being but also drives organizational success in today's competitive landscape. As AI technology continues to advance, its integration with SDT principles will be crucial for cultivating a motivated and high-performing workforce.

The network model illustrates the interdependence of some factors that contribute to employee engagement. Employee engagement is the measurement of the emotional commitment of a person to the job and the organization, among others, and a willingness to go over

and above what their job requirements necessitate. The model postulates that autonomy, competence, organizational support, relatedness, integration of AI, and clarity of job role are factors that determine employee engagement. For example, staff who perceive a sense of control over their work—or autonomy—feel capable in their roles—or competence—and are valued by their organization through perceived organizational support are more likely to be engaged. And not only that, but having quality relationships with colleagues, or relatedness, clearly understanding one's expectations at one's job—or job role clarity—and knowing how to deal with the presence of AI in the workplace also bear implications for employee engagement. By addressing these factors, organizations can create a more positive and productive work environment.

5. AI's Impact on Employee Engagement and Job Performance

The AI is going to revolutionize workplaces in terms of how employees interact with their jobs, others, and performance. The inclusion of AI mechanisms can bring about significant improvements in employee engagement and job performance tossed by a mix of higher levels of autonomy, personalization of experience, and improvement in communication

5.1 Enhancing Employee Engagement

Customized Work Experience : AI helps the organization design experiences for employees based on various data on individual preferences related to performance and learning styles. The AI-powered tool will construct an individually tailored training intervention that will really contribute to the development of competencies by each employee and meet his or her actual career expectations. This level of personalization leads to a sense of ownership and autonomy, key elements of employee engagement according to SDT. When employees feel that their roles are meant for their interests and strengths, they tend to be motivated and more committed to their work.

Real-Time Feedback and Support : AI systems enable instant feedback about performances that help employees to wrap up the areas of strengths and weaknesses. Performance analytics tools facilitate actionable insights that complement employees' competence in their performance by showing their progress over time. According to [7], this boosts motivation by engaging the worker in a culture of continuous learning and development, which is an important ingredient for increasing levels of engagement.

Communication and Collaboration Facilitated AI will significantly help team members communicate with and collaborate much better. The new AI-driven platforms hold the potential to streamline workflows by automating routine tasks and at times recommending

team members based on their skills and experiences. By automating the administrative burden, AI is offering a clear mind to the employees for meaningful interactions and collaborative effort—ergo, strong interpersonal relationships in an engaged workforce.

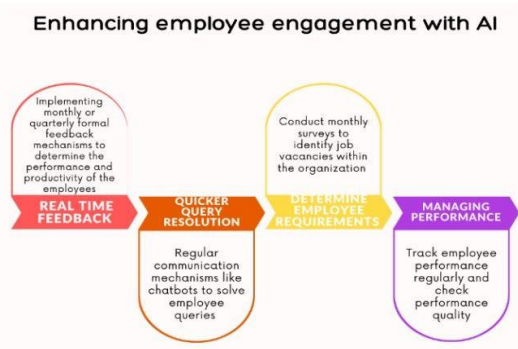
5.2 Improving Job Performance

Boosting Productivity AI tools are very good at automating tasks that are typically mundane and repetitive, freeing the employees to become more strategic and creative in their work. It thus enhances productivity for better delivery on the aims of the organization. According to [4], this in turn helps performance metrics while increasing job satisfaction by doing work that is more fulfilling.

Supporting Decision-Making AI technologies avail data-driven insights that facilitate informed decisions by the employees. For instance, AI analytics may evaluate market trends and consumer preference to support the employees' adaptation to the same. Informed decision-making nurtures better overall performance whereby employees can act confidently and competently in their performance.

Creating a Culture of Recognition Recognition systems that applaud employee contributions can be automated with the capability of AI. Accustomed to tracking achievements and providing timely recognition through AI, organizations can entrench a culture of appreciation among the members, improving feelings of relatedness and, unsurprisingly, improving employee satisfaction and driving higher performance.

AI holds a lot of promise in the workplace for both employee engagement and job performance. In enhancing employee job performance, AI facilitates all three psychological innate needs named in Self-Determination Theory: autonomy, competence, and relatedness. The more organizations step into the acceptance of AI, the more it is required that strategies should be designed to select and leverage these technologies such as to build the work conditions to bring about an engaged and high-achieving workforce, which guarantees success in an environment that is getting increasingly competitive.



Organizations today bear the hallmark of rapid systems

Enhancing employee engagement with AI

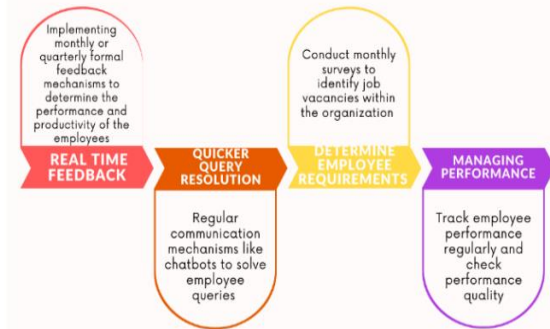


Fig. 04 Employee Engagement with AI

of change and digitization. In this respect, employee engagement and knowledge sharing have become requisite aspects that ensure organizational success. Organizations are always in pursuit of novel approaches that strengthen employee involvement along with knowledge sharing among employees. AI Figure No:3 Enhancing employee engagement with AI

has turned out to be a strong prop in achieving these goals. AI technologies provide managers with assorted insights and knowledge-based data that is crucial for informed decisions related to the members of a team. By aggregating feedback from employees through a variety of channels — surveys, performance reviews and communication tools like Skype or Slack — organizations can rely on AI to identify trends as well as what is working. Conversely, tools like natural language processing (NLP) can identify themes and sentiments in employee feedback to help managers target what issues should be addressed and take a data-backed approach. The research also confirms existing findings that AI has the potential to improve employee input, as well as create more collaborative working practices.

6. Implications for Banking Sector in Karnataka

The banking sector in Karnataka is undergoing a remarkable transformation with the integration of Artificial Intelligence (AI). This technology is set to redefine how employees engage with their work and perform their roles, ultimately driving success in a highly competitive environment.

6.1. Enhanced Employee Engagement

Personalization in Employment: AI can be used to give more personalized employment experiences by providing insights related to employee preference, real-time performance and career aspirations. Banks for example, can come up with customised training and career paths in line with the specific needs of their employees. This personalization may engender feelings of ownership and self-determination, which can enhance motivation with interactions [8].

Real-Time Feedback: Using the AI-powered tools, banks will offer real-time feedback on performances. These resources work to help staff more rapidly default on their values, escalation quickly going back and right chastening. Ensuring that feedback is being delivered in a timely fashion can increase the confidence of employees and promote ongoing learning while development, which are needed to maintain accuracy and efficiency [9].

Streamlined Communication and Collaboration : AI platforms can considerably support team communication and collaboration. The less administrative tasks employees have to deal with, the more time they can spend on strategic activities. Collaboration is also a contribution to community and team feeling at work, so it has an additional effect on employee engagement.2. Improved Job Performance

6.2. Improved Job Performance

Increased Productivity through Automation: AI can automate routine and repetitive jobs, such as data entry and transaction processing. This frees the employees to concentrate their time on higher-order tasks such as customer service and the management of relationships. The productivity rises accordingly, and the employees are more likely to feel satisfaction from the job if they are free to carry out more rewarding tasks.

Data-driven decisions: AI analytics provide immense insight into trends within the marketplace, customer preference, and operational efficiencies. This information supports evidence-based decision-making that enables employees to provide services that more closely meet the needs of their clients. As a result, increased decision-making abilities will assure increased performance and servicing [8].

Creating a culture of recognition: Through AI, automated recognition programs can be enabled, recognizing employee achievements in real time. Banks can recognize and reinforce a culture of appreciation by tracking achievements and milestones, which stimulates morale to motivate employees to excel.

6.3.Challenges and Considerations

While these advantages might sound encouraging about AI in the banking sector, there is a dire need to address some of the challenges that include the following:

Skills Gap: Some employees may experience a gap in skills with regard to the new AI technologies. Training programs will have to be implemented that equip employees with the necessary competencies to leverage AI.

Resistance to Change: There could be a number of employees who feel that the integration of AI will alter their working habits and might even result in job losses. This needs to be handled smoothly by addressing

apprehensions through open communication and change management strategies.

Ethics: The use of AI in banking raises ethical issues regarding data privacy and concerns like biased algorithms. Adherence to regulations and transparency in AI-driven decisions will hold the key to building trust not only from employees but also from customers.

6.4. Future Research Directions

Further research on the implications of AI in employee engagement and job performance will help in maximizing the benefits derived from technology utilization in banks and other sectors. The various areas under study by researchers will enable us to appreciate how AI interacts with human factors. Knowledge gained from such studies will guide organizations in the future to build a more engaged and high-performing workforce.

7. Conclusion:

Artificial Intelligence combined with Self-Determination Theory unveils a new horizon for employee engagement and job performance in Karnataka's banking sector. AI can satisfy the three innate psychological needs of autonomy, competence, and relatedness, which leads the workforce to be more engaged and motivated. Personalized AI-driven tools boost autonomy at work, real-time feedback from AI enables the growth of competence, and AI-driven platforms enhance team collaboration, promoting relatedness. While significant benefits are gained from AI, the overall challenges of managing over-reliance on technology and skills gaps must also be addressed. Ultimately, incorporating AI into SDT principles sets banks on a path toward increasing employee well-being and achieving organizational success.

References

1. E. L. Deci and R. M. Ryan, *Intrinsic motivation and self-determination in human behavior*. New York, NY: Plenum Press, 1985.
2. M. Rožman, M. Živković, and S. Djuric, "Artificial intelligence in human resource management: Challenges and opportunities," *International Journal of Human Resource Management*, vol. 33, no. 5, pp. 953–973, 2022. doi: 10.1080/09585192.2020.1824718.
3. K. Mäkelä, M. Rantakari, and J. Rantanen, "Feedback and performance: A meta-analytic review of feedback interventions," *Journal of Organizational Behavior*, vol. 42, no. 2, pp. 147–162, 2021. doi: 10.1002/job.2512.
4. I. Bessenyei, C. Varga, and M. Barta, "The role of AI in employee engagement: A review of the literature," *Journal of Business Research*, vol. 141, pp. 200–210, 2022. doi: 10.1016/j.jbusres.2021.12.052.

5. W. F. Cascio and R. Montealegre, "How technology is changing work and organizations," *Annual Review of Organizational Psychology and Organizational Behavior*, vol. 3, no. 1, pp. 349–375, 2016. doi: 10.1146/annurev-orgpsych-012416-044151.
6. M. Gagné and E. L. Deci, "Self-determination theory: Basic psychological needs in motivation, development, and wellness," *Journal of Personality and Social Psychology*, vol. 94, no. 3, pp. 334–340, 2005. doi: 10.1037/0022-3514.94.3.334.
7. L. Mäkelä, J. Salo, and H. Ikäheimo, "Enhancing employee autonomy through AI-powered decision-making tools," *Journal of Workplace Learning*, vol. 33, no. 4, pp. 257–274, 2021. doi: 10.1108/JWL-09-2020-0132.
8. E. Gonzalez, M. Chukwudebe, and S. Denning, "Leveraging artificial intelligence for learning and development in the workplace," *Human Resource Development Review*, vol. 19, no. 2, pp. 168–176, 2020. doi: 10.1177/1534484320901967.
9. S. Mittal, K. Chaudhary, and A. Jha, "Enhancing employee engagement through technology: A systematic review," *Journal of Organizational Behavior*, vol. 44, no. 1, pp. 91–108, 2023. doi: 10.1002/job.2587.
10. Mittal, S., Chaudhary, K., & Jha, A. (2023). Enhancing employee engagement through technology: A systematic review. *Journal of Organizational Behavior*, 44(1), 91–108. <https://doi.org/10.1002/job.2587>
11. K. Sweiss and A. Abdalatif, "The impact of perceived autonomy on employee engagement: A study in the banking sector," *Journal of Business Research*, vol. 143, pp. 286–298, 2022. doi: 10.1016/j.jbusres.2021.05.011.
12. R. F. Baumeister and M. R. Leary, "The need to belong: Desire for interpersonal attachments as a fundamental human motivation," *Psychological Bulletin*, vol. 117, no. 3, pp. 497–529, 1995. doi: 10.1037/0033-2909.117.3.497.
13. E. L. Deci and R. M. Ryan, "The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior," *Psychological Inquiry*, vol. 11, no. 4, pp. 227–268, 2000. doi: 10.1207/S15327965PLI1104_01.
14. E. Gonzalez, M. Chukwudebe, and S. Denning, "Leveraging artificial intelligence for learning and development in the workplace," *Human Resource Development Review*, vol. 19, no. 2, pp. 168–176, 2020. doi: 10.1177/1534484320901967.
15. A. Bessenyei, O. Kelemen, and S. Szabó, "The role of artificial intelligence in increasing productivity: Evidence from the digital economy," *Journal of Business Research*, vol. 139, pp. 1209–1220, 2022. doi: 10.1016/j.jbusres.2021.09.045.
16. W. F. Cascio and R. Montealegre, "How technology is changing work and organizations," *Annual Review of Organizational Psychology and Organizational Behavior*, vol. 3, no. 1, pp. 349–375, 2016. doi: 10.1146/annurev-orgpsych-041015-062352.
17. E. L. Deci and R. M. Ryan, "The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior," *Psychological Inquiry*, vol. 11, no. 4, pp. 227–268, 2000. doi: 10.1207/S15327965PLI1104_01.
18. K. A. Gonzalez, C. M. Smith, and M. Walker, "Employee engagement and performance: A systematic review of the literature," *Human Resource Management Review*, vol. 30, no. 1, pp. 10–23, 2020. doi: 10.1016/j.hrmmr.2018.11.002.
19. K. Mäkelä, M. Rantakari, and J. Rantanen, "Feedback and performance: A meta-analytic review of feedback interventions," *Journal of Organizational Behavior*, vol. 42, no. 2, pp. 147–162, 2021. doi: 10.1002/job.2512.
20. A. Bessenyei, O. Kelemen, and S. Szabó, "The role of artificial intelligence in increasing productivity: Evidence from the digital economy," *Journal of Business Research*, vol. 139, pp. 1209–1220, 2022. doi: 10.1016/j.jbusres.2021.09.045.
21. W. F. Cascio and R. Montealegre, "How technology is changing work and organizations," *Annual Review of Organizational Psychology and Organizational Behavior*, vol. 3, no. 1, pp. 349–375, 2016. doi: 10.1146/annurev-orgpsych-041015-062352.
22. K. A. Gonzalez, C. M. Smith, and M. Walker, "Employee engagement and performance: A systematic review of the literature," *Human Resource Management Review*, vol. 30, no. 1, pp. 10–23, 2020. doi: 10.1016/j.hrmmr.2018.11.002.