

**ESTIMATION OF OCCUPATIONAL ACCIDENT AND ACCIDENT
PREVENTION COST IN WOOD BASED RELATED INDUSTRIES.**

HOOD BIN ATAN

Submitted to the Faculty of Mechanical Engineering
as a partial fulfillment for the degree of
Master of Engineering (Industrial Engineering)

FACULTY OF MECHANICAL ENGINEERING
UNIVERSITI TEKNOLOGI MALAYSIA

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**Specially dedicated to my wife,
my son and daughters, parents and
to my friends**

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ABSTRACT

The objective of the study is to estimate occupational accident cost in manufacturing industries, especially in wood based related industries. The study attempts to identify, define, and classify the cost components of occupational accident related cost and to catalogue the various economic approaches used to estimate the entire costs of occupational accident and to propose the risk prevention plan. The study uses local specific approach by reviewing company historical records on occupational accident as reported in JKPP 6, JKPP 8, JKPP 9 and company internal investigation reports. For each occupational accident, the site safety officer in charge, human resource and account employee, supervisor, victim, related co-workers and relatives were interviewed in order to estimate direct costs, indirect costs, prevention costs and others personal cost related to the accident. Other related information such as personal data of the victim, type of injuries, location of injuries and cause of injuries were recorded. A total of 24 occupational accidents data for the past five years were analyzed in the cost of accident summary report to determine the overall ratio of direct to indirect cost and ratio of total cost of accident to prevention cost. Further analysis was carried out to determine the most significant cost of accident related to demographic profiles for Malaysian and Non Malaysian employees. Result obtained from the analysis has been integrated into existing Hazard Identification, Risk Assessment and Risk Control (HIRARC) format during the risk assessment in the selected manufacturing process within the company. The estimated potential cost of accident and cost of prevention was added to the existing report for HIRARC. In conclusion, this study has determined the ratio of direct to indirect cost of occupational accident and to propose the risk prevention plan with additional information on cost of accident and cost of prevention.

Keywords: *Accident Cost Estimation, Direct Cost, Indirect Cost, Risk Assessment*

ABSTRAK

Objektif kajian ini adalah untuk menganggarkan kos kemalangan pekerjaan dalam industri pembuatan, terutama dalam industri yang berasaskan kayu. Kajian ini bertujuan untuk mengenal pasti, menentukan, dan mengelaskan komponen kos kemalangan berkaitan pekerjaan didalam pelbagai kategori. Pendekatan ekonomi digunakan untuk menganggarkan keseluruhan kos risiko kemalangan ditempat kerja di dalam industri pembuatan dan mencadangkan tahap pencegahan yang perlu. Kajian ini menggunakan pendekatan khusus tempatan dengan menyemak rekod sejarah kemalangan lalu di syarikat terpilih sepertimana yang telah dilaporkan didalam laporan kemalangan pekerjaan rasmi JKKP 6, JKKP 8, JKKP 9 dan laporan siasatan dalaman syarikat. Bagi setiap kes kemalangan pekerjaan, pegawai keselamatan syarikat, pihak sumber manusia, pekerja, penyelia, mangsa, rakan sekerja dan yang berkaitan akan di temuramah untuk menganggarkan kos langsung, kos tidak langsung, kos pencegahan dan lain-lain yang berkaitan dengan kos kemalangan yang ditanggung oleh mangsa. Maklumat berkaitan seperti data peribadi mangsa, jenis kecederaan, lokasi kecederaan dan sebab-sebab kecederaan direkodkan. Sejumlah 24 data kemalangan pekerjaan telah berjaya di analisa. Data kemalangan tersebut di ringkaskan untuk menentukan nisbah keseluruhan kos kemalangan langsung dan kos tidak langsung dan juga nisbah jumlah kos pencegahan kemalangan. Analisa lanjut juga dijalankan untuk menentukan perbandingan kos kemalangan pekerja tempatan dan pekerja asing. Kajian seterusnya ke atas data berkaitan kos kemalangan tersebut digunakan ke dalam analisa Mengenalpasti bahaya, Penaksiran Risiko dan Kawalan Risiko (HIRARC). Anggaran kos kemalangan dan kos pencegahan kemalangan telah di masukan didalam laporan HIRARC sedia ada. Kesimpulannya, kajian ini telah berjaya menentukan komponen kos kemalangan di tempat kerja, sama ada kos langsung atau tidak langsung. Nisbah kos kemalangan di antara kos langsung dan tidak langsung, nisbah kos kemalangan dan kos pencegahan kemalangan telah berjaya di anggarkan. Laporan Risiko Kemalangan HIRARC yang sedia ada telah di perbaiki dengan memasukkan data berkenaan dengan anggaran kos kemalangan dan kos pencegahan kemalangan.

Katakunci: *Anggaran Kos Kemalangan, Kos Langsung, Kos tidak Langsung Penilaian Risiko*