TQM EXTENSION PRACTICES AND PERFORMANCE: A CASE STUDY IN MALAYSIAN AEROSPACE INDUSTRY

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TQM EXTENSION PRACTICES AND PERFORMANCE: A CASE STUDY IN MALAYSIAN AEROSPACE INDUSTRY

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ABSTRAK

Amalan Tambahan Pengurusan Kualiti Menyeluruh (TQM) dan Prestasi: Kajian Kes di Industri Aeroangkasa Malaysia

Kajian ini memeriksa perlaksanaan amalan tambahan pengurusan kualiti menyeluruh (TQM) dan prestasi perniagaan di dalam industri aeroangkasa Malaysia. Kajian ini melihat keberkesanan dan kecekapan organisasi, dan bagaimana tahap prestasi organisasi mematuhi piawaian kualiti antarabangsa serta peranan dan pengawalan terhadap keperluan penguatkuasa industri aeroangkasa. Industri aeroangkasa Malaysia termasuk industri pembuat alat ganti aeroangkasa dan komponen perakitan aeroangkasa adalah dijangkakan berkembang dan menyumbang bagi mencapai nilai tertambah teknologi tinggi, peningkatan ekonomi nasional, dan meningkatkan cabaran pasaran persaingan globalisasi industri aeroangkasa yang dijangka akan lebih mencabar menjelang tahun 2015 dan ke atas. Matlamat utama kajian ini untuk menyelidik dan mengukur sepuluh pembolehubah dalam TQM, iaitu kepimpinan, polisi dan strategi, manusia dan keputusan, perkongsian dan sumber, proses pengurusan kualiti, maklumat dan analisis, hasil masyarakat, penumpuan sumber manusia, kepuasan dan keperluan pelanggan. Kajian ini juga menyelidiki penggabungan criteria prestasi kecemerlangan termasuk MBNQA, AS9100 Boeing , EN9100 Airbus, AQS D1-9000, *National Institute Standard and Technology* (NIST), *International Aerospace Group of Quality* (IAQG), *International Aerospace Quality Standard* (IAQS), *Business Excellent Models* (BEM) KANO, CNQI dan IBM, dan lain lain. Keputusan ujian kebolehpercayaan Cronbach Alpha adalah memuaskan. Di samping itu, model yang digunakan dapat diterima dan sesuai. Pembolehubah adalah bersekutu dengan pembolehubah terpendam (*latent variable*), dan jumlah pengukuran varians 81% diterangkan dengan faktor ektrasi untuk sejumlah informasi luasan muatan penghasilan dalam prestasi perniagaan. Penemuan utama menunjukkan bahawa dua (2) pembolehubah (iaitu kepimpinan dan perkongsian sumber) tidak menyokong sepenuhnya prestasi perniagaan. Syarikat hendaklah membuat pelan tidakan pembetulan dan peningkatan kualiti berterusan untuk mencapai kecemerlangan. Berasaskan penemuan, terdapat beberapa cadangan seperti berikut: (1) peningkatan perkongsian dalaman dan luaran, rekabentuk, produk, proses, kualiti, pengkhidmatan, penghantaran menepati masa; dan (2) peningkatan pembelajaran pekerja, latihan dan pembangunan; dan penumpuan untuk melayakkan dan mengesahkan pekerja dan kemudahan terhadap keperluan pelanggan dan peranan kuasa 'regulator' antarabangsa. Hasilnya, ia membolehkan syarikat-syarikat industri aeroangkasa Malaysia mendapat jaminan kontrak jangka panjang, kepercayaan daripada rakan kongsi, pembayaran mengikut masa, kepuasan pembekal dan pelanggan, tahap prestasi, pelaburan yang baru daripada pelangan luar negera dan melaksanakan perniagaan secara global. Keaslian kajian ini adalah pemahaman terhadap kecermerlangan tahap keupayaan prestasi perniagaan, menyedari amalan kualiti sebenar yang mempunyai pengaruh yang signifikan terhadap prestasi perniagaan, termasuk penambahbaikan yang perlu dilaksanakan oleh organisasi yang terlibat.

ABSTRACT

Total Quality Management (TQM) Extension Practices and Performance:

A case study of Malaysian Aerospace Industry

This research examines the implementation of total quality management (TQM) extension practices and business performance using a case study on Malaysian aerospace industries. The study examines the organization effectiveness and efficiencies, and the level of company performance that complies with the international quality standard, role and regulation of the aerospace authority. Malaysian aerospace industries are expected to expand and significantly contribute to capture value-added high technology, national economic growth, and increasing challenge in a globalization competition marketplace which is expected to become fierce in the year 2015 and beyond. The main objective of this research is to investigate and measure ten variables of TQM, which are leadership, policy and strategy, people and result, partnership and resources, processes quality management, information and analysis, society result, human resources focused, customer satisfaction and requirement. This research also examines the company performance using the criteria of performance excellence such as MBNQA, EFQM, AS/EN9100, AQS D1-9000, *National Institute Standard and Technology* (NIST), *International Aerospace Group of Quality* (IAQG), *International Aerospace Quality Standard* (IAQS), *Business Excellent Models* (BEM) and others. The result of the reliability test i.e. the Cronbach's Alpha was extremely reliable. Similarly, the model was accepted and significantly fit. It was found that the variables were significantly associated with the underlying latent variable which measured a total of 81% .The variance was explained by extraction factor sums squared loadings of the information yielded in business performance of Malaysian aerospace firms. The main findings showed that all the two (2) variables i.e. leadership and partnership resources are less influence the business performance of Malaysian aerospace industry. Therefore, it is suggested that firms need to formulate corrective action plans and continuous quality improvements to achieve excellence. Therefore, the following recommendations are identified: (1) improvement of internal and external partnerships, design, product, processes, quality, services, on time delivery; and (2) improvement of employee education, training and development; and focus on qualifying and certifying both personnel and facilities to the customer requirement needed and role regulatory of the international authority aerospace requirement. Consequently, these enable the Malaysian aerospace firms to secure long term contracts, gain trust from partners, have timely payments, ensure the suppliers and customers' satisfaction, increase the performance level, get new investments from foreign customers, and do business globally. The novelty of this study are the understanding the excellent level of capability of business performance; realized the actual quality practices which have significant effect towards business performance; including the necessary improvements to be carried-out by the companies involved.

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LIST OF ABBREVIATIONS / GLOSSARY OF TERMS

AS 9100	American System 9100
ASQ	American Society for Quality
AQS	Advance Quality System
AIC	Akaike Information Criteria
BAE	British Aerospace Enterprise
BCC	Browne Cudeck Criteria
BEM	Business Excellence Models
CFA	Confirmatory Factors Analysis
CPE	Critical Performance Excellence
CFI	Comparative Fit Index
CMINDF	Chi-Square Minimum Index Degrees of Freedom
CR	Critical Rations
CNQI	Canada's National Quality Institute
DF	Degree of Freedom
DV	Dependent Variable
EN9100	European Nation 9100
EFQM	European Framework Quality Management
FAA	Federal Airworthiness Authority (USA)
GAO	General Accounting Offices (USA)
GE	General Electrics (Engine Aircraft Company)
GFI	Goodness of Fit Index
IV	Independent Variable
IFI	Incremental Fit Index
ISO 9000	International System Organization 9000
IAQG	International Aerospace Quality Groups
IAQS	International Aerospace Quality Standard
JISQ	Japan International System Quality
JAA	Joint Airworthiness Authority (Europe)
KANO	Business Excellence Models Prof. KANO

KMO	Kaiser Meyer Olkin (Measurement of Sampling Adequacy)
KPIs	Key Performance Indicators
MAC	Malaysian Aerospace Council
MBNQA	Malcolm Baldrige Nation Quality Awards
MI	Modification Index
MITI	Ministry of International Trade and Industry
MIGHT	Malaysian Industry Government Group for High Technology
MIDA	Malaysian Industrial Development Authority
MIAR	Malaysian Aerospace Industry Report
MRO	Maintenance Repair and Overhauls
MRS	Manufacturing Repair and Services
NIST	National Institute of Standard and Technology
NFI	Normed Fit Index
OD	Organization Development
ODT	Organization Development Techniques
OASIS	Online Aerospace Supplier Information System (data base)
P	Probability
PCFI	Parsimony Comparative Fit Index
PDCA	Plan Do Check Action
QMS	Quality Management System
ROI	Return On Investment
RMSEA	Root Mean Square Error of Approximation
RFI	Related Fit Index
R^2	Rations Square
SEM	Structural Equation Modeling
SPSS	Statistical Processes Social and Science
TLI	Tucker Lewis Coefficient Index
TQM	Total Quality Management

CHAPTER 1
INTRODUCTION

1 . 0 . BACKGROUND OF STUDY

The aerospace industry which includes aircraft parts and components manufacture are expected to expand and significantly contribute to the development of the broader aerospace industry in Malaysia. This is as a result of the capturing of a value-added high-technology driven opportunities, which is precisely envisaged by the Malaysian government for the industry (MAC-MIGHT, 2007, 2008**).**

The Aerospace Industry which is vital to the world business economy is the major long-term determinant of the Malaysia national economic growth (MIDA, 2006). The aerospace industry is in fact one of the unique sectors of commerce and technology in the modern world. It is amazing to observe that the aerospace industry is now a key player in the global transportation sector, and more significantly a substantial contributor to the global economy considering its non-existence some 100 years ago (MIGHT, 2008).

Aerospace is a mature industry which is highly technologically regulated and financially geared. Pricing, revenues, return on investment, management of costs and profit margins are increasingly challenged in a globally competitive market (MIGHT, 2008). The globalization market and international business aerospace industries, along with advances in information technology, have significantly increased the competition worldwide. Obviously, in a global business market, firms must always improve their

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