Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 10145 – 10150
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5623

# The Relevance of Behavioral Engineering Model for Productivity Optimization in a Fast-Growing Private Learning Institutions

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**Abstract**

*Optimising performance in the workplace is increasingly becoming a strategic agenda in companies. This interest is fuelled not only by economic and competitive pressures, but also by a growing awareness of the need to improve the prospects of individuals or employees. This article provides an overview of the contributions of the Behavioural Engineering Model (BEM) to optimising the performance of work systems. Proper organisational performance management usually contributes to the long-term benefit of both the organisation and the individual. This model comprises two main elements: the environment and the individual. The employee opinion survey regarding their views on the organisation (satisfaction) was conducted according to the BEM model to illustrate how employee behaviour, performance and performance are related.*

**Keywords:** *Behavioral Engineering Model, Human Performance Technology, Organizational Performance, People Competence.*

## Introduction

Optimising the company's resources to achieve its objectives depends to a large extent on the workforce, which is a key factor in the company's development process. Adopting a systematic approach to aligning organisational goals and strategies with the skills and responsibilities of employees is crucial. This has led to an increasing focus on technology that links individuals to organisational goals in order to drive business success. Employees are expected not only to perform competently, but also to understand the future direction of the organisation. Scholars such as [1], [2] and [3] relate these fundamentals to human performance technology [HPT], which is concerned with improving human motivation and satisfaction.

UTMSPACE (Universiti Teknologi Malaysia School of Professional and Continuing Education) is the professional and continuing education dedicated to promoting lifelong learning for professionals, practitioners and the public. As a private arm of Universiti Teknologi Malaysia, UTMSPACE offers a wide range of programs including short courses, executive diplomas, certificates, continuing education courses, and degree programs. Its aim is to offer flexible learning options, such as part-time study, which allows students to balance their academic goals with their work commitments.

In line with its mission to provide high quality lifelong learning programs, UTMSPACE relies on HPT to systematically improve individual and organisational performance. The key to success is the ability to ensure a positive customer experience, maintain a strong brand presence and provide valuable learning experiences that support professional and personal growth — perspectives that are critical to meeting stakeholder expectations. To achieve these goals, HPT applies a systemic approach that considers the complex functions and areas within UTMSPACE to optimize performance at all levels of the organisation.

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## Literature Review

*Human Performance*

The term human performance technology [HPT] or human performance improvement (HPI) and

performance technology (PT) are often used interchangeably to refer to strategies that focus on improving human performance in the workplace [4] HPT is a tool for diagnosing and improving areas of performance in the workplace through an evidence-based approach.

HPT is inherently people-centered and recognises that people are the key drivers of organisational success. Their skills and potential are critical as they drive change and make performance improvement possible. The behavioural focus of HPT views employees as performers and not just learners [5]. When organisations provide employees with the right tools and resources to solve various performance problems, employees not only improve their performance but also derive value from the problem-solving process.

*Behavioral Engineering Model [BEM]*

This model, developed and popularized by Gilbert, has been integrated into the foundation of Human Performance Technology (HPT) to emphasize the causes of performance discrepancies [6]. These causes are attributed to a lack of environmental support and an inadequate behavioural repertoire. Gilbert's model identifies gaps between current and desired performance and aims to adjust environmental factors to promote peak performance [7]. It is widely applied to measure and improve performance in various sectors, including vocational rehabilitation [8], banking [9], training [10] and education [11].

The model categorizes the factors that influence performance into six areas: Data (information), Tools (resources), Incentives, Knowledge, Capacity and Motives. These categories serve as a framework for diagnosing performance problems and implementing targeted improvements.

## Methodology

The current study takes a quantitative approach, using a self-administered questionnaire distributed to UTMSPACE employees. The study adapted the BEM model commonly used by researchers to assess performance and productivity [12], [13]. A total of 144 employees (70% response rate) responded, selected from a group of 207 managerial and non-managerial employees at UTMSPACE over an eight-week period. A population sample was used as the population size of managerial and non-managerial employees was considered small. As in [14] sample size determination table, a population of 220 would require a sample of 140, so the response rate in this study is remarkably high. The items were developed on the basis of the relevant literature and adapted to the objectives of this study. Six quadrants were used, comprising 30 items. Table 1 provides an overview of the items, organised by the corresponding determinants within each quadrant.

**Table I.** Items in the Quadrant

| **Factor** | **Information** | **Instrument** | **Motivation** |
|---|---|---|---|
| **Environment** | Data (6) | Resource (5) | Incentives (7) |
| **Individual** | Knowledge (3) | Capacity (5) | Motives (4) |

These elements were developed on the basis of the BEM model and adapted to reflect the findings of an internal survey at UTMSPACE. The six quadrants represent the most important productivity factors among managerial and non-managerial employees at UTMSPACE.

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## Findings and Discussion

The factor analysis was carried out to determine the factorial structure of the items. In the initial phase, an exploratory factor analysis (EFA) was conducted to examine the internal structure and identify items with low factor loadings for possible elimination. An orthogonal varimax rotation was applied to minimize the probability of incorrect statistical solutions and to clarify uncorrelated factors.

Table II shows the results of the factor analysis based on the BEM criteria, which comprises six quadrants: Data, Capacity, Motive, Knowledge and Resources. Only items with factor loadings above 0.3 are shown; items I3, M1 and M4, which had loadings below 0.3, were excluded. In the current study, a factor loading threshold of 0.3 was maintained as the average variance extracted (AVE) was above 0.5.

**Table II.** Exploratory Factor Analysis

| **Item** | **Factors** | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | Uniqueness |
| D1: I have clear expectations and an understanding of my job duties and what is required of me | 0.489 | | | | | | 0.65 |
| D2: I understand UTMSPACE's strategic objectives (mission, vision, and core values) | 0.728 | | | | | | 0.47 |
| D3: I can see a clear link between my work and UTMSPACE's strategic objectives | 0.959 | | | | | | 0.28 |
| D4: I am provided with the appropriate amount of information to make correct decisions about my daily work | 0.99 | | | | | | 0.89 |
| D5: I understand my pension and benefits package and how it works for me | 0.633 | | | | | | 0.56 |
| D6: Management communicates effectively to all employees regarding the latest task/job information | 0.723 | | | | | | 0.28 |
| R1: I am satisfied with the job-related training the UTMSPACE offers | | 0.803 | | | | | 0.10 |
| R2: I have the materials and/or equipment I need to do my work | | 0.819 | | | | | 0.21 |
| R3: The resources (people, materials, and budget) I needed to do my job were sufficient | | | | | | | 0.60 |
| R4: I am always rushing to finish my tasks | | 0.668 | | | | | 0.70 |
| R5: My leader is accessible | | -0.372 | | | | | 0.89 |
| I1: My role is dynamic and provides new and satisfying challenges | | | 0.326 | | | | 0.90 |
| I2: UTMSPACE's leadership has a genuine interest in the welfare and satisfaction of those who work here | | | 0.918 | | | | 0.20 |

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| I3: My direct manager and I have effective communication and a good working relationship | | | - | | | | 0.88 |
| I4: The workplace culture promotes, recognizes, and rewards success | | | 0.517 | | | | 0.53 |
| I5: Overall, I am pleased with the career advancement and/or professional development opportunities available to me | | | 0.783 | | | | 0.22 |
| I6: In the past twelve months, a UTMSPACE manager has spoken to me about my performance and career goals | | | 0.660 | | | | 0.64 |
| I7: In the past twelve months, I have had opportunities at work to learn and grow within my position | | | 0.965 | | | | 0.11 |
| K1: I have enough skills to take up the challenges of my jobs to perform better | | | | 0.886 | | | 0.20 |
| K2: I feel empowered whenever the work processes are involved in the process | | | | 0.634 | | | 0.60 |
| K3: I have the necessary knowledge to perform the expected outcome | | | | 0.994 | | | 0.01 |
| C1: I do not have the opportunity (short in time etc) to attend training offered by UTMSPACE | | | | | -0.333 | | 0.80 |
| C2: I believe my colleagues and I proactively identify and share future work-related challenges and opportunities with each other | | | | | 0.369 | | 0.77 |
| C3: I am given the tools I need to provide the services or products assigned to me | | | | | 0.979 | | 0.60 |
| C4: I can consult with each other when I need support | | | | | 0.930 | | 0.70 |
| C5: When conflict occurs, I can address it promptly and resolve it | | | | | 0.978 | | 0.70 |
| M1: I enjoy the day-to-day activities of performing my job | | | | | | - | 0.90 |
| M2: I am a proud member of the UTMSPACE team | | | | | | 0.99 | 0.67 |
| M3: I would recommend working with UTMSPACE to others | | | | | | 0.580 | 0.66 |
| M4: I think that I am valued by my manager | | | | | | - | 0.90 |
| Cronbach Alpha | 0.796 | 0.696 | 0.752 | 0.812 | 0.605 | 0.530 | |

The uniqueness of each factor reflects the specificity of its items. A higher uniqueness value means that an item is less explained by other factors. For example, item D1 has a uniqueness value of 65%, which means that 65% of its variance cannot be explained by other factors. Conversely, items D3, D6, R2, I2, I5, I7, K1 and K3 have lower uniqueness values (about 20%), which means that 80% of their variance is explained by other factors.

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Fig. 1 presents the results of the correlation analysis, examining the associations between indicators of the six quadrants in the BEM model. The correlation between incentive and motive is notably high ($r = 0.60$, $p < 0.05$), suggesting that when an organization provides incentives, employees are more likely to feel happy and motivated. Motive (items M1–M4) reflects employees' feelings of pride, enjoyment, and satisfaction in their work.

Conversely, knowledge shows no correlation with motive ($p > 0.05$), indicating that employees' knowledge, skills, and experience are not necessarily associated with their motivation levels. Employees may possess the necessary knowledge but may lack motivation. Most other factors—such as data, capacity, incentive, resources, and knowledge—demonstrate intercorrelations. Knowledge and motive, however, remain the only factors without a significant association.

**Figure 1.** Correlation Matrix

| | | Motive | | Data | | Incentive | | Resources | | Knowledge | | capacity | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Motive | Pearson's r | — | | | | | | | | | | | |
| | p-value | — | | | | | | | | | | | |
| | 95% CI Upper | — | | | | | | | | | | | |
| | 95% CI Lower | — | | | | | | | | | | | |
| Data | Pearson's r | 0.474 | *** | — | | | | | | | | | |
| | p-value | < .001 | | — | | | | | | | | | |
| | 95% CI Upper | 0.636 | | — | | | | | | | | | |
| | 95% CI Lower | 0.272 | | — | | | | | | | | | |
| Incentive | Pearson's r | 0.609 | *** | 0.571 | *** | — | | | | | | | |
| | p-value | < .001 | | < .001 | | — | | | | | | | |
| | 95% CI Upper | 0.736 | | 0.709 | | — | | | | | | | |
| | 95% CI Lower | 0.439 | | 0.391 | | — | | | | | | | |
| Resources | Pearson's r | 0.597 | *** | 0.583 | *** | 0.500 | *** | — | | | | | |
| | p-value | < .001 | | < .001 | | < .001 | | — | | | | | |
| | 95% CI Upper | 0.728 | | 0.718 | | 0.656 | | — | | | | | |
| | 95% CI Lower | 0.424 | | 0.406 | | 0.303 | | — | | | | | |
| Knowledge | Pearson's r | -0.033 | | 0.227 | | 0.299 | * | -0.069 | | — | | | |
| | p-value | 0.781 | | 0.055 | | 0.011 | | 0.567 | | — | | | |
| | 95% CI Upper | 0.200 | | 0.436 | | 0.496 | | 0.166 | | — | | | |
| | 95% CI Lower | -0.263 | | -0.005 | | 0.072 | | -0.296 | | — | | | |
| Capacity | Pearson's r | 0.408 | *** | 0.596 | *** | 0.595 | *** | 0.424 | *** | 0.402 | *** | — | |
| | p-value | < .001 | | < .001 | | < .001 | | < .001 | | < .001 | | — | |
| | 95% CI Upper | 0.585 | | 0.727 | | 0.726 | | 0.597 | | 0.580 | | — | |
| | 95% CI Lower | 0.195 | | 0.423 | | 0.421 | | 0.214 | | 0.188 | | — | |

Note. * p < .05, ** p < .01, *** p < .001

## Conclusion

This study found that organisational effectiveness is significantly influenced by BEM performance factors, particularly data, resources, incentives and capacity, which serve as strong predictors. These findings are consistent with previous research [15], [16] that emphasized the importance of improving organisational practices to better support employees to enhance their skills and performance. In this study, the workforce has the right skills to effectively achieve the results expected by the stakeholders. It can be said that they are recruited and assigned to their position based on their skills. As they understand the vision, mission and values of the institution, they are performance orientated and able to deliver more than what is expected by

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the stakeholders. This finding also draws on social exchange theory, which suggests that employees perceive a commitment to positive reciprocation based on their interpretation of the organization's supportive practices.

**Acknowledgment**

The authors hereby acknowledge School of Professional and Continuing Education, Universiti Teknologi Malaysia (UTMSPACE) for the provision of financial supports under Quick Win Research Grant R.J130000.7711.4J640.

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