

**A FORMAL MODEL FOR ANALYZING MANAGER'S  
PERFORMANCE DURING STRESS**



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## Abstrak

Pengurus yang terdedah kepada tekanan mempunyai risiko mengambil keputusan yang tidak mencukupi, yang akan memberi kesan kepada tahap prestasi mereka. Menjejaskan boleh menjadi sama ada positif atau negatif, bergantung kepada persepsi individu pada stres. Ramai yang tidak mencukupi kajian konvensional telah dijalankan untuk menganalisis hubungan rumit tekanan dan prestasi. Oleh itu kajian ini memperkenalkan model formal menyokong prestasi pengurus 'semasa tekanan. Model ini boleh dimuatkan ke dalam agen pintar atau robot yang boleh digunakan untuk menyokong pengurus. Metodologi yang digunakan untuk meneroka proses kognitif manusia semasa tekanan terdiri daripada empat fasa: pengenalpastian ciri-ciri tempatan dan bukan tempatan, konsep model ini harta, perasmian, dan penilaian. Persamaan yg memuji-muji telah digunakan dalam memformalkan hartanah. Model yang dibangunkan telah disimulasikan dengan memohon kepada senario yang berbeza. Analisis matematik telah digunakan untuk penilaian model. Hasil kajian menunjukkan bahawa model yang formal dapat menunjukkan kesan tahap yang berbeza tekanan pada prestasi pengurus.

**Kata kunci:** model formal, prestasi pengurus, tekanan, tekanan dan hubungan prestasi



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## Abstract

Managers who are exposed to stress have the risk of taking insufficient decisions, which will affect their performance levels. The affect could be either positive or negative, depending on the individual's perception on stress. Many inadequate conventional studies have been conducted for analyzing the complicated relationship of stress and performance. Hence this study introduces a formal model supports managers' performance during stress. This model can be encapsulated within an intelligent agent or robots that can be used to support managers. The methodology was used to explore human cognitive processes during stress consisted of four phases: identification of local and non-local properties, conceptualization of the model of these properties, formalization, and evaluation. Differential equations have been used in formalizing the properties. The developed model has been simulated by applying it to different scenarios. Mathematical analysis has been used for the evaluation of the model. Results showed that the formal model was able to show the effects of different levels of stress on managers' performance.

**Keywords:** formal model, managers' performance, stressors, stress and performance relationship



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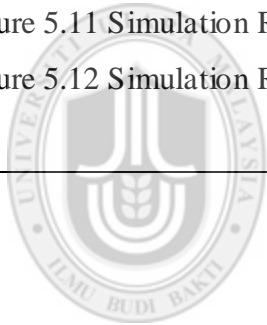
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## LIST OF ABBREVIATIONS

EU-OSHA	European Agency for Safety and Health at Work
KPI	Key Performance Indicators
CO's	Correctional Officers
JDR	Job Demand Resources Model
COR	Conservation of Resources Theory
HSE	Health and Safety Executive
BERT	Rational Emotive Behavioural Therapy



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# CHAPTER ONE

## INTRODUCTION

### 1.1 Introduction

This chapter briefly explains the study background, problem statement, objectives, significance and scope of the study.

### 1.2 Background of the Study

Researchers and practitioners have paid more concern and focus on studying managerial stress and stress management. Implications of stress on individual and organization can no longer be studied or treated solely as the problem of individual manager. Stress has affects on the adjustment of individual with others which in turn can affect production and performance of the whole organization. Potential negative effects of stress are being realized by organizations, stress affects organizations in terms of lower motivation, decreased performance levels as well as physical and mental illness which are beyond cause of stress (Menon & Akhilesh, 1994). Stress emerges in situations when individuals face circumstances that they appraise as demanding or exceeding their resources and endangering their well-being (Lazarus & Folkman, 2011; Rani et al. 2013; Ramezani et al., 2013).

Up to fifty million Europeans complained about stress at work reported by European Agency for Safety and Health at work, stress results in costs of forty billion Euros in both health care and time (EU-OSHA, 2003; 2015). Additionally, 19% and 30% of general working employees are suffering from workplace stress and burnout (Cooper & Mrshall, 1976; Bourbonnais, Malenfant, Vézina, Jauvin, & Brisson, 2005; Dewa, McDaid, & Ettner, 2007). Work stress is the psychological negative stress or strain that appears as a result of both individual as well as organizational stressors in the work (Cooper & Mrshall, 1976; Cullen, Link, Wolfe & Frank, 1985). Burnout in the work is characterized by feelings of exhaustion which is one of the consequences of long term stress; there are plenty of other consequences just to mention cynicism, detachment, ineffectiveness and lack of personal accomplishment (Maslach, Schaufeli, & Leiter, 2001). Both job stress and burnout can affect employees' organizational commitment and leads to lower productivity (Maslach et al., 2001).

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