Chapter 13
Smartphones With Brain-Computer Interface Control for HR Secure Data Management

S. Prince Chelladurai
https://orcid.org/0009-0008-5017-0346
Department of Computational Intelligence, SRM Institute of Science and Technology, India

Somanchi Hari Krishna
Department of Business Management, Vignana Bharathi Institute of Technology, India

Prithu Sarkar
Amity School of Communication, India

Zainab Failhal Lami Lami
Department of Education, Al-Manara College for Medical Sciences, Iraq

Melanie Lourens
Management Sciences, Durban University of Technology, Iraq

Taha Raad Al-Shaikhli
https://orcid.org/0009-0005-2166-9509
Department of Technology, Al-Nisour University College, Iraq

ABSTRACT

The integration of Brain-Computer Interface (BCI) technology into smartphone applications has made a substantial contribution to the advancement of HR management. This research concentrates on the potential advantages of employing BCI-controlled handsets in a variety of human resources (HR) processes, including recruitment, performance evaluation, and employee engagement. Smartphone applications that employ brain-computer interfaces (BCIs) to monitor the affective and cognitive states of employees in real time can provide human resource managers with a more comprehensive understanding of their productivity and well-being. The technology's ability to provide customised and adaptable management strategies

DOI: 10.4018/979-8-3373-5122-3.ch013

enhances the overall efficacy of the organisation and elevates staff morale. This article investigates the technology of brain-computer interfaces (BCIs), including their potential limitations and ethical implications, as well as their application in human resource management.

INTRODUCTION

The integration of Brain-Computer Interface (BCI) technology into HR administration represents a substantial change in the manner in which organisations interact with their employees. By enabling direct wireless communication (Raja, D. S. S. et al., 2024) between the brain and external equipment, BCIs offer a novel approach to HR function administration. This technology enables the integration of digital platforms with human cognitive processes, which leads to enhanced HR tasks, including recruitment and employee engagement (Lakshmi, K. V. N. et al., 2024). Historically, the field of human resource management has relied on conventional resources and established methods to manage activities such as employee engagement (Pandey, B. K. et al., 2024a), performance assessment, and recruitment. Digital technology has improved efficiency; however, the integration of BCIs has the potential to revolutionise these processes by providing a more profound understanding of cognitive and affective states (Pandey, B. K., & Pandey, D., 2023). This change indicates a trend towards HR management systems that are becoming more personalised and adaptable to accommodate specific needs (George, W. K. et al., 2024).

HR frequently implements BCI technology for recruitment objectives (Rai, P. K. et al., 2024). The cognitive reactions of interviewees can be evaluated using brain-computer interfaces (BCIs), which provides a more comprehensive understanding of their actual capabilities and suitability for the position (Muralidhar, L. B. et al., 2024). By facilitating the real-time evaluation of applicants' mental states, this technology surpasses conventional employment procedures, including resumes and interviews. By enabling the direct surveillance of cognitive engagement and stress levels (Tareke, S. A. et al., 2022), BCI technology offers a novel approach to performance evaluation. By providing a more thorough comprehension of their contributions and well-being, this data can be employed to assess employee performance in a more appropriate and equitable manner (Pandey, B. K. et al., 2024). A comprehensive understanding of employees' emotional well-being can enable human resource managers to adjust feedback and development initiatives to facilitate their career advancement.

The welfare and active participation of an organization's personnel are critical to its success. BCIs are capable of monitoring the cognitive and affective states of employees to assess their engagement and identify potential issues before they