

UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

**THE APPLICATION OF ENTROPY-TOPSIS METHOD IN
SOLVING THE TIME AND ATTENDANCE SYSTEM
SOFTWARE SELECTION PROBLEM OF
A PRIVATE HOSPITAL IN TÜRKIYE**

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IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

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ABSTRACT

Automated time and attendance systems track employee attendance, calculate working days, overtime hours, late arrivals, and generate attendance reports, thereby improving workforce productivity. The Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) method was adopted to rank the alternatives. However, TOPSIS lacks a mechanism for weight elicitation. Thus, the integration of the Entropy method with TOPSIS was proposed to address the shortcoming. Hence, the goal of this study is to integrate the Entropy-TOPSIS method, select the most suitable time and attendance system software, and conduct sensitivity analysis to validate the ranking stability. Real-life data about time and attendance system software selection for hospital in Türkiye was used to integrate the Entropy-TOPSIS method. The data consist of five alternatives (A_1, A_2, A_3, A_4, A_5) and six criteria specifically: cost ($C_1, \$$), ease of use (C_2), being compatible with existing HR software and operating system (C_3), reporting capabilities (C_4), customer service (C_5) and scheduling capabilities (C_6). The Entropy-TOPSIS framework is based on a decision matrix that can be computed in Microsoft Excel software. The findings showed that the most significant criterion is C_1 and the least desired criterion is C_3 . Thus, the ranking order for criteria was $C_1 > C_6 > C_4 > C_2 > C_5 > C_3$. Meanwhile the most preferable alternative is A_5 and the least preferable alternative is A_1 which the ranking order for the alternative was $A_5 > A_4 > A_2 > A_3 > A_1$. Therefore, the integrated Entropy-TOPSIS method can be used to select the suitable time and attendance system software from most to least preferable.