

**UNIVERSITI TEKNOLOGI MARA**

**ORGANIZATIONAL CONTEXT, STRUCTURE,  
AND PERFORMANCE OF PLANT TURNAROUND  
MAINTENANCE IN MALAYSIAN PROCESS-  
BASED INDUSTRIES**

**ZULKIPLI BIN GHAZALI**

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## ABSTRACT

Plant turnaround maintenance is a crucial asset management that is practiced in large process-based industries. The unprecedented large and expensive maintenance event is carried out to revitalize, maintain, and improve the plant facilities for optimal and efficient performance. The event is characterized by a multi-faceted business process comprising engineering, business, and organization. Typical problems that are linked to the dismal performance of the plant turnaround maintenance include schedule slippage, work scope growth, cost over run, concerns on regulatory compliance, inadequate resources, and startup problems. These depictions imply that the turnaround maintenance event requires efficient organization, coordination, and control of the turnaround organizational resources to ensure its successful implementation.

The present study examines the effect of congruent relationship between plant technology, organizational size, and structuring processes on the performance of plant turnaround maintenance of process-based industries in Malaysia. The study was based on quantitative data collected from 58 companies using questionnaire-aided survey. A research framework is developed and 25 research hypotheses are put forth, which suggest the relationship of plant technology, organizational size, structuring processes, and organizational performance of turnaround maintenance.

The findings indicate that the congruent relationships between organizational size and level of formalization and centralization in the organization of turnaround maintenance contribute to high level of organizational performance. Establishing the appropriate level of formalization and centralization that commensurate with the organizational size of the turnaround is pertinent to the turnaround maintenance performance. It offers organizational theorists and managers with a prescription of strategic organizational choice in managing one of the factors of production of the companies in the process-based industries in Malaysia, namely plant technology.

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# CHAPTER 1

## INTRODUCTION

### 1.0 Background

A poignant statement in Adam Smith's *Wealth of Nations* is the conviction that "economic power stems from the ability to produce" (Smith, 1937 in Alcorn, 1997). A viable economy depends on the ability of the nation to maintain and develop this capacity. An economy experiences growth through industrial development that called for investments in the means of production namely plants, equipment, human resource, information technology, and others. This tenet has placed the importance of technology in the economic structure of a nation. Technology is one of the key attributes in developing and supporting the economy of a nation (Alcorn, 1997). In the case of Malaysia, the country has seen rapid industrial development during the last four decades in her effort to move towards an advanced industrial country.

The industrial sector has spearheaded the transformation of the Malaysian economy since 1960s. The first phase of the industrial development during the 1960s was aimed at import-substitution. This was followed by the development for export-oriented industries during the 1970s which also witnessed the establishment of Free Trade Zones to encourage direct investments from foreign multinationals. In the 1980s the government gave further emphasis to import-substitution industries. During this period, Malaysia has seen rapid economic growth. Largely, the growth was linked to the increasing role of the manufacturing sector. Further industrial expansion was steered by the Fourth Malaysia Plan (1981-1985) that saw greater efforts by the private sector, both local and foreign, investing in heavy industries. The economic transformation brought by the industrial sector has resulted in significant structural changes in the composition of gross domestic product (GDP) of Malaysia in the period between 1970 and 2000. The manufacturing sector has become the largest contributor to the