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This thesis is presented for the degree of Doctor of Philosophy of Murdoch University

2011
I declare that this thesis is my own account of my research and contains as its main content work which has not previously been submitted for a degree at any tertiary education institution.

Fawzi Al Sawalqa
Abstract

This thesis investigated the use of the performance measurement system (PMS) within Jordanian industrial companies. Jordan was selected as an exemplar of a Middle Eastern developing nation. The study investigated the extent of the use of thirty performance measures across six categories. The extent of use of the balanced scorecard (BSC) approach was also investigated. Contingency theory was utilised as the theoretical framework to investigate the effect of seven selected factors on the extent of measurement diversity usage. The study also examined the organisational performance impact of using a range of performance measurement dimensions. Finally, the perceived benefits and difficulties of using PMS were identified and analysed. A survey research methodology was used, which involved a quantitative and a partially qualitative approach. Factor analysis, descriptive statistics, correlation and regression analysis were used to analyse the survey data responses to the main questionnaire.

The results showed that Jordanian companies use a diverse set of both financial and non-financial measures. Results also indicated that Jordanian companies operate under significant institutional and government controls. Furthermore, the results indicated that some companies use diverse performance measurements to improve their PMS and not as a strategic decision option. Only a minority of companies (35.1%) reported using the BSC approach. Advanced manufacturing technology; differentiation strategy; intensity of market competition; perceived environmental uncertainty; and, workforce diversity were found to be factors affecting the extent of performance measurement diversity usage. The study findings indicated that using non-financial measures, measurement diversity and the BSC contributed significantly toward overall organisational performance.

The qualitative interview results identified a range of benefits from using a diversity approach. The results, however, indicated that using such measures effectively is not a straightforward task. There are obstacles that limited the effective use of PMS. Researchers and practitioners, especially in Middle Eastern countries, should consider and build on the findings of this research.
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<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AICPA</td>
<td>American Institute of Certified Public Accountants</td>
</tr>
<tr>
<td>APC</td>
<td>Arab Potash Company</td>
</tr>
<tr>
<td>ASE</td>
<td>Amman Stock Exchange</td>
</tr>
<tr>
<td>ASEZ</td>
<td>Aqaba Special Economic Zone</td>
</tr>
<tr>
<td>EAP</td>
<td>Economic Adjustment Program</td>
</tr>
<tr>
<td>EC</td>
<td>European Community</td>
</tr>
<tr>
<td>FDI</td>
<td>Foreign Direct Investment</td>
</tr>
<tr>
<td>FTA</td>
<td>Free Trade Agreement</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>HREC</td>
<td>Human Research Ethics Committee</td>
</tr>
<tr>
<td>IAS</td>
<td>International Accounting Standards</td>
</tr>
<tr>
<td>IAS</td>
<td>International Auditing Standards</td>
</tr>
<tr>
<td>IASB</td>
<td>International Accounting Standards Board</td>
</tr>
<tr>
<td>IFAC</td>
<td>International Federation of Accountants</td>
</tr>
<tr>
<td>IMA</td>
<td>Institute of Management Accountants</td>
</tr>
<tr>
<td>IMF</td>
<td>International Monetary Fund</td>
</tr>
<tr>
<td>IOSCO</td>
<td>International Organization of Securities Commissions</td>
</tr>
<tr>
<td>JACPA</td>
<td>Jordanian Association of Certified Public Accountants</td>
</tr>
<tr>
<td>JD</td>
<td>Jordanian Dinar</td>
</tr>
<tr>
<td>JIEC</td>
<td>Jordan Industrial Estates Corporation</td>
</tr>
<tr>
<td>JISM</td>
<td>Jordan Institution for Standards and Metrology</td>
</tr>
<tr>
<td>JIT</td>
<td>Just-In-Time</td>
</tr>
<tr>
<td>JPMC</td>
<td>Jordan Phosphate Mines Company</td>
</tr>
<tr>
<td>KAIIA</td>
<td>King Abdullah II Award</td>
</tr>
<tr>
<td>KMO</td>
<td>Kaiser-Meyer-Olkin</td>
</tr>
<tr>
<td>MCS</td>
<td>Management Control System</td>
</tr>
<tr>
<td>MIT</td>
<td>Ministry of Industry and Trade</td>
</tr>
<tr>
<td>MOICT</td>
<td>Ministry of Information and Communication Technologies</td>
</tr>
<tr>
<td>MOP</td>
<td>Ministry of Planning</td>
</tr>
<tr>
<td>PCA</td>
<td>Principle Component Analysis</td>
</tr>
<tr>
<td>PMS</td>
<td>Performance Measurement System/s</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>QIZs</td>
<td>Qualified Industrial Zones</td>
</tr>
<tr>
<td>SBSC</td>
<td>Sustainable Balanced Scorecard</td>
</tr>
<tr>
<td>SEC</td>
<td>Securities Exchange Commission</td>
</tr>
<tr>
<td>SEM</td>
<td>Structural Equation Modelling</td>
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<tr>
<td>SPM</td>
<td>Strategic Performance Measurement</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical Package for Social Sciences</td>
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<tr>
<td>VIF</td>
<td>Variance Inflation Factor</td>
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<tr>
<td>WIPO</td>
<td>World Intellectual Property Organization</td>
</tr>
<tr>
<td>WTO</td>
<td>World Trade Organisation</td>
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Key Definitions

The following is a list of the key terms that are used throughout the thesis:

**Advanced Manufacturing Technology (AMT)**

AMT is related to the processing characteristics of organisations and is one of the most notable innovations in manufacturing during the last few decades and include as examples Computer Aided Design (CAD), Computer Aided Manufacturing (CAM) and Flexible Manufacturing Systems (FMS) (Abdel-Kader & Luther, 2008).

**A mail questionnaire**

A mail questionnaire is a self-administered questionnaire sent to respondents through the mail. It is an effective tool to collect data from a geographically dispersed sample with a relatively low cost (Zikmund, 2003).

**A performance measure**

A performance measure is “…a metric used to quantify the efficiency and/or effectiveness of an action” (Neely, Gregory & Platts, 2005, p. 1229).

**A personal interview**

A personal interview is a form of direct communication between interviewer and respondent in which the interviewer asks the respondent questions in a face-to-face situation (Zikmund, 2003).

**A pilot study**

A pilot study is an important procedure in social science research used mainly to revise the questionnaire in order to ensure the validity and reliability of measures by identifying any potential problems in advance and to amend any question that is ambiguous (Zikmund, 2003).

**A semi-structured interview**

A semi-structured interview is the most widely used interviewing format for qualitative research. It is often the sole data source for a qualitative research project and is usually scheduled in advance at a designated time and location suitable for both interviewer and interviewee. It is generally organised around a set of predetermined open-ended questions and the researcher must prepare in advance the main interview questions.
Balanced Scorecard (BSC)

BSC is a measurement system introduced by Robert Kaplan and David Norton in 1992 and includes both financial measures that report the previous results of a firm and operational or non-financial measures that act as indicators for future performance. BSC helps organisations to translate their vision and strategy into action, and provides a comprehensible overview of organisational performance.

Contingency theory of management accounting

Contingency theory hypothesizes that organisational structure is a function of context, a context that is simultaneously determined by the contextual factors such as the external environment. This is because a company’s accounting system is an important component of organisational structure and the particular features of this system are affected by the circumstances that a company faces.

Differentiation Strategy

Differentiation strategy is one of Porter’s (1980, 1985) competitive strategies aims to facilitate product flexibility in terms of quality, design, new features and delivery which in turn support customer satisfaction and retention.

Intensity of Market Competition

Intensity of market competition is defined as an increasing of competition among companies in a market segment. The market competition has many dimensions including for example price, new product development, distribution channels, market share and number of competitors.

Low-cost Strategy

Low-cost strategy (also called cost leadership strategy) is one of Porter’s competitive strategies that focuses mainly on selling products at a lower price than competitors.

Management Accounting

Management accounting refers to the “… use of privileged accounting data- not available to external users- by organisational decision makers (usually senior and middle management) to inform internal decision-making, both operational and strategic” (Holloway, 2006, p. 20).
Mixed method approach of data collection

Mixed method approach of data collection means to complement the quantitative method of data collection with a greater or lesser element of using a qualitative approach to enhance the validity of research findings.

Non-financial performance measures

Non-financial performance measures are those measures that provide information in non-monetary terms such as defect rates (internal non-financial performance measure) and customer satisfaction (external non-financial performance measure).

Organisational Culture

Organisational culture is a pattern of shared values, beliefs, assumptions and variables that are embedded in organisations and distinguish one organisation from another.

Organisational Performance

Organisational performance refers to the outcomes of an organisation based on both financial and non-financial dimensions of performance.

Perceived Environmental Uncertainty (PEU)

PEU is defined as a lack of information or knowledge regarding response options available or an inability to predict the likely consequences of a response choice (Gerloff, Muir & Bodensteiner, 1991).

Performance Measurement

Performance measurement “…refers to the use of a multi-dimensional set of performance measures. The set of measures is multi-dimensional as it includes both financial and non-financial measures, it includes both internal and external measures of performance and it often includes both measures which quantify what has been achieved as well as measures which are used to help predict the future” (Bourne, Neely, Mills & Platts, 2003, p. 3).

Performance Measurement Diversity

Performance measurement diversity is a general approach for developing performance measurement. This approach “…calls for firms to measure and use a diverse set of financial and non-financial measures” (Ittner et al., 2003, p. 715).
Performance Measurement System (PMS)

PMS defined by Neely (1994) as “…the set of metrics used to quantify both the efficiency and effectiveness of actions” (cited in Neely et al., 2005, p. 1229).

Traditional Financial Performance Measures

Traditional financial performance measures are those measures that can be calculated such as return on investment and cost per unit produced. These measures are used mainly to evaluate the ability of the managers to create value for shareholders.

Workforce Diversity

Workforce diversity refers to the human differences that exert a powerful, sustained effect on people behaviour such as gender, age, ethnicity, race, sexual orientation and physical abilities (Kinicki & Williams, 2006).
Acknowledgment

The completion of this thesis would not have become a reality without the invaluable support of several individuals and organisations. First of all, I would like to thank my principal supervisor, Associate Professor Dr. David Holloway for his wisdom and mentoring as well as his willingness to counsel me, review my work, comment and advise and also for his patience, encouragement and very kind treatment. He provided me with extraordinary experiences throughout this work. I am very proud to have had Dr. David as my supervisor. I am indebted to him more than he knows and will remember him forever.

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