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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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<th>Full Form</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>
</tr>
<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>
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<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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<td>---------</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>
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<tr>
<td>SEM</td>
<td>Structural Equation Modelling</td>
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<tr>
<td>SPM</td>
<td>Strategic Performance Measurement</td>
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<tr>
<td>SPSS</td>
<td>Statistical Package for Social Sciences</td>
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<tr>
<td>VIF</td>
<td>Variance Inflation Factor</td>
</tr>
<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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Chapter 1
Introduction

1.1 Introduction and background

Performance measurement is a significant component of the management control process of any organisation (Olson & Slater, 2002). Since the late 1980s performance measurement has become topical with ever-increasing interest in the subject which has been driven by the rapidly changing business environment in different sectors (McAdam & Bailie, 2002). According to Ghalayini and Noble (1996) the literature concerning performance measurement has had two main stages.

The first stage began in the late 1880s and went through the 1980s. In this stage the emphasis was on financial performance measures such as profit and return on investment. The second stage started in the late 1980s as a result of changes in the world market. Organisations in less developed countries began to lose market share to overseas competitors who were able to provide higher-quality products with lower costs and more variety. To regain a competitive edge, organisations not only shifted their strategic priorities from low-cost production to quality, flexibility, short lead time and dependable delivery, but also implemented new technologies and philosophies of production management. The implementation of these changes revealed that traditional performance measures have many limitations. Therefore, organisations started to use non-financial performance measures such as customer satisfaction and product quality. In this context, Bourne, Mills, Wilcox, Neely and Platts (2000) indicated that in the late 1970s and 1980s, authors expressed a general dissatisfaction with traditional backward looking accounting based performance measurements. In the late 1980s and early 1990s, this dissatisfaction led to the development of balanced or multidimensional performance measurement frameworks. These new frameworks placed emphasis on
non-financial, external and future looking performance measures. However, performance measurement has a major role in organizational effectiveness and it is one of the most important processes in management accounting literature. Accurate performance measurement is critical for judging the success or failure of an organisation because it evaluates an organisation’s current status and may help predict its future health (Aydogan, 2011, Kim & Ardit, 2010). Previous studies (e.g. Carlucci, 2010; Ittner & Larcker 1998; Jusoh, Ibrahim & Zainuddin, 2008; Paranjape, Rossiter & Pantano, 2006) indicated that the performance measures must be carefully selected and identified. The selection of performance measures which are appropriate to a particular company ought to be made to suit the competitive business environment in which it operates. Consequently the choice of relevant performance measures, and the system, is one of the most critical challenges facing organisations in all business sectors (Burgess, Ong & Shaw, 2007; Kennerley & Neely, 2002). However, the current understanding of performance management practices and the consequences of different performance measurement and control system designs is limited (Stivers, Covin, Hall & Smalt, 1998; Stringer, 2007).

Furthermore, a major part of the accounting studies is devoted to financial accounting issues while a smaller part is devoted to management accounting issues. This phenomenon exists in many developing countries, such as Jordan (Hutaibat, 2005). In the absence of significant empirical evidence that provides a comprehensive investigation to management accounting in general and to performance measurement in particular in Jordan, this study investigates the key issues related to performance measurement among Jordanian industrial companies. Using a performance measurement diversity approach (i.e. financial and non-financial measures), the thesis analyses the extent of usage of a broad set of financial and non-financial measures in the
industrial sector in Jordan. The thesis also identifies the main purposes for using such measures and assesses the level of usage of the balanced scorecard (BSC) approach. The study utilises the contingency theory approach to investigate the effect of various factors relevant to the Jordanian business environment on the extent of performance measurement diversity usage. Furthermore, the study investigates the performance impact of using four performance measurement practices. Finally, the perceived benefits and difficulties of performance measurement process are identified.

Performance measurement is an important management control tool for business firms in the currently competitive environment. It is directly related to the formation of a firm’s core competency and has a significant impact on the firm’s growth (Xiong, Su & Lin, 2008). Thus, wrongly designed, inappropriate measures drive unintended behaviours that can have harmful performance consequences (Paranjape et al., 2006). Therefore, for businesses to survive in a competitive market place a new set of operational performance measures should be used (Burgess et al., 2007). These measures should provide managers, supervisors and operators with on-time information that is necessary for effective decision making. In addition, these measures should be flexible and both financial and non-financial (Ghalayini & Noble, 1996; Kaplan & Norton, 1992). A stream of previous management accounting research often criticises the idea of relying solely on financial performance measures and stresses the importance of using a combination of financial and non-financial measures. This is because such a combination is argued to be more effective for performance measurement (e.g. Abernethy & Lillis, 1995; Atkinson et al., 1997; Brignall, 2007; Chenhall & Langfiels-Smith, 2007; Chow & Van der Stede, 2006; Dunk, 2005; Fisher, 1995, 1998; Govindarajan, 1988; Hertenstein & Plat, 1998; Hoque, Mia & Alam, 2001; Hussain & Gunasekaran, 2002; Kaplan & Norton, 1992, 1993, 1996a, 1996b, 1996c; Lau &
Furthermore, supplementing traditional financial measures with a diverse mix of non-financial measures is believed to capture key strategic performance areas (Ittner, Larcker & Randall, 2003). However, previous studies in performance measurement were criticised on the bases that they considered only a small number of performance measures (Olson & Slater, 2002). According to Ittner et al. (2003), the proponents of strategic performance measurement (SPM) advocate two general approaches for developing performance measurement system (PMS). The simplest approach is performance measurement diversity which calls for companies to measure and use a diverse set of financial and non-financial performance measures (see, for example, Franco-Santos, 2007; Henri, 2006; Hoque et al., 2001; Ittner et al., 2003; Malina & Selto, 2004; Van der Stede et al., 2006). Thus, performance measurement diversity approach emphasises the multiplicity and variety of performance measures that can be grouped into financial and non-financial measures to develop a more comprehensive PMS (Hall, 2008, Henri, 2006). This thesis utilises this approach by investigating the extent of usage of thirty financial and non-financial measures among Jordanian companies.

The other approach for developing PMS is the use of measurement techniques such as the BSC approach (Ittner et al., 2003). The BSC is a measurement system which helps organisations translate their vision and strategy into action, and provides a comprehensible overview of organisational performance. Thus, the use of a BSC means putting a handful of strategically critical measures together in a single report, in a way that makes cause-and-effect relationships transparent and keeps managers from focusing too much on improving one measure at the expense of others (Hoque & James, 2000). A properly developed BSC should represent both financial and non-financial measures...
from all levels of the organisation, maintain an equilibrium between: firstly, external measures and internal measures, secondly, past performance measures and future performance measures, and finally, objective measures and subjective measures of performance and include only measures that are elements in a chain of cause-and-effect relationships that communicate the meaning of the company’s strategy (Sedera, Gable & Rosemann, 2001). Thus, BSC users put more emphasis on non-financial measures than non-users. Furthermore, BSC users put more emphasis on the idea of linking performance measures to business strategy and associated cause-and-effect relationships. Thus, although the BSC is a multi-perspective sets of both financial and non-financial measures (Bisbe & Otley, 2004), using financial and non-financial measures does not necessarily imply that the companies are BSC users (e.g. Hawamdah, 2006; Hyvönen, 2005; Iselin, Mia & Sands, 2008; Ismail 2007; Ittner et al., 2003; Zuriekat, 2005). Instead, using financial and non-financial measures provides the basic data needed to build the BSC model (Hawamdah, 2006). Thus, it is appropriate in this study to analyse the diffusion of BSC approach within a Jordanian environment.

One focus of the contingency theory is to examine the effect of different contingent factors on the extent of performance measures usage. Previous studies (e.g. Euske, Lebas & McNair, 1993; Gosselin, 2005; Haldma & Lääts; 2002; Otley, 1980) argued that performance measures and the accounting system in general appear to be a contextually defined phenomenon and should adapt with internal and external factors in order to help managers achieve business goals. In this context, Kaplan and Norton (1992, 1993, 2000) suggested the need to focus on both financial and non-financial performance measures and this may well be contingent upon organizational circumstances. Furthermore, contingency theory suggests that the appropriateness, effectiveness and use of a PMS are affected by the circumstances or contexts in which
an organisation operates (Chenhall, 2003; Chenhall & Morris, 1986; Fisher, 1998; Haldma & Lääts, 2002; Henri, 2004; Maltz, Shenhar & Reilly, 2003; Otley, 1980, 1999; Paranjape et al., 2006). Unfortunately, the major criticism is that many of the empirical studies on contingency theory have examined only one or two contingent variables and one control system attribute (Chapman, 1997; Fisher, 1995; Van de Ven & Drazin, 1985). Thus, this thesis utilises the contingency theory approach for investigating the effect of various factors on the extent of performance measurement diversity usage.

The relationship between performance measurement practices and organisational performance is ambiguous. Previous studies (e.g. Dunk, 2005; Hemmer, 1996; Henri, 2004; Ittner & Larcker, 1998, 2001) indicated that little evidence is available regarding the effect of multiple measures of performance on organisational performance. Thus, further research on the performance effect of the different dimensions of performance measurement can make a significant contribution to the managerial accounting literature (Ittner & Larcker, 2001, p. 376). Therefore, this thesis examines inter alia the performance impact of using different performance measurement practices.

Finally, it should be noted that there has been little research into the success and failure of using different performance measurement techniques (Bourne, Neely, Platts & Mills, 2002). Furthermore, most of the previous research has focused mainly on the reasons for using performance measures and overlooked the perceived benefits associated with using such measures (see, for example, Ittner et al., 2003). In this context, Franco-Santos (2007) argued that the importance of the relative benefits that firms obtain through using financial and non-financial performance measures is vital. The problems and difficulties that companies face in their current PMS were also given little attention in previous research. In this context, earlier studies (Holloway, 2001; Kennerley &
Neely, 2002) argued that much of the previous research has been focused on analysing various models of performance measurement, but this stream of research overlooked the problems and difficulties associated with the application of these models. This thesis is one of the first to consider and analyse both of these issues.

In general, previous performance measurement studies have faced a number of criticisms. First, most of the prior research focused on financial control systems and ignored non-financial control systems. Second, many of the empirical studies on contingency theory have examined the effect of a limited number of contingent variables on performance measures usage. Third, the relationship between performance measurement practices and organisational performance is ambiguous. Fourth, most of the previous studies did not consider the non-financial dimension of organisational performance and focused primarily on the financial dimension (Dunk, 2005; Fisher, 1995; Matsuno & Mentzer, 2000). Fifth, the benefits and difficulties associated with the usage of performance measurement techniques were ignored in the previous performance measurement literature. Finally, most of the performance measurement research has not been extended to developing countries and has generally been conducted in a Western context.

1.2 The purpose of the study

The current study is an attempt to fill these gaps in the previous performance measurement literature, especially with respect to the Middle East developing countries; in this case the country of Jordan. The thesis attempts to overcome the above mentioned criticisms and extends the previous research in several ways. First, this study extends the previous research by investigating the extent of use of a broad set of financial and non-financial measures (i.e. performance measurement diversity approach) among
Jordanian industrial companies. Second, the thesis extends the previous contingency-based research which used one or two contingent variables by using seven contingent variables and assessing their effect on the extent of performance measurement diversity usage. Third, the thesis examines the impact of usage of four performance measurement practices (i.e. financial measures, non-financial measures, measurement diversity and the BSC approach) on organisational performance. Fourth, this study focuses on both the financial and non-financial dimensions of organisational performance. Fifth, two important issues related to performance measurement practices are analysed. These are the perceived benefits associated with using such measures and the potential difficulties that Jordanian companies may face in using their PMS. Finally, the thesis utilises a mixed methodology research approach utilising a primarily quantitative research method supplemented by a qualitative approach.

This thesis has six main research objectives:

1. To determine the extent of financial and non-financial performance measures usage among Jordanian industrial companies and to determine the main purposes for using these measures.

2. To investigate the extent of the diffusion of the BSC approach among Jordanian industrial companies.

3. To examine the effect of seven contextual factors (advanced manufacturing technology, business strategy, intensity of market competition, perceived environmental uncertainty, organisational culture, workforce diversity and organisation size) on the extent of performance measurement diversity usage in Jordanian industrial companies.

4. To investigate the impact of the use of performance measurement practices (i.e. financial measures, overall non-financial measures, measurement diversity approach}
and the BSC approach) on the organisational performance of Jordanian industrial companies.

5. To determine if there are any perceived benefits for using a diverse set of performance measures among Jordanian industrial companies.

6. To identify any major difficulties that Jordanian companies may have with their current performance measurement systems and propose possible solutions.

1.3 Research methodology

The choice of research approach and data collection methods depends on the facilities available, the time span, researcher skills and other costs and resources associated with gathering data (Frechtling & Sharp, 1997; Sekaran, 2003). The most common methods to collect data are questionnaires and interviews (Easterby-Smith, Thorpe & Lowe, 2002). The purpose of a study and its associated research questions affect important survey design decisions, such as the choice of a cross-sectional or longitudinal design, the choice of data collection method and the determination of the level of analysis (Van der Stede, Young & Chen, 2005). Notably, the decision as to whether one should use a quantitative or qualitative research strategy is not clear-cut; it is largely determined by the goals and questions of the research (De Beuckelaer & Wagner, 2007). This thesis utilizes a survey research which involves both quantitative and partially qualitative approaches\footnote{See Chapter 6 for more details.} to collect and analyse data from a sample of industrial companies in Jordan.

A questionnaire was developed to collect data to empirically test the hypotheses of this thesis and to describe the extent of performance measures usage and BSC approach diffusion. In particular, the quantitative approach was used to collect relevant data to achieve the first four research objectives. The development of the main questionnaire is
based on three sources. These include: previous literature in the field, consultations with different experts and practitioners and the results of a two-stage pilot study conducted with 15 financial managers and academics.

Some phenomena cannot be explained quantitatively at this stage in Jordan. Therefore, researchers are interested in using other approaches to capture a better understanding for such ambiguous phenomena. The qualitative method gives the researcher the opportunity to explain the issues rather than just measuring their attributes (Murry, 2003). Thus, the qualitative approach based on personal semi-structured interviews was used in this research primarily to achieve the last two research objectives which related to the benefits and difficulties of performance measurement. The qualitative approach was also used to collect more data in respect to the other objectives of the study in order to add new information to this thesis and to minimize the disadvantages of a single research approach (see Chapter 9 for more details).

This thesis includes a sample of Jordanian industrial companies in Jordan. Industry in Jordan is divided into two main types: the first is the manufacturing sector which includes, for example, textiles, leather and clothing manufacturing, chemical industry, plastic industry, IT industry, furniture industry, food and beverages industries, printing and packaging industries, engineering products, pharmaceutical and medical industries, paper and cardboard industries, tobacco and cigarettes industries, electrical industries, and glass and ceramic industries. The second key sector is the mining sector which includes for example phosphate, potash, cement, kaolin, gypsum, feldspar, silica, marble, granite, sandstones and chalk. This study focuses on medium and large industrial companies\(^2\). The sample frame for this study includes those industrial companies.

\(^2\) The rationale for targeting the industrial sector is discussed in Chapter 6, sub-section 6.4.1.3.
companies with 50 employees or more. The main questionnaire was sent to 339 companies and a total of 179 questionnaires were returned including 168 usable questionnaires. In addition, five financial managers from five industrial companies agreed to answer questions in a semi-structured interview which lasted from 40 minutes to 90 minutes. These semi-structured interviews were tape recorded.

1.4 Thesis motivation

In addition to the aforementioned reasons for conducting this research (see Section 1.1), it is appropriate at this point to provide other reasons for conducting this research in the Jordanian environment.

Jordan has a stable political and democratic environment with a positive investment climate. “In the last few years, Jordan demonstrated its capability to reform its economy in a manner that provides the basic steps for thriving into the third millennium” (Rawabdeh, 2008, p. 5). From the early 1990s, the Jordanian government has endeavoured to rebuild its economy by signing trade agreements with developed and developing countries. Jordan has been seeking to reformulate economic and legal frameworks to attract foreign investment (Shanikat, 2008). Jordan recognises that continued economic restructuring and growth relies significantly on a more proactive role for the private sector and a redefinition of the role of the government in the economy. Therefore, Jordan started a privatisation program in 1996 aimed at enhancing enterprise efficiency through the sale of state owned enterprises to technically advanced strategic investors (Awamleh, 2002). In this context, Hutaibat (2005) argued that the Jordanian business environment was different from its immediate past in that it became more competitive. Jordan experienced enhanced development in many fields such as the
education system, health services, public services, industry and tourism (see Chapter 2 for more details).

As a result, the role of management accounting in Jordanian companies has become increasingly important and critical in providing management with appropriate information for decision-making. Knowledge about how Jordanian companies design and use accounting systems is limited. This is because previous accounting research “…has focused on developed countries particularly Europe and northern America, while Jordan (and the Middle Eastern region) has been neglected despite recent changes in its economic and accounting regulatory environments” (Al-Akra, Ali & Marashdeh, 2009, p. 164). In particular, the overall situation of how management accounting provides appropriate information is not clear. Therefore, Jordan and other developing countries are in need of further studies to examine accounting systems such as PMS. This is because very little is known about the actual practices of performance measurement in Jordan.

Previous research conducted in Jordan (Hawamdah, 2006; Hutaibat, 2005; Zuriekat, 2007) indicated that Jordanian companies do use multiple performance measures (i.e. financial and non-financial). These studies, however, did not identify the relevant performance measurement instruments or measures in the context of Jordan. This thesis extends previous research by building an appropriate performance measurement instrument relevant to the Jordanian business environment. Previous studies also called for further research to investigate performance measurement practices and other management accounting techniques and practices in Jordan and to assess the impact of several contextual factors on their usage (see also Al-Khodash & Feridun, 2006). As a result, this study incorporates a diverse set of financial and non-financial measures to
assess the extent of their usage and to determine the actual measures that are currently used by Jordanian industrial companies. Similarly, this research seeks to contribute to the development of knowledge in the field of PMS in Jordan as a developing country and to set out the basis for establishing key performance measures (Ahmad & Dhafr, 2002) in Jordanian industrial companies and to encourage further research in the area.

Contingency theory suggests that the use of PMS is affected by the circumstances in which an organisation operates. This indicates the importance of contingent factors in explaining the motivation for designing and using performance measures. Little empirical research has been undertaken to investigate the effect of contingent factors on management accounting practices, especially in developing countries (Hutaibat, 2005). Consequently, this study incorporates seven contingent factors relevant to the Jordanian business environment in order to investigate their impact on the extent of performance measurement diversity usage (see Chapter 2, section 2.3 and Chapter 4, section 4.3).

In addition, there is a lack of significant empirical evidence about how different performance measures are associated with organisational performance. This thesis responds to the calls of previous researchers (e.g. Banker, Potter & Srinivasan, 2000; Dunk, 2005; Hemmer, 1996; Henri, 2004; Iselin et al., 2008; Ittner & Larcker, 1998; Ittner & Larcker, 2001; Jusoh et al., 2008; Shields & White, 2004; Widener, 2006) by investigating this relationship (see Chapter 3, section 3.8).

Finally, the associated difficulties and perceived benefits of performance measurement are important issues overlooked by previous research. This thesis posits that it is necessary to identify the main purposes, benefits and difficulties of using performance measures in Jordan. Thus, consistent with the limited research (Ismail 2007; Kald &
Nilsson, 2000; Malmi, 2001) that has partially investigated these issues, this study uses a qualitative approach to investigate the perceived benefits for using performance measures and to identify the main difficulties that Jordanian companies encounter in their current PMS and to derive suggested solutions for these difficulties.

1.5 Research contribution

The current study is an attempt to remedy the shortage and fill the gap in the performance measurement literature, especially in developing countries, such as Jordan. The thesis aims to make a valuable addition to management accounting research in general and performance measurement in particular as it relates to a developing country such as Jordan. The findings of this thesis shed light on the development of PMS in Jordan which is a developing country currently undergoing rapid changes in the business environment.

The contributions of this thesis include:\(^3\): firstly, an extension of previous research concerning the usage and practices of performance measures (reviewed in Chapter 3) by investigating the extent of the use of thirty financial and non-financial measures. The thesis opens up ways to improve and develop overall PMS, and sets out the basis for establishing key performance measures in Jordanian organisations (see Chapter 7). The research constructs a practical checklist of financial and non-financial performance measures that can be used as a cornerstone for any future research in the field. The thesis also provides the primary purposes for using such measures.

Secondly, The BSC is a potentially powerful management tool (reviewed in Chapter 3) that may help organisations to improve their competitive position and reach

\(^3\) See Chapter 10 for more details.
organisational objectives. This thesis responds to the call by Speckbacher, Bischot and Pfeiffer (2003) by utilising an effective methodology (see Chapter 6, sub-section 6.5.1.4) to discuss the state of BSC approach implementation among Jordanian industrial companies. The thesis provides researchers and managers with insight into the diffusion, implementation stages and content of BSC (see Chapter 7) and identifies avenues for further research in Jordan and other developing countries on the state of the BSC approach.

Thirdly, this thesis contributes to and extends the extant contingency theory literature (reviewed in Chapter 4) by investigating the impact of several contingent factors including advanced manufacturing technology, business strategy, intensity of market competition, perceived environmental uncertainty, organisational culture, workforce diversity and organisation size on the extent of performance measurement diversity usage (financial and non-financial measures). The thesis also supports the assumption of contingency theory which indicates that the use of PMS is affected by the overall circumstances of an organisation. This also provides managers with a better understanding of the factors that affect the design and use of a PMS.

Fourthly, this study contributes to the research in the field by empirically investigating the organisational performance impact of the usage of financial measures, non-financial measures, measurement diversity approach and the BSC approach. The thesis posits that senior managers need to put more emphasis on the use of multiple measures of performance since they are fundamental to the success of their companies. This study also incorporates both financial and non-financial dimensions in measuring organisational performance. This is because previous research defines organisational performance poorly since these studies have measured organisational performance
based on the financial dimension only (Fisher, 1995). This encourages Jordanian companies to pay more attention to both financial and non-financial performance of their companies.

Fifthly, only few studies have investigated the benefits and difficulties associated with the performance measurement process. This study is one of the first to qualitatively investigate these two issues. This will enable academics as well as managers to understand better the role of PMS in Jordanian and other similar developing countries (see Chapter 9).

1.6 Organisation of the thesis

The rest of this thesis is composed of the following chapters:

Chapter two sheds lights upon the environment being investigated. It begins by presenting background information on Jordan’s location and demographics. The chapter also presents the main features of social and business culture of Jordan and how they affect the business environment. Jordan’s economy is analysed with a special focus on the industrial sector because it is the focus of present study. The chapter discusses significant changes in the Jordanian business environment as a result of privatisation, economic programs and international trade agreements. The chapter concludes with a discussion about the state of accounting practices in Jordan.

Chapter three reviews the relevant literature on performance management and measurement highlighting the need for organisations to utilise both financial and non-financial performance measures. The chapter starts with a brief overview of the definition, design, features and importance of a PMS. It then analyses the limitations of traditional financial measures and in what way the use of additional non-financial
measures can overcome these limitations. The chapter reviews previous related empirical studies that focus on non-financial measures practices. The chapter also reviews the literature on the BSC as a useful framework from which to develop such measures. This is followed by a brief overview of the performance measurement diversity approach as suggested by previous studies. The final part of the chapter reviews the previous research that empirically examines the organisational impact of using the different performance measurement practices.

Chapter four provides an overview of the contingency theory approach. It provides a deeper understanding of the arguments, aspects and criticisms of previous contingency-based research. The chapter starts by reviewing the emergence of contingency theory with its initial and contemporary focus on organisation structure, contingent factors, management control system (MCS) and organisational performance. The chapter focuses also on the gaps in contingency theory-based research to identify the contingent factors relevant to this study. This is followed by a discussion of the contingent factors adopted in this study and their effect on the extent of performance measures usage. Finally, the chapter analyses the different criticisms of contingency theory based-research and how the current thesis endeavours to resolve these criticisms.

Chapter five develops the research theoretical model and formulates the hypotheses of this research. These are based on the key arguments, findings and recommendations from the literature of PMS and contingency theory that is discussed and analysed in chapters three and four respectively. The chapter starts by identifying the research objectives and their related research questions. Given the research objectives, two models are developed in this chapter. The first research theoretical model is formulated on the basis of the third research objective. The second research theoretical model is
formulated on the basis of the fourth research objective. Finally, the chapter develops two set of hypotheses. The first set of hypotheses includes eight hypotheses related to the third research objective. The second set of hypotheses includes four hypotheses related to the fourth research objective.

Chapter six presents a detailed description of the research approaches, design and methodology used in this study. The chapter starts with a brief overview of the approach and the main paradigm of the study and explains the different types of business research and where this thesis is placed among them. The chapter also discusses the quantitative approach by outlining the different stages of questionnaire development. It presents the pre-test and pilot study procedures, final survey sampling frame, final survey procedure used to collect the data and the subsequent response rate. It then discusses the qualitative approach by focusing on the semi-structured personal interviews, the design and associated procedures to perform the interviews. Furthermore, the chapter describes how the different variables of this research are chosen and operationalized based on the criticisms and gaps in previous performance measurement and contingency theory-based research. Finally, the chapter explains the statistical techniques used to analyse the data to accomplish the research objectives and presents the procedures that were used to measure the validity and reliability of the instrument.

Chapter seven reports on the findings of the data collection process used to test the research hypotheses presented in chapter five. It discusses the profile of respondents, provides the results of validity and reliability statistics of data and discusses the results of the descriptive statistics of this research which is used primarily to achieve the first two objectives of the research.
Chapter eight analyses and discusses in depth the results of the analysis conducted in order to test the hypotheses formulated in chapter five to achieve the third and fourth objectives of the research. The chapter starts with a discussion of the underlying assumptions of regression tests and how this research meets them. The chapter presents and discusses the results of testing the hypotheses relating to contingent variables and the extent of performance measurement diversity usage. Finally, the chapter presents and discusses the results of testing the hypotheses relating to the performance consequences of using the different performance measurement practices.

Chapter nine presents the results from conducting face-to-face interviews with respondents from Jordanian industrial companies focused on the last two research objectives of the study. Furthermore, the chapter provides additional details and information about current performance measures practices among Jordanian industrial companies, purposes for their usage and identifies all the potential factors that may influence the level of their usage. The chapter also focuses on the performance of Jordanian companies in terms of trends and the possible factors that might affect it with a major focus on the performance impact of using performance measures diversity. Finally, the main two issues of the chapter- benefits and difficulties- are discussed in depth.

Chapter ten is the final chapter. It presents a summary of the findings that have emerged from this research. The chapter also reports the major contributions of this research for both academics and managers. Also, the limitations of this research are outlined followed by suggestions relating to potential future research areas.
Chapter 2
Jordan Overview

2.1 Introduction

The fundamental purpose of this chapter is to provide background information on the environment being investigated. This background is very important since it provides the reader with valuable information about the study context. The chapter presents the main changes that the Jordanian business environment has witnessed recently due to national and international influences.

The chapter begins by presenting background information on Jordan’s location, demographics, politics and technology. The chapter also presents the main features of social and business culture of Jordan and how they affect the business environment. Furthermore, it explores Jordan’s economy with a special focus on the industrial sector because it is the main focus of this thesis. Finally, it discusses the state of accounting in Jordan.

2.2 The Hashemite Kingdom of Jordan

Jordan is an Arabic country located in the heart of the Middle East and the Arab world. Jordan is situated between latitudes 29 and 33 north and longitudes 34 and 39 east. Jordan's location amongst the Middle East countries is strategic. To the east is the Iraqi border which is 181 km, in length, to the west is Israel and the Palestinian National Authority border (238 km), to the east and south is the Saudi Arabian border (744 km), to the north is the Syrian border (375 km). The port of Aqaba in the south gives Jordan an outlet to the Red Sea. Jordan is a small country. The estimated population of Jordan was about 6,000,000 people in February 2010. The total area of Jordan is approximately 89,000 km$^2$. 
Administratively, the country is divided into 12 governorates, which are then grouped into three regions. The Northern region (Irbid, Jarash, Ajloun and Mafraq), the Central region (Amman, Zarqa, Balqa and Madaba), and the Southern region (Karak, Tafila, Ma’an and Aqaba). The major cities are Amman (the capital), Zarqa, and Irbid (Department of Statistics, 2010). The Jordanian population range is the youngest in the Middle East Region with 50% of the population aged between 16 and 25 and only seven other countries in the world have a younger population than Jordan. This signals significant growth opportunities because of the availability of a younger talented population. In addition, there is an impressive potential for growth in the market size of the economy in the future (Navarra, 2006). Arabic is the official language in Jordan. Jordan is a constitutional monarchy. King Abdullah II is the highest constitutional and legal authority in Jordan.

The Government is made up of the Prime Minister and the Council of Ministers. The members of the Council of Ministers are selected by the Prime Minister, and the nominations are delivered to the King for his ratification of the entire Council of Ministers. The members of parliament are elected by a system of universal suffrage every four years.

English is considered to be the second language and is widely spoken and understood, especially in institutions of higher learning and the corporate sector. Jordan and nearby countries represent what is internationally known as the rich historic region of the Fertile Crescent. Although Jordan has limited economic capacities, it has significant political, cultural and economic influence over the region due to its strategic location. Jordan has long been a crossroads where the Middle East meets the rest of the world.
Significantly, Jordan’s central location has given it a strategic and economic importance as a vital trading and communications centre.

The support that the United States and Arab Gulf countries have offered to the King shows that there are strong national and international interests in maintaining Jordan’s stability, since Jordan has been given a key role by the West in helping to stabilise the Arab world. Commencing in 1999, Jordan has signed numerous agreements aiming to liberalise the national economy and integrating it with the global market, by encouraging the private sector, decreasing public expenditures, accelerating privatisation, encouraging investments related to exports, reducing poverty and unemployment. These achievements, however, are related primarily to the efforts of King Abdullah II who retains the principle power over the promotion of new economic activities and projects, which make the country the most progressive example in the region for its commitment to modernisation and good government (Navarra, 2006).

2.3 Social and business culture of Jordan

The Hashemite Kingdom of Jordan is a Muslim country. Many Jordanians come from different origins, religions and ethnic backgrounds. Jordan is home to several cultural minorities. Jordan's social system is a mixture of new, old, traditional and non-traditional cultural beliefs and values (Langhans, 2009).

The family is the most important social unit in Jordanian society. The extended patriarchal family unit is at the centre of social and political activity and cultivates a close relationship amongst the members of the family. The patriarch is often called “sheikh” and his influence is based on familial ancestry, size and economic wealth of the family. Traditional clan groupings play a critical role in the construction of
Jordanian social life and day-to-day reality. Helping and supporting another family member is regarded as a source of pride and honour. Jordanians are also known for their generous hospitality. The social acts of visiting and entertaining play a significant role in Jordanian life. Invitations to social activities at Jordanians’ homes are common and are readily accepted. Coffee or tea is traditionally offered even during a short visit (Langhans, 2009). The existence of traditional clan values is also common in the workplace. This is because the business environment is a wider and more nuanced manifestation of these social values (Hutaibat, 2005). In this context, Smith (1987) argued that individual status is more important than ability and kinship ties in the decision-making process in Jordanian companies (cited in Hutaibat, 2005, p. 29).

For those wishing to do business in Jordan, an understanding of Jordanian etiquette and the personal manner in which business is conducted is very important to success (Betts, 2006; Langhans, 2009). The concept of time in Jordanian business culture is considerably different to that of many Western cultures. Jordanians put more focus on people and relationships than on schedules. Therefore, patience is valued and extra time in your schedule can help business relationships in Jordan. It is customary to make appointments for times of the day rather than precise hours as the relaxed and hospitable nature of Jordanians business culture may cause delays in daily schedules. Developing a social relationship with your Jordanian counterparts is paramount for developing successful business ties and opportunities in Jordan. Conversational topics such as family or other social areas that are not work related are appropriate to discuss while initiating business meetings. Additional time should be allocated for such business meetings, as they are an essential part of Jordanian business culture (Langhans, 2009).
A sound knowledge of Jordan and of its cultural particularities is essential for a successful experience living or working in the country (Langhans, 2009). As a developing country, Jordan’s economy is small, with insufficient supplies of water and oil, which helps to explain the government’s heavy reliance on foreign aid (Central Intelligence Agency, 2011). The Hashemite Kingdom of Jordan is a relatively young nation but with ancient roots. Recent economic reforms, liberalisations and privatisations by the government have helped to stabilise Jordan’s economy, strengthen its global position and increase its attractiveness for foreign investment through the membership in the World Trade Organization (WTO) and the negotiation and finalisation of trade agreements with a number of other countries. These actions are consistent with the Waweru et al. (2004) argument that globalisation has exposed companies in developing countries to strong competition. According to Waweru et al. (2004), most of them now have to cope with a declining market share, while several others have been forced out of the market.

Thus, since the inauguration of King Abdullah II in 1999, his economic modernisations and reforms have increased foreign investment through the offering of multiple investment opportunities in a strategic area with many added trade incentives and exemptions. King Abdullah II’s extensive transformation programme has made significant progression into the problems of poverty and unemployment and successfully raised the living standards of Jordanians (Langhans, 2009). Jordan has put in place a national strategy to play an active role in the global knowledge economy and society. In 1999 Abdullah II launched the REACH initiative (Regulatory Framework; Estate; Advancement programs; Capital; Human Resources Development), an all encompassing program aimed at the creation of a knowledge based and internationally competitive economy (Navarra, 2006).
E-Government initiatives are ranked high on Jordan’s economic agenda. A number of international IT companies have been involved in an e-government program such as Intel I-Lab and Sun Microsystems. Similarly, various ministries and universities are involved in and have supported the program including the Ministry of Planning (MOP), the Ministry of Industry and Trade (MIT), the Ministry of Information and Communication Technologies (MOICT), the University of Jordan and Princess Sumaya University of Technology (Navarra, 2006). The e-Government project in Jordan aims to achieve greater efficiency in all aspects of government performance by raising the level and quality of service delivery to clients and investors in all segments of economy (Mohammad, Almarabeh & Abu Ali, 2009). These initiatives have increased the level of local competition in the Jordanian market (Hutaibat, 2005) and facilitated the way for liberalising and enhancing the investment environment in the country, especially in the area of local technological capacity. Jordan has the aspiration of becoming the leading Middle Eastern economy in the area of information and communication technologies (Navarra, 2006).

In addition, the emerging modern cultural values place more emphasis on enhancing education and social freedom. For example, the acceptance of female employees in organisations is one of the most important changes in the composition of the Jordanian workforce (Halpern, 2004). Furthermore, many foreign employees are now working in Jordan as a result of the free trade agreements with their countries, which has also affected the composition of the Jordanian workforce.

As a British colony for the first half of the 20th century, Jordan’s business culture has been, and continues to be, heavily influenced by the West. With this in mind, Smith (1987) pointed out that some changes have influenced Jordanian business culture,
especially the influence of the western management style, via the education of Jordanian students in the USA and Europe, international trade agreements, special training courses for managers and use of new technology and communication tools, especially in the computing field (cited in Hutaibat, 2005, p. 29). Most Jordanian companies have adopted Western systems and practices in their workplaces.

Moreover, the limitation of Jordanian natural resources has encouraged Jordan to place more emphasis on developing and expanding the industrial sector—the focus of this thesis—and to take many steps toward improving local industrial production to compete in the international markets. Thus, Jordanian companies have started to put more emphasis on investing in high-technology industry (Awamleh, 2002). Using technology in Jordan is easier because the country is relatively liberal (Tubaishat, Bhatti & El-Qawasmeh, 2006) and has developed sound trade relationships across various international markets (Navarra, 2006).

In summary, Jordan has high calibre human resources, low labour costs, attractive investment incentives environment, an efficient regulatory framework and business-friendly structures with a strong focus on supporting entrepreneurial initiatives (Jordan Chamber of Industry, 2006). The social culture of Jordan has significantly influences Jordanian business culture as would be expected. Jordanians are known for their generous hospitality and flexibility, as well as having a positive attitude to life and actively cooperating, sharing and communicating with others. These cultural beliefs and values are reflected in the work environment in Jordan, which has also been influenced by Western business culture. Jordan has signed several trade agreements with many other nations, especially Western ones, and attracted significant levels of foreign investment. Therefore, the Jordanian market is now substantially different from those of
neighbouring developing Middle Eastern countries in that it has a high level of competition with significant workforce diversity and greater use of advanced manufacturing technology. Jordanian companies have placed more emphasis on the implementation of a product differentiation strategy to meet local and international standards. Thus, it can be argued that these factors—organisational culture, market competition, advanced manufacturing technology, business environment, workforce diversity and business strategy—have had a substantial influence on the usage and evolution of accounting systems (financial and management accounting) used among Jordanian companies. This argument is consistent with the findings of previous researchers (Euske, Lebas & McNair, 1993; Gosselin, 2005; Haldma & Lääts; 2002; Otley, 1980) who argued that the accounting systems in general appear to be a contextually defined phenomenon and should adapt with internal and external factors in order to help managers achieve business goals. Thus, it is reasonable to incorporate these factors into this study by examining their impact on the extent of performance measurement diversity approach usage (see Chapter 4 for more details).

2.4 Jordan’s economy

Jordanian economists, strategists and politicians have recently begun to strengthen the economic and political infrastructure in order to enable Jordan to further develop its own natural and human resources. From the early 1990s, the Jordanian government has endeavoured to rebuild its economy by signing trade agreements with developed and developing countries. Moreover, Jordan has been seeking to reformulate economic and legal frameworks to get the attention of foreign investors (Shanikat, 2008).

Jordan realizes that continued economic restructuring and growth relies significantly on a more proactive role by the private sector and a redefinition of the role of the
government in the economy. Therefore, from 1996 Jordan had begun a privatisation program aiming at developing enterprise efficiency through the sale of state shares to technically advanced strategic investors (Awamleh, 2002; Zeitun & Tian, 2007).

According to the annual report of Central Bank of Jordan (2010), the Jordanian economy has displayed divergent trends in 2009 under the repercussions of the global financial and economic crisis. Preliminary estimates by the Department of Statistics show that the pace of real growth in the Kingdom decelerated substantially in 2009 at 2.8 percent; down from 7.8 percent in the preceding year. This notable slowdown came after a period of rapid growth averaging more than 8.0 percent per annum during the period (2004-2008) driven by export expansion, inflows of foreign investments, as well as the efforts of economic reform. Furthermore, the pace of economic growth in the Kingdom as well as the donor community influenced the performance of the general budget in 2009. The fiscal deficit (including grants) widened significantly to be 8.9 percent of Gross Domestic Product (GDP). In addition, the outstanding balance of net public debt, domestic and external, as a percent of GDP was up by 2.6 percentage points; totalling JD 9,660.0 million\(^4\), or 59.4 percent of GDP in 2009. By contrast, indicators of the banking and external sectors were more immune to external economic shocks. This was demonstrated by the general soundness and strength of the banking system, as well as the significant decline in the current account deficit, driven by the drop in imports. In effect, Central Bank's foreign currency reserves were up by 40.5 percent at the end of 2009 to hit a record high, amounting to around US$ 11.0 billion.

According to the report, the performance of the national economy in 2009 was not invulnerable to the repercussions of the global financial and economic crisis. However,

\(^4\) \(\text{AUS1= JD 0.50 as on 1/01/2009.}\)
it was affected to a much lower degree compared to developed countries. Furthermore, the recorded growth rate was still higher than the population growth rate of 2.2 percent for the same year. Moreover, this rate outstripped the growth rate of the global economy in 2009. Most of the external trade indicators displayed a positive performance in 2009 compared to the preceding years; the balance of payments’ indicators showed that the current account deficit has narrowed down significantly due to the decline in the value of merchandize imports coupled with the rise in the surplus of services account.

Furthermore, the report indicates that the volume of foreign trade (domestic exports plus imports) decreased by 17.7 percent in 2009 against an increase amounting to 27.8 percent in the previous year. The drop in the volume of external trade was attributable to the fall in exports by 19.4 percent compared to a growth amounting to 39.2 percent in 2008 combined with the decline in the merchandize imports by 17.1 percent against a growth amounting to 24.1 percent in 2008. In addition, the current account deficit was reduced from JD 1,546.0 million (10.3 percent of GDP) in 2008 to JD 899.8 million (5.5 percent of GDP) in 2009.

However, the American Chamber of Commerce in Jordan (2008) reported that the private sector in Jordan needed the appropriate channels to commercialize knowledge from research institutions and universities. Moreover, a few if any advantageous productive links are known to exist between research institutions and universities and private enterprise. Universities face technical and financial constraints, an environment not conducive for research and innovation, which keeps them pursuing basic rather than applied research projects.
Jordan has a stable political and democratic environment with an attractive investment environment. Local investment grew by 100% between 2005 and 2006. However, this rise was eclipsed by the growth in foreign investment which rose by 205% in the same period. Most of these investments went into industrial projects (520 projects) followed by agriculture (31 projects) and hotels (20 projects). These three sectors took up all foreign investments in 2006 (Jordan Investment Board, 2007). For example, Jordan is one of the few countries in the Middle East region to witness annual growth in the tourism industry (Aldehayyat, 2011).

To restructure economic activities in the country, the government began a progressive reform program in the early 1990s. Since the mid-1990s, the government has actively encouraged the privatization of certain community services as part of the program, and in 2000 it passed the Privatization Act No. 25 to establish the legal and institutional framework for privatization in Jordan. The government launched the process of integration and consolidation with the world economy by joining the WTO, signing a free trade agreement with the United States, a partnership agreement with the European Union, the Greater Arab Free Trade Agreement (FTA) and the Qualified Industrial Zones (QIZs) agreement. The government has also established several industrial development areas, such as the Aqaba Special Economic Zone (ASEZ). The government has also launched the Socioeconomic Transition Program, the E-government Initiative, the National Agenda, and many other social programs. In addition economic zones have been created in some governorates in order to distribute fairly the development outcomes among all citizens. Thus, private local and foreign investments have significantly increased, reaching levels never previously achieved, as a result of the continuity of implementing privatization programs and a positive environment for investment. The government, in response to the directives of His
Majesty King Abdullah II, has expanded the provision of decent housing for tens of thousands of poor households and those with limited and low income in Jordan (Department of Statistics, 2010).

2.4.1 International cooperation with initiatives

The Jordanian government has substantially liberalised the trading system to secure membership in the WTO and the World Intellectual Property Organization (WIPO). In 1997, Jordan signed the Bilateral Investment Treaty with the United States. This Treaty came into effect in 2003 and provided reciprocal protection of Jordanian and American individual and corporate investments. In May 2002, an agreement between Jordan and the European Union was reached with the aim of establishing a free trade area over a period of twelve years. In 2004, Jordan signed trade agreements with Egypt, Morocco and Tunisia. Again in 2004, Jordan signed a free trade agreement with Singapore towards the creation of a free trade area and greater cooperation for investment in high value added industries. Furthermore, Jordan has been a member of the Great Arab Free Trade Area since 1998. In December 2004, Jordan further liberalised trading relation with Israel in the framework of the Pan-Euro-Mediterranean Agreement, ensuring a system for preferential access to the European market (American Chamber of Commerce in Jordan, 2006; Australian Department of Foreign Affairs and Trade, 2008).

Jordan's trade relations with various international markets are facilitated by a generalized system of preference, which provides Jordan beneficial access to different markets including North America, Japan, Australia, Scandinavia and other countries. Such standards are paving the way for liberalising and improving the investment environment in Jordan, especially to enhance the local technological capacity, with the
aspiration of becoming the leading Middle East economy in the area of information and communication technologies (Navarra, 2006).

2.4.2 Jordan’s free zones

The experience of the free zones in Jordan started in 1973, when a small free zone established in the city of Aqaba to support worldwide commercial exchanges and help transit trade. In 1997, the government established the Free Zones Corporation as a governmental corporation enjoying administrative and financial independence, aiming at setting up, managing and investing in the free zones in the Kingdom and supervised by a Board of Directors presided over by the Minister of Finance. Due to political and economic stability in Jordan, and its strategic location in the heart of Middle East region as well as its moderate weather; and due to the multiple services, facilities and infrastructure, many public and private free zones were developed. In 1983, the government established the Zarqa Free Zone in an international network, linking Jordan with neighbouring countries. It covers 5.2 million square meters and is intended to meet the investment applications in the commercial, industrial and services fields. The Sahab Free Zone was started in 1997 on an area of 70,000 square meters located at King Abdullah II Industrial Estate to serve the investors therein, whether in storage of primary raw materials or products of industries operating in the Industrial Estate. Queen Alia International Airport Free Zone was opened in 1998 for the purposes of storing goods passing through the Airport. Also, this zone organizes and controls the activities of the private free zones at civil airports. In 2001 the government established the Al-Karak Free Zone at Al-Hussein Bin Abdullah II Industrial Estate at Al-Karak. This free zone organizes and controls the activities of the private free zones located in the southern region. Al-Karama Free Zone was opened at the end of 2004. It is located on the Jordanian-Iraqi border to be a land port for all economic activities in that region.
The private free zones provide sustainable development and absorb a portion of national manpower and exploit local natural resources. Many private free zones have been licensed in the different economic activities (Jordanian Free Zones Corporation, 2006).

The ASEZ was established in 2001 as a bold economic initiative by the government of Jordan (Aqaba Special Economic Zone Authority, 2006). Aqaba is a Special Economic Zones run by the Aqaba Special Economic Zone Authority. ASEZ is a large area of liberalized economic conditions designed to attract local and foreign investment by offering multiple investment opportunities in a strategic area covering 375 million square meters. The key incentives in ASEZ include a small rate of flat tax on income for most economic activities, no tariffs or import taxes on imported goods, no land and property taxes for company property, no foreign currency restrictions, full repatriation of profit and capital, 100% foreign ownership and permission to fill up to 70% of jobs with overseas workers (Garb, 2008).

Free zones provide many exemptions, which include (Jordanian Free Zones Corporation, 2006):

- Exempting project profits from income taxes for goods exported outside the Kingdom, as well as transit trade, in addition to profits accruing from selling or transferring of goods inside the borders of the free zones. Profits accruing from goods put on the domestic market are excluded from such exemption.
- Exempting salaries and allowances of non-Jordanian employees, who work in projects established in the free zones, from income and social service taxes.
- Exempting goods imported into the free zones or exported from there, for parties other than the local market, from import fees, customs duties and all other taxes and fees payable thereon, except services charges and rents.
• Exempting buildings and real estate constructions from licensing fees of buildings and land.

• Free transference of the capital invested in the free zones and the profits arising there from abroad.

• Exempting products of industrial projects in the free zones, upon placing them for consumption in the local market, from customs duties to the extent of the cost of local materials and expenses included in their manufacturing, provided that such value be estimated by a committee chaired by the Director General or his deputy and representatives from MIT and Customs.

2.4.3 Jordan’s qualifying industrial zones (QIZs)

QIZs are areas that have been accorded a special status designated by the governments of Jordan and the USA, whereby products manufactured in these zones can be exported to the USA without payment of duty or excise taxes, and without the requirement for any reciprocal benefits. In addition, there are no quotas on products manufactured in Jordan and exported to the USA. Furthermore, QIZs contribute to aiding technology transfer and creating new jobs especially for women, as well as attracting Foreign Direct Investment (FDI).

In this context, Gaffney (2005) argued that the government and private sector in Jordan has realized how to attract foreign investment and their success in building exports to the USA helps to market the country overseas. Thus, QIZs have brought Jordan to the attention of potential investors. QIZs appeared in Jordan as a result of the peace agreement between Jordan and Israel. Manufacturers in the QIZs are deemed to qualify for such status by a board composed of both Jordanian and Israeli representatives. A company must qualify every year and each shipment must be qualified before it is
exported. Inputs into the final products shipped out can be approved once a year and the USA accepts the approval of the joint committee at face value.

The first actual zone was set up in 1996, and the number has increased to thirteen today. The QIZs themselves can be run as either private or public enterprises (Gaffney, 2005). Of Jordan’s 13 QIZs, three are publicly operated industrial estates and function under the supervision of the Jordan Industrial Estates Corporation (JIEC). A semi-governmental corporation with financial and administrative autonomy, the JIEC was created by law in 1985 to promote the establishment of industrial estates in Jordan (Bolle, Prados & Sharp 2006). In addition, there are a number of associations such as the Jordan Investment Board, the Jordan Trade Associations and the Jordanian-American Commerce Board that promote the zones and serve as board members on the local QIZ authorities’ boards. Finally, the Jordanian government has provided a number of monetary incentives for companies to invest in the QIZs (Gaffney, 2005).

2.4.4 Jordan’s competitive advantage

Jordan has been dedicated to building up its economy over the last two decades. Jordan has been working with the World Bank and International Monetary Fund (IMF) to establish both a national and international economy. Devoted to this cause, Jordan has established itself as a model of developing country. Jordan was even able to join the WTO within 11 months of application.

Jordan’s competitive key strength attributes can be illustrated as follows (Jordan Chamber of Industry, 2006):

- Jordan enjoys the dynamic leadership of His Majesty King Abdullah II, who is the pioneer of initiatives in various fields, particularly those related to the economy.
Jordan has taken very important steps towards building its economy and continues to advance. There has been a privatization program to modernise the national economy and increase the flow of foreign capital.

- Jordan has a stable political climate and is eager to establish good relations with overseas nations which were initiated by King Hussein and which King Abdullah II plans to continue.

- Located in the heart of the Middle East, Jordan is an ideal springboard for access to regional and global markets.

- Jordan has high calibre human resources, low labour costs, attractive investment incentives environment, efficient regulatory framework and business-friendly structures with a strong focus on supporting entrepreneurial initiative.

- Jordan has many preferential trade deals. It has free trade agreements with the European Union and with many Arab countries. Jordan also has QIZs that allow free trade into other countries.

2.5 Industry in Jordan

Industry in Jordan is divided into two main types: the first is the manufacturing sector and the second is the mining sector. The percentage of small and medium enterprises contributes about 98.7% of the total industrial establishments, depending on the number of workers per establishment for the definition of small and medium enterprises (Ministry of Industry and Trade, 2008). Industry in Jordan contributes about 20% of Jordanian GDP (Department of Statistics, 2008). On the whole, the industrial sector provides the majority of new jobs. It contributes about 48% of the total number of workers in Jordan and produces the creativity and innovation that fuels economic progress. Industrial establishments totalled 23,000 companies in 2007 with more than 206,352 workers. The manufacturing sector includes textiles, leather and clothing
manufacturing, chemical industry, plastic industry, IT industry, furniture industry, food and beverages industries, printing and packaging industries, engineering products, pharmaceutical and medical industries, paper and cardboard industries, tobacco and cigarettes industries, electrical industries, and glass and ceramic industries. This sector contributes approximately 18% of Jordanian annual GDP. The second key sector is the mining sector which contributes about 2% of Jordanian GDP (Ministry of Industry and Trade, 2008).

A main manufacturing sector is the pharmaceutical sector. From a modest start in 1962, with the first local manufacturer beginning production in 1966, the pharmaceutical sector in Jordan now has 18 registered companies that produce branded generic pharmaceuticals. The sector accounts for 20% of manufacturing GDP and has had 17.5% manufacturing growth in 2006. Industry output in 2007 reached $500 million, while exports have grown by 17% since 2000. Jordan has the second largest export focus in the region, exporting about 80% of production to 60 countries worldwide (Jordan Investment Board, 2008).

The Dead Sea, in addition to being the lowest point on earth, at 400 meters below sea level, also boasts the highest concentration of minerals of any sea in the world. The Dead Sea is a natural lake full of vital minerals including magnesium, sodium, potassium, calcium, selenium, chloride, sulphur, bromide, and manganese. The cosmetics industry began in Jordan in 1986, based on the mineral rich-salts and mud extracted from the Dead Sea. There are about 36 export-oriented small and medium companies currently engaged in manufacturing Dead Sea products, with a total investment capital of US$10 million. This Industry employs 750 people. Dead Sea Products are currently being exported to more than 65 countries worldwide including
Europe, USA, Japan, Canada, South America and others (Investment Promotion Unit, 2010).

The strategic location of Jordan in the Middle East and its regional and international trade agreements have helped Jordan to orient the apparel and textile sector towards exports. The textiles and clothing industries sector comprises of around 776 companies. Investment within this sector has increased from US$ 693 million by the end of 2003 to US$ 1,060 million in 2004. Investment within the sector has risen from US$ 693 million by the end of 2003 to US$ 1,060 million in 2004. One feature of the textiles and clothing industries sector is that make it attractive to investment is the existence of a qualified and trained workforce of both sexes, with women making up 65% of the total workforce. The presence of a qualified and experienced workforce makes the establishment of new and modern factories, particularly recruiting and training the workforce, an easy matter. The sector created 53,380 jobs under the QIZ and FTA agreements and a number of training programs were organized to improve the productivity of workers and upgrade their skills (Jordan Investment Board, 2005).

In addition, furniture production in Jordan includes both in large industrial scale and in workshop level manufacturing products for the local and foreign markets such as kitchens, office furniture, school and auditorium furniture, medical furniture, hotel furniture for example. It is estimated that there are around 3,000 furniture manufacturers operating in Jordan. As for the raw materials, top quality wood is used in the production process such as beech wood, pine and a variety of soft and hard woods, in addition to the various exotic woods imported from other countries (Investment Promotion Unit, 2010).
Jordan's mining sector is composed mainly of large-scale industries consisting mainly of:

- Phosphate and potash mining
- Cement industrial production
- Mining and extracting limestone for producing calcium carbonate
- Mining and processing of Kaolin, Gypsum, Feldspar and Silica
- Quarrying of Slate, Marble, Granite and Sandstones
- Mining of Chalk
- Crushing and breaking of Stones

Phosphate bearing deposits were first discovered in Jordan in 1908. There are reserves estimated to exist across more than 60% of the country. Mining activity first commenced in 1935 in the AL-Ruseifa region east of Amman. Currently, the Jordan Phosphate Mines Company (JPMC) is the exclusive phosphate rock producer in Jordan and operates three mines in the country. The company is considered the sixth largest phosphate rock producer and the fourth largest phosphate rock exporter in the world. During the year 2007, production reached 5,551,822 tons against 5,804,991 tons produced in 2006, showing a decrease of 4.4%. Locally, sales decreased by 65.5%, which led to a decrease in revenues by 71.6% compared to 2006. Exports increased by 10.5% compared to 2006 and revenues increased by 22.5%. Phosphate total revenues in 2007 reached 152,247,542 JD representing a decrease of 6.6% compared with 2006.

The Arab Potash Company (APC) was established in 1956 to extract, manufacture and market the resources of the Dead Sea. APC was granted a concession by the Jordanian government for 99 years to carry out these activities exclusively. Potash production began in 1983 and grew rapidly making APC one of the world’s leading producers. APC sold 26% of its shares to a Canadian company to enhance production efficiency
and to improve technological skills. Potash production in 2007 amounted to 1,796,569 tons against 1,699,414 tons produced in 2006, increasing by 5.7%. In the local market, although sales had decreased by 3.5%, its revenues recorded a growth by 7.6%. Internationally, sales increased by 10.8%, which was reflected as an increase in export revenues by 14.6% (Omari & Zurquiah, 2008).

2.6 Accounting in Jordan

The economic adjustment program and other economic changes that have taken place in Jordan brought with them the need to change the accounting systems in order to facilitate competing on the world markets (Al-Akra et al., 2009).

In financial accounting, different regulative institutions have played an important role in developing contemporary financial accounting in Jordan. The Amman Stock Exchange (ASE) has focused mainly on developing financial reporting standards in Jordan. ASE required companies to publish all the information necessary for informed decision-making to investors. Income and sales tax regulations have played a big role in developing financial accounting by obliging companies to keep regular accounts. Therefore, under article 22 of the Income Tax Law and article 18 of the General Sales Tax Law, companies are obliged to keep regular financial records for their incomes and expenditures (Income and Sales Tax Department, 1985, 1994). In addition, the Companies Law 1989 requires that Jordanian companies prepare an annual report, including a broad set of financial statements such as a profit and loss account and balance sheet (Abu-Nassar & Rutherford, 1996).

In 1987, the Jordanian Association of Certified Public Accountants (JACPA) was started and became a member of the International Federation of Accountants (IFAC) in
October 1992 (Al-Akra et al., 2009). In 1989 and 1990, JACPA decided to adopt International Auditing Standards (IAS) and International Accounting Standards (IAS) respectively, but no legal force was put into place to ensure that such standards were met. The most important development in financial accounting was achieved by the Securities Exchange Commission (SEC) in 1998 when a legal requirement was issued for companies to adopt International Accounting and Auditing Standards (Hutaibat, 2005). Therefore, these measures are now disclosed in companies’ financial statements, because all listed companies must use financial measures in order to compare their performance from one year to another and to compare their achievement relative to that of competitors.

External pressure to change international accounting practices is getting stronger due to the international pressures of increased globalization and the integration of capital markets. Jordan has been under pressure to use and enforce international accounting standards, exerted by several international institutions including the International Accounting Standards Board (IASB), the IFAC, the International Organization of Securities Commissions (IOSCO), the World Bank, and the IMF. Furthermore, because Jordan was a British colony for the first half of the 20th century and British troops remained in Jordan during the 1950s, strong trading and economic relations have continued to exist between Jordan and Britain and other Western countries. This facilitated the transfer of Western accounting practices to Jordanian companies and consequently led to the earlier adoption of international accounting and reporting standards (Al-Akra et al., 2009).
Jordan is also a member of the WTO; it has signed several trade agreements with many countries (Rawabdeh, 2008). The new partners, however, have increased the pressure facing Jordanian companies to adopt and use current international accounting practices.

In the context of management accounting, the role of management accounting and in particular the role of performance measurement systems in Jordanian companies has become increasingly important in providing management with appropriate information about the overall company situation. Jordanian companies need to plan, control, and make decisions about projects; this can only be done using contemporary management accounting practices (Hutaibat, 2005). Different factors and institutions have contributed to the change of management accounting practices in Jordan.

The Jordan Institution for standards and Metrology (JISM) was established in 1995. JISM focuses mainly on the product quality to meet the local and international standards and provides services in standardization, certification, innovation, testing and metrology (Rawabdeh, 2002). In 1999, the King Abdullah II Centre for Excellence established the King Abdullah II Award (KAIIA) for Excellence in the private sector as the highest level of recognition for quality and excellence in Jordan. The primary aim is to enhance the competitiveness of Jordanian businesses by promoting quality awareness and performance excellence as well as recognising quality and the business achievements of Jordanian organisations. The Award also aims at sharing the experience and success stories of participating organisations. The Award contributes to enhancing management accounting practices and in particular to improve performance measurement practices by ensuring the following (King Abdullah II Centre for Excellence, 2009):
• How does the organisation design its main processes so it fulfils the needs and requirements of the different stakeholders and contribute to providing the best products and services to customers?

• What are the appropriate performance measures related to processes control and development?

• How does the organisation guarantee training for all employees?

• What quality management systems are adopted in the organisation? How comprehensive are these systems in terms of covering all activities related to providing products to customers?

• How does the organization determine the performance indicators for measuring the implementation of quality management systems and the effectiveness of their application? How does it develop, apply and review quality management systems so as to keep abreast with new developments?

• How does the organization preserve a database for applied quality management systems?

• How does the application of quality management systems affect the organization’s culture, productivity and competitiveness?

• How does the organization manage the environmental aspects of its products/services and activities, including saving resources, lessening their use, and the treatment and safe disposal of waste?

• How does the organization benefit from customers’ needs, queries, suggestions and complaints in improving its future performance?

• How does the organization establish relations with its customers so as to expand the customers’ base, raise their satisfaction level, create brand loyalty towards the organization, and make a good impression about the organization through them?

• How does the organization measure customers’ satisfaction and loyalty?
• How does the organization acquire information about the level of its customers’ satisfaction with its products/services and their loyalty?

• How does the organization measure employees’ satisfaction, loyalty and development?

• How does the organization measure the quality of its products/services and its operational performance?

• How does the organization measure the results of simplifying processes and the effectiveness of the simplification process and their development rates, including creativity, renewal and patents?

• How does the organization measure suppliers’ performance?

• What is the level of the organization’s participation in cultural, scientific, sports, environmental and other activities of the local community?

• How does the organization measure and assess its participation in the local community’s activities?

• How does the organization measure the results of its financial performance and market performance (sales, profits, market share, growth rate, new markets, others)?

The assessment for the award depends on 1,000 points divided into five sets of criteria. Rawabdeh (2008) summarised the criteria and the sub-criteria of the award and the corresponding points allocated for each (see Table 2.1).
Table 2.1: Criteria of KAIJA for Excellence in Jordanian private sector

<table>
<thead>
<tr>
<th>Criteria/ sub criteria</th>
<th>Points</th>
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<tbody>
<tr>
<td>1.0 Leadership</td>
<td></td>
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<tr>
<td>1.1. Leadership vision</td>
<td>20</td>
</tr>
<tr>
<td>1.2. Leadership educational system</td>
<td>50</td>
</tr>
<tr>
<td>1.3. Leadership support</td>
<td>65</td>
</tr>
<tr>
<td>1.4. Leadership selection and suitability</td>
<td>65</td>
</tr>
<tr>
<td>2.0 Strategic planning</td>
<td>150</td>
</tr>
<tr>
<td>2.1. Mission statement</td>
<td>10</td>
</tr>
<tr>
<td>2.2. External environment analysis</td>
<td>25</td>
</tr>
<tr>
<td>2.3. Objectives</td>
<td>15</td>
</tr>
<tr>
<td>2.4. Strategies</td>
<td>15</td>
</tr>
<tr>
<td>2.5. Projects and action plans</td>
<td>25</td>
</tr>
<tr>
<td>2.6. Implementation and control</td>
<td>60</td>
</tr>
<tr>
<td>3.0 Processes management</td>
<td>200</td>
</tr>
<tr>
<td>3.1. Quality management systems</td>
<td>80</td>
</tr>
<tr>
<td>3.2. Customers relationships management</td>
<td>60</td>
</tr>
<tr>
<td>3.3. Coordination and structure</td>
<td>60</td>
</tr>
<tr>
<td>4.0 Resources management</td>
<td>250</td>
</tr>
<tr>
<td>4.1. Human resources</td>
<td>120</td>
</tr>
<tr>
<td>4.2. Information resources</td>
<td>30</td>
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<tr>
<td>4.3. Financial resources</td>
<td>60</td>
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<tr>
<td>4.4. Material resources</td>
<td>20</td>
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<tr>
<td>4.5. Technological resources</td>
<td>20</td>
</tr>
<tr>
<td>5.0 Results</td>
<td>200</td>
</tr>
<tr>
<td>5.1. Customer satisfaction</td>
<td>50</td>
</tr>
<tr>
<td>5.2. Employee satisfaction</td>
<td>40</td>
</tr>
<tr>
<td>5.3. Product/ service quality and operational performance</td>
<td>40</td>
</tr>
<tr>
<td>5.4. Suppliers’ performance</td>
<td>20</td>
</tr>
<tr>
<td>5.5. Impact on society</td>
<td>30</td>
</tr>
<tr>
<td>5.6. Financial results</td>
<td></td>
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</tbody>
</table>


2.7 Summary

This chapter has provided a brief overview about Jordan’s location, demographics, culture and economy with a special focus on the industrial sector. The chapter has also detailed the state of accounting in Jordan. Jordan is one of the countries that enjoy the most freedom and pluralism among Arab countries. The Jordanian business environment has become more competitive especially after the Jordanian government
new economic programs and proactive actions. Given its strategic location at the heart of the Middle Eastern and the Arab worlds, Jordan has a well-educated workforce with a stable political and democratic environment. Accordingly, the Jordanian market has become more attractive to foreign investment currently through the new Investment Promotion Law, Free Zones, Qualified Industrial Zones, and Free Trade agreements with many countries. Thus, Jordan has developed close business ties with other countries especially the developed nations.

The limitation of Jordanian natural resources has encouraged Jordan to place more emphasis on developing and expanding the industrial sector. Jordan has, therefore, taken many steps toward improving local industrial production to compete in the international markets. The significant changes in the Jordanian business environment have brought about the need to change prevailing accounting practices to facilitate competing internationally. Thus, several major changes in regulative institutions and laws have assisted in the development of contemporary financial and management accounting in Jordan as a whole.
Chapter 3
Multidimensional View of Performance Measurement

3.1 Introduction

In the last two decades, management accounting studies have received considerable attention. The findings of these studies highlight a significant role for management accounting systems in organisations in which management accounting information is now used in planning, decision-making, control, performance measurement and business strategy in most organisations (Akbar, 2010). For example, Kaplan (1984, p. 390) indicated that the challenges of the competitive environment in the 1980s should motivate us to re-examine our traditional cost accounting and management control systems. As one of these systems, PMS can be used for internal or external control purposes in organisations (Fried, 2010).

This chapter reviews the literature on various issues related to the design and importance of using an effective PMS in order to meet organisational objectives. This chapter also reviews performance measurement practices with more emphasis on using a diverse set of financial and non-financial measures using BSC framework. In addition, this chapter covers the performance consequences of using the different types of performance measures.

This chapter is structured as follows: Section 3.2 focuses on the definition and design of PMS. Section 3.3 presents the features and importance of an effective PMS. Section 3.4 examines traditional financial measures and criticisms of such measures. Section 3.5 focuses on non-financial performance measures and their role in responding to these criticisms. This section also examines the practices of non-financial measures as reported in previous literature. Section 3.6 discusses the BSC approach as a tool for
combining financial and non-financial measures. This section also discusses the effectiveness and limitations of the BSC approach. Section 3.7 focuses on performance measurement diversity approach as suggested in previous literature. Section 3.8 investigates the various findings of previous literature that examines the relationship between different types of performance measurement and organisational performance. Finally, section 3.9 concludes the chapter.

### 3.2 Definition and design of PMS

Performance measurement is an important management control tool for business firms in a competitive environment. It is directly related to the formation of a firm’s core competency and has a significant impact on the firm’s growth (Xiong et al., 2008). Different definitions for PMS exist. Neely (1994) defines PMS as the set of metrics used to quantify both the efficiency and effectiveness of actions (cited in Neely et al., 2005, p. 1229). In respect to performance measurement, Marshall, Wray, Epstein and Grifel (1999) define performance measurement as a development of indicators and collection of data to describe and analyse performance. To be more precise, performance measurement refers to the use of a multi-dimensional set of performance measures. This set of measures is multi-dimensional if it includes both financial and non-financial performance measures. Both internal and external measures of performance are included and both measures quantify what has been achieved. These measures are used to help predict the future (Bourne et al., 2003, p. 3). However, Neely et al. (2005, p. 1229) define a performance measure as a metric used to quantify the efficiency and/or effectiveness of an action.

There is further scope for research into the design of performance measures as the problems faced in the selection of performance measures are well documented in
The design and use of performance measurement practices are important for managerial staff and management accounting researchers to enhance organisational performance (Stringer, 2007). In this context, Paranjape et al. (2006) argued that inappropriately designed measures drive unintended behaviors that can have harmful performance consequences.

However, Franco-Santos et al. (2007) argued that there are two features that are considered necessary to define effective PMS. These are performance measures and the supporting infrastructure. In the context of performance measures, there is no general agreement on the nature and design of those measures. Therefore, it is impossible to define the generic types of measures that should be included in any definition of PMS. In this context, DeBusk, Brown and Killough (2003) found that the number of performance measurement components and their relative composition is situational. According to Franco-Santos et al. (2007) a supporting infrastructure can vary from very simplistic manual tools of recording data to sophisticated information systems. Bourne, Kennerley and Franco-Santos (2005) analysed ten individual case studies and found that in average-performing business units, managers were describing common but simple control systems based around their use of the performance measures. The use of measures in higher-performing companies was more sophisticated. Therefore, the PMS differs from one organisation to another. This is because measurement systems are directly related to each organisation’s overall strategy (Medori & Steeple, 2000). Thus, Ittner et al. (2003) suggested that performance measures usage differs from one managerial purpose to another. Paranjape et al. (2006) specifically stated:

……a performance measurement framework, which is responsive to the ever-changing business environment within which the global organizations operate, needs to be designed. While the primary design focus for such a framework needs to be being adaptive, a secondary goal should be addressing the changing structure of global business, operating within an integrated framework of business processes teams and individuals within global organizations (p. 10).
Previous management accounting research often criticises the idea of relying solely on financial performance measures. These criticisms lead to increasing emphasis on the use of both financial and non-financial measures. This emphasis is consistent with two trends that have dominated recent performance measurement research, which are the addition of new financial measures that are claimed to overcome some of the limitations of traditional performance measures such as economic value measures and greater emphasis on forward-looking non-financial measures such as customer satisfaction and employee satisfaction (Ittner & Larcker, 1998). Thus, several performance measurement approaches have been developed. Examples of these approaches include the performance measurement matrix (Keegan, Eiler & Jones 1989), the performance measurement questionnaire (Dixon, Nanni & Vollmann, 1990), the performance pyramid system (Lynch & Cross, 1991), the integrated dynamic performance measurement approach (Ghalayini, Noble & Crowe, 1997) and the performance prism (Neely, Adams & Kennerley, 2002).

Previous researchers in management accounting criticise the idea of relying solely on financial control systems and stress the importance of using a combination of financial and non-financial measures. This is because such a combination is argued to be more effective and useful for performance measurement of an organisation (Abernethy & Lillis, 1995; Atkinson et al., 1997; Brignall, 2007; Chenhall & Langfiels-Smith, 2007; Chow & Van der Stede, 2006; Dunk, 2005; Fisher, 1995, 1998; Govindarajan, 1988; Hertenstein & Plat, 1998; Hoque et al., 2001; Hussain & Gunasekaran, 2002; Kaplan & Norton, 1992, 1993, 1996a, 1996b, 1996c; Lau & Sholihin, 2005; Van der Stede et al., 2006; White, 2008; Xiong et al., 2008). Thus, one of the most important arguments in this research is that previous scholars in the field stress the importance of using a
combination of financial and non-financial measures in order to support the decision-making process in an organisation. In this context, Fisher (1998) stated:

Most accounting research on control has focused on financial control systems.... Future research should incorporate non-financial performance measures. Based on the balanced scorecard, Kaplan and Norton (1992) have suggested that the linkage between financial and non-financial measures is extremely important and has been relatively unexplored (p. 62).

Similarly, Otley (1999) stated in this context: “Accounting measurement was stressed and non-financial performance measures were neglected” (p. 365). Furthermore, Maines et al. (2002) stated that, “....we believe that companies should be encouraged to experiment with new non-financial measures and models integrating financial and non-financial measures, under the umbrella of safe harbor rules” (p. 360).

Consequently, more attention has been placed on using non-financial measures of performance. The proponents of strategic performance measurement advocated two general approaches for developing performance measures. The first one being measurement diversity. This approach calls upon firms to measure and use a diverse set of financial and non-financial measures. The second approach is the use of measurement techniques such as the BSC (Ittner et al., 2003).

The BSC approach combines both financial and non-financial measures of performance and stresses the importance of aligning the scorecard information with the business strategy. Unfortunately, previous researchers (Iselin et al., 2008; Ittner et al., 2003) found that this alignment does not occur in practice. Similarly, the BSC approach itself faced many criticisms (Chang, 2007; Henri, 2004; Hubbard, 2009; Maltz et al., 2003; Neely et al., 2005) arguing that it needs more diverse perspectives. Many researchers (Bryant, Jones & Widener, 2004; Iselin et al., 2008; Ittner et al., 2003; Maltz et al., 2003; Widener, 2006) have called for further research that considers multiple
performance measures in terms of financial and non-financial and argued that future studies in PMS must not be restricted to the narrowly interpreted BSC and must add additional perspectives such as environment and community. In addition, previous researchers argued that multiple measures of performance have become more acceptable in practice and the academic community. Measurement diversity is an approach that extends the BSC approach and calls for supplementing traditional financial measures with a diverse mix of non-financial measures regardless of an organisation’s strategy (Ittner et al., 2003). Therefore, this thesis focuses mainly on a performance measurement diversity approach.

3.3 Features and importance of a PMS

Organizations that wish to carry on the sustainable growing need a robust PMS because of changing demands of consumers, reduced product life cycle, competitive and globalised markets (Zeydan, Çolpan & Çobanoğlu, 2011). Improving the PMS is one of management accounting’s key roles. Effective performance measurement allows a firm to implement sound strategy, guide employee behaviour, assess managerial effectiveness, and provide the basis for rewards (Malina & Selto, 2004). The selection of performance measures which are appropriate to a particular company ought to be made in the light of the company’s strategic priorities which will have been formed to suit the competitive environment in which it operates and the nature of its business. In choosing an appropriate range of performance measures, it will be necessary to balance them and to make sure that one measure or set of measures of performance is not emphasised at the detriment of others. In this context, Maltz et al. (2003, p. 199) argued that any prescription for performance measurements should be simple, dynamic, flexible over time, foster improvement, and be linked to the company’s strategy and objectives. Notably, Franco-Santos et al. (2007) and Neely, Mills, Platts, Gregory and Richard
(1994) argued that deriving performance measures from strategy does not always happen in reality. Franco-Santos et al. (2007, pp. 796-797) argued that there are many measurement systems within businesses that have only operational goals, which may or may not be linked to strategy. In this context, Ittner and Larcker (2003) findings indicated that most companies have made little attempt to identify areas of non-financial performance that might advance their strategy, also they did not demonstrate a cause-and-effect relationship between improvements in non-financial areas and financial performance.

However, Chen (2008) pointed out that an effective PMS should include the traditional financial measures and cost-accounting measures used by senior management and also the tactical-performance measures that are used in evaluating a firm’s current level of performance. Kim, Park and Yoon (1997) argued that a performance measurement should provide timely, accurate feedback on the efficiency and effectiveness of an activity operation in any environment. In general, Malina and Selto (2004, p. 446) identified the following group of attributes of performance measures:

1. Measures should be diverse and complementary.
2. Measures should be objective and accurate.
3. Measures should be informative.
4. The benefits of using performance measures should outweigh the associated costs.
5. Measures should reflect system causality.
6. Measures should facilitate strategic communication.
7. Measures should be incentives for improvement.
8. Measures should improve decision-making.
Hwang, Lee, Liu and Ouyang (2009) argued that PMS play a critical role in evaluating the achievement of firm goals, compensating managers, and developing strategies. The essential function of a PMS is to assess how well the activities within a process, or the outputs of a process, achieve specified goals. This includes a comparison of actual results with a planned goal and an assessment of the extent of any deviation from the standard goal (Ahmad & Dhafr, 2002; Chen, 2008). Franco-Santos et al. (2007, p. 797) summarised the roles of PMS into the following five categories:

1. Measure performance: this category encompasses the role of monitor progress and measure performance.
2. Strategy management: this category comprises the roles of planning, strategy formulation, strategy implementation and focus attention.
3. Communication: this category comprises the roles of internal and external communication, benchmarking and compliance with regulation.
4. Influence behaviour: this category encompasses the roles of rewarding, managing relationships and control.
5. Learning and improvement: this category comprises the roles of feedback, double-loop learning and performance improvement.

Empirically, Stivers et al. (1998) examined the importance of 21 non-financial measures in setting company goals in USA and Canada. The study findings indicated that of the 253 responding firms, 235 (92.9%) rated customer satisfaction and delivery performance/customer service as highly important. Product/process quality was rated as highly important by 206 (81.4%) of the responding firms and service quality by 205 (81%) of the 253 firms. Thus, customer service measures are perceived to be the most important measures. Market performance and goal achievement are perceived to be highly important categories. Market share in the market performance categories was
rated highly important by 200 (79.1%) of the responding firms. Productivity in the goal achievement category was rated highly important by 211 (83.4%) of the 253 firms. Factors in the innovation and employee involvement categories were perceived to be less important in goal setting. For example, employee turnover in the employee involvement category was rated as highly important by only 122 (48.2%) of the responding firms. However, Stivers et al. (1998) findings also indicated that an individual measure was identified as highly important if it received a rating of four or greater on the five-point scale of importance. Xiong et al. (2008) conducted a survey of senior executive and senior financial officers of large or mid-size firms. The purpose of the study was to determine the current extent of usage of nine performance measures among Chinese firms and to analyse the importance of these measures across twelve different uses. Findings of the study showed that the top four performance measurement effects with a high important score were profit increase (59.5%), motivating employees (54.7%), cost reduction (51.6%) and helping employees understanding enterprise strategy (48.1%). In their efforts to investigate whether the strategic priorities of an organization are associated with the use and effectiveness of specific performance measures, Verbeeten and Boons (2009) included an additional question on the importance of the performance measures for several goals. Their findings indicated that the PMS is important or very important for operational decisions (85%), strategic decisions (80%), evaluating economic performance (71%), evaluating managerial performance (70%), rewarding employees (68%) and communication of strategy (50%). Additionally, Verbeeten and Boons (2009) investigated whether specific measures are used for specific purposes. Their results indicated that financial and non-financial measures are used more frequently for operational and strategic decisions. In contrast, budget, return on total capital (ROTC), process and innovation measures are used to a larger extent for incentive purposes. Finally, non-financial measures of customer and
innovation are more important for the communication of strategy. Recently, Veen-Dirks (2010) examined how the importance that is attributed to a variety of financial and non-financial performance measures depends on periodic evaluation of performance and determination of rewards. The empirical evidence in this study is based on a survey among 84 industrial companies located in the Netherlands. Multiple interviews were conducted with both production managers and management accountants. The study provided evidence of a higher importance attached to both financial and non-financial performance measures in the periodic evaluation than in the determination of rewards. The results of the studies above indicate that PMS is used for many purposes other than evaluating and rewarding managers (Verbeeten & Boons, 2009).

The next sections review four types of performance measurement. These include: traditional financial measures, non-financial performance measures, BSC approach and measurement diversity approach.

### 3.4 Traditional financial measures

Accounting systems produce various measures of financial performance, including costs, revenues, and profits. Each of these financial measures of performance can be calculated at different levels within the organisation, including the firm-wide level (Datar, Kulp, & Lambert, 2001). Traditional financial measures are concerned with identifying the key financial drivers in creating shareholder wealth. Shareholder wealth is created when the business earns a rate of return on invested capital that exceeds its cost of capital. Therefore, traditional financial measures are used mainly to evaluate the ability of the managers to create value for shareholders. Moreover, financial measures are an important tool to provide financial information to present and potential investors, financial analysts, auditors and government. Such information is reported in the annual
financial statements including balance sheet, income statement, and statement of cash flows (Slater, Olson & Reddy, 1997; Tapanya, 2004).

Financial measures play an important role in evaluating the prior financial conditions and performance of the organisation. However, these measures should be selected on some theoretical basis, coupled with demonstrated empirical evidence of their effectiveness. Each measure includes common as well as unique information. The common information contained in a measure is represented by several factors. Unique information is not shared by any other measures in the factor (Chen & Shimerda, 1981).

A study by Chenhall and Langfield-Smith (1998b) conducted in large Australian manufacturing companies indicated that relatively high benefits are derived from traditional financial measures such as budgeting for controlling costs (ranked 1) and budget variance analysis (ranked 3) and conventional financial performance measures, such as return on investment (ranked 2) divisional profit (ranked 4) and controllable profit (ranked 8). The findings of this study confirm the importance of traditional financial measures of performance and found that traditional financial measures and traditional planning techniques are widely adopted. A similar study was conducted by Hyvönen (2005) using Finnish manufacturing companies. The results of the study indicated that the three most beneficial practices in management accounting were traditional financial measures, budgeting for controlling costs and variable costing. Many of the companies in the survey were investment-intensive so controlling costs was important.

Some of the commonly used financial measures include: return on investment (ROI), return on assets (ROA), return on equity (ROE), internal rate of return (IRR), price variance, earning per share (EPS), inventory turnover, receivable turnover, capital
turnover, return on sales (ROS), net income/sales, working capital/total assets, etc. These measures are profit measures used to evaluate the past performance of organisations. Accounting standards encourage the use and application of financial measures (Budde, 2007). For example, ROI is the most conventional measure of business performance; it evaluates the rate of return on total assets used in the organisation. It is used mainly to measure the management efficiency in resource deployment (Thomas, Litschert & Ramaswamy, 1991).

Traditional financial measures have faced many criticisms for many reasons. Examples of these reasons include: the changing nature of work, increasing competition, specific improvement initiatives, national and international quality awards, changing organizational roles, changing external demands, and the power of information technology (Chenhall & Langfield-Smith, 1998b; Hyvönen, 2005; Neely, 1999). Thus, traditional financial measures have many limitations that make them less applicable in today's competitive market. Examples of these criticisms also include:

- Ittner and Larcker (1998, p. 217) summarized the limitations of traditional financial measures in that they: (1) are too historical and backward looking, (2) lack predictive ability, (3) reward short-term or incorrect behaviour, (4) are not actionable, providing little information on solutions to problems, (5) do not capture key business changes until too late, (6) are too aggregated and summarized to guide managerial action, (7) reflect functions, not cross-functional processes, within a company, and (8) give inadequate consideration to evaluating intangible assets.

- Traditional PMS have concentrated on the development of measures that lack focus and are dependent mainly on the choice of accounting policy (Kloot & Martin, 2000).
Traditional financial measures are inadequate for measuring and managing organisational performance because these measures communicate little about future and long-term performance (Kaplan, 2001).

Gumbus (2005) criticized the idea of depending solely on traditional performance measures and argued:

Organisations that focus solely on financial measures can be compared to a race car driver that only monitors their speed during a race. Suppose you are a race car driver at the Indy 500 and are monitoring your car by looking at the RPM (revolutions of the engine per minute) gauge on your dashboard. You are not noticing the MPG (miles per gallon of gas), nor the MPH (miles per hour or speed your car is travelling), nor the temperature gauge. You might win the race, but you are also putting yourself and your car at risk by not monitoring these other gauges and focusing extensively on the RPM dial. You might run out of gas, overheat the engine, crash another car in your lane and make other errors in navigating the course (p. 620).

Empirically, previous studies (e.g. Ittner et al., 2003; Jusoh et al., 2008; Van der Stede et al., 2006) findings indicated that the usage of financial measures do not contribute significantly towards organisational performance.

To overcome the limitations of traditional financial measures, many researchers have suggested that for businesses to survive in a competitive market place, a new set of operational performance measures should be used (Burgess et al., 2007). These measures should provide managers, supervisors and operators with on-time information that is necessary for daily decision making. These measures should be flexible, primarily non-financial, and able to be changed as needed (Ghalayini & Noble, 1996; Kaplan & Norton, 1992).

### 3.5 Non-financial measures

Non-financial performance measures are defined as measures that provide performance information in non-monetary terms such as customer satisfaction and employee
satisfaction (Verbeeten & Boons, 2009). These measures are operational measures that are not on the financial statements, but are often disclosed elsewhere in the annual report (Brazel, Jones & Prawitt, 2010). Moers (2006) defines two types of non-financial measures. First, the internal non-financial performance measures which consist of non-financial measures that are directly related to the tasks performed such as productivity and efficiency. Second, the external non-financial performance measures which reflect performance in the market such as customer satisfaction and market share. Non-financial performance measures cover many aspects in organisations. These include for example, customers, employees, innovation, quality, community and environment. Therefore, non-financial measures are broad and varied (Lau & Sholihin, 2005).

Recently, greater importance has been attached to the use of non-financial performance measures, which originated from two reasons as suggested by Medori and Steeple (2000). These include problems of using only traditional financial measures in manufacturing and the effects of global competition and world class manufacturing. In this context, Chenhall and Langfield-Smith (1998b) suggested that the high rate of adoption of these practices in Australia is related to some factors specific to Australia, such as influence from the USA and Japan and sponsorship activities of the Australian federal government.

Similarly, the adoption of these practices by Jordanian companies is influenced by many factors. In addition to the Jordanian Economic Adjustment Program (EAP) for the period 1992-1998 which aimed to transfer the Jordan economy to be free and open and the privatisation program which started in 1996, Jordan has close business ties with other countries especially developed nations. Jordan has signed many free trade agreements with other countries including the USA, Europe and Canada. These agreements, however, increased the internal and external competition in Jordan.
Jordanian companies were also required to focus mainly on product quality to meet local and international standards. Thus, it can be argued that in particular three trade agreements have changed accounting practices in Jordan. These include: WTO in 2000, the FTA with USA in 2001, and the European Community (EC) in 2002. In this context, Hussain and Gunasekaran (2002) and Hussain and Hoque (2002) argued that transnational institutions like the WTO encourage companies to change their performance measurement practices. In addition, several institutions have been established in Jordan to ensure that the Jordanian companies are working in accordance to international quality standards. For example, the King Abdullah II Centre for Excellence was established to ensure that the PMS of Jordanian companies includes current performance measures practices such as customer measures, employee measures, quality and innovation measures, community measures and process measures. Thus, Hutaibat (2005) found that Jordanian industrial companies had applied various management accounting techniques. In particular, this study indicates that performance measurement techniques were most prominent.

Using non-financial performance measures does not mean that non-financial performance measures should replace financial performance measures. Instead, non-financial measures possess predictive ability and complement financial measures, which remain important (Govindarajan & Gupta, 1985; Henri, 2004). In this context, Otley (2007) stated:

For example, I can point you to a firm that has a strong financial control system and has shown excellent financial performance. But I can also point you to another firm with much weaker financial controls that also shows excellent performance. It does this by deploying a range of non-financial performance measures which are of key importance in managing its operations (p. 30).

White (2008) investigated the use of financial and non-financial performance measures and their relationship with outcomes of SPM systems and found that financial measures
and non-financial measures are positively correlated. Medori and Steeple (2000) argued that performance measurement incorporating non-financial measures has been a topic of great interest throughout the 1990s. This emphasis as suggested by Medori and Steeple (2000, p. 521) is not only because non-financial performance measures overcome the limitations of using only financial performance measures, instead there are many advantages to using non-financial measures. These include: (1) the measures are more timely than financial ones, (2) the measures are very measurable and precise, (3) the measures are meaningful to the workforce so aiding continual improvement, (4) the measures are consistent with company goals and strategies, and (5) non-financial measures change and vary over time as market needs change, and so tend to be more flexible. Furthermore, financial performance measures tend to focus on short term profitability, whilst non-financial performance measures focus on long term profitability (Chenhall & Langfiels-Smith, 2007).

Stivers et al. (1998) found that non-financial measures such as customer satisfaction, customer service, delivery performance, process quality and product quality are highly important in setting company goals in the USA and Canada. Recently, Xiong et al. (2008) findings showed that the higher the level or extent that firms adopts non-financial measures, the better the effect. In particular, the study indicated that the more firms focus on and use non-financial measures such as internal process quality, coordination, and employee satisfaction the more effectively firms will implement cost control to reduce costs. Similarly, firms’ profitability will increase because firms’ customer-oriented measures help promote sales and keep customers. Focussing on learning and innovation measures motivates employees to innovate and seek out improvement methods. Additionally, if firms pay more attention to employees’ learning and growth, they will increase employee satisfaction. Finally, if firms consider both
subjective and objective measures by not only estimating employees’ contribution by financial measures, but also considering employees’ personal and team achievement, they will help promote cooperation among departments and employees. More recently, Baiman and Baldenius (2009) findings indicated that paying the division managers discrete bonuses tied to non-financial performance measures such as new product development improves the efficiency of project implementation and upfront investments. Similarly, Verbeeten and Boons (2009) found that non-financial measures are used more frequently for operational and strategic decisions, evaluation of managerial performance and communication of strategy. As shown in Table 3.1, Ghalayini and Noble (1996) listed the main features and advantages of non-financial measures in comparison to those of traditional measures.

Table 3.1: Comparison between traditional and non-traditional performance measures

<table>
<thead>
<tr>
<th>Traditional performance measures</th>
<th>Non-traditional performance measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on outdated accounting systems</td>
<td>Based on company strategy</td>
</tr>
<tr>
<td>Mainly financial measures</td>
<td>Mainly non-financial measures</td>
</tr>
<tr>
<td>Intended for middle and high managers</td>
<td>Intended for all employees</td>
</tr>
<tr>
<td>Lagging metrics (weekly, monthly)</td>
<td>On time metrics (hourly, daily)</td>
</tr>
<tr>
<td>Complicated, confusing and misleading</td>
<td>Simple, accurate and easy to use</td>
</tr>
<tr>
<td>Lead to employee frustration</td>
<td>Lead to employee satisfaction</td>
</tr>
<tr>
<td>Neglected at the shopfloor</td>
<td>Frequently used at shopfloor</td>
</tr>
<tr>
<td>Have a fixed format</td>
<td>Have no fixed format</td>
</tr>
<tr>
<td>Do not vary between locations</td>
<td>Vary between locations</td>
</tr>
<tr>
<td>Do not change over time</td>
<td>Change over time</td>
</tr>
<tr>
<td>Intended for monitoring performance</td>
<td>Intended to improve performance</td>
</tr>
<tr>
<td>Not applicable for JIT, TQM, etc</td>
<td>Applicable</td>
</tr>
<tr>
<td>Hinder continuous improvement</td>
<td>Help in achieving continuous improvement</td>
</tr>
</tbody>
</table>

Similarly, Burgess et al. (2007) listed the features of the traditional approach which relies on financial measures in comparison with those of the contemporary approach which relies on a wide range of financial and non-financial measures (see Table 3.2).

Table 3.2: Comparison between traditional financial-based PMSs and contemporary PMSs

<table>
<thead>
<tr>
<th>Item</th>
<th>Traditional financial-based PMSs</th>
<th>Contemporary PMSs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basis of system</td>
<td>Accounting standards</td>
<td>Company strategy</td>
</tr>
<tr>
<td>Types of measures</td>
<td>Financial</td>
<td>Both financial and non-financial</td>
</tr>
<tr>
<td>Focus of measures</td>
<td>Internal and historical</td>
<td>Internal and external</td>
</tr>
<tr>
<td>Audience</td>
<td>Middle and top managers</td>
<td>All employees</td>
</tr>
<tr>
<td>Shop floor relevance</td>
<td>Ignored</td>
<td>Used</td>
</tr>
<tr>
<td>Frequency</td>
<td>Lagging (weekly or monthly)</td>
<td>Real-time (hourly or daily)</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Expensive</td>
<td>Relevant</td>
</tr>
<tr>
<td>Integration</td>
<td>Ignored</td>
<td>Integration exists</td>
</tr>
<tr>
<td>Linkage with reality</td>
<td>Indirect and misleading</td>
<td>Direct and accurate</td>
</tr>
<tr>
<td>Local-global relevance</td>
<td>Static, non-varying</td>
<td>Dynamic, situation structure dependent</td>
</tr>
<tr>
<td>Stability</td>
<td>Static, non-changing</td>
<td>Dynamic, situation timing dependent</td>
</tr>
<tr>
<td>Format</td>
<td>Fixed</td>
<td>Flexible</td>
</tr>
<tr>
<td>Purpose</td>
<td>Monitoring</td>
<td>Improvement</td>
</tr>
<tr>
<td>Function</td>
<td>Allocate blame</td>
<td>Encourage creative and learning</td>
</tr>
<tr>
<td>Decision making</td>
<td>Structured</td>
<td>Unstructured</td>
</tr>
<tr>
<td>Effect on continuous</td>
<td>Impedes</td>
<td>Stimulates</td>
</tr>
<tr>
<td>improvement</td>
<td>Linked to strategy No/less link to strategy</td>
<td>Derived from strategy</td>
</tr>
</tbody>
</table>

Source: Burgess et al. (2007, p. 588).
3.5.1 Non-financial measures practices

It is clear that non-financial measures have many advantages over financial ones. Thus, it is argued that companies should be encouraged to disclose non-financial performance measurements voluntarily. Recently, Coram, Monroe and Woodliff (2009) provide evidence on the effect of voluntary disclosure of non-financial performance information and the impact on financial statement users’ stock price estimates. The study indicated that non-financial performance indicators have a significant impact on the stock price estimates of sophisticated financial report users. This provides significant evidence about the importance of non-financial information disclosure. Maines et al. (2002) argued that previous research suggests that non-financial performance measures are relevant for predicting organisational financial performance, have the ability to value organisational equity, can enhance the value of financial measures due to interactive effects between the two and have some degree of reliability. However, Maines et al. (2002) concluded that companies should be encouraged to disclose non-financial performance measures voluntarily.

Empirically, several studies have focussed on non-financial performance measures practices in different types of organisations in different countries. To determine the scope of current non-financial practices in USA and Canada, Stivers et al. (1998) grouped 21 non-financial performance measures in five categories. These include: customer service, market performance, innovation, goal achievement and employee involvement. The result of the study indicated that customer service measures were perceived to be the most important measures, market performance and goal achievement were also perceived to be highly important categories, whereas, innovation and employee involvement categories were perceived to be less important. Chenhall and Langfield-Smith (1998b) found that Australian manufacturing companies use a broad
set of non-financial measures such as customer satisfaction, employee attitudes, team performance, qualitative measures and ongoing supplier evaluations. In his study, Hyvönen (2005) found that Finnish manufacturing companies put greater emphasis on recently developed non-financial measures of performance than the Australian companies reported by Chenhall and Langfield-Smith (1998b). Hyvönen (2005) justified his findings in that the sample period of these two studies is different. It should be noted that the Australian results were in 1998 and the development of these latest techniques has been quite recent. In addition, the organisations presented in Hyvönen’s study are leading companies in their field in the world and use the most advanced techniques. Hyvönen (2005) also argued that joining the European Union in 1995 changed the accounting legislation in Finland. Gosselin (2005) developed a questionnaire including a list of 73 financial and non-financial performance measures to measure the extent of their usage among Canadian manufacturing companies. Study findings indicated that despite all the recommendation to put more emphasis on non-financial measures, management in Canadian manufacturing companies is still giving much more weight in the PMS to financial measures. Widener (2006) surveyed 107 USA firms and found that top managers of these companies place more emphasis on non-financial measures related to employees (employee satisfaction and employee skill development), operational (cycle or lead time and sales from new products or services) and productivity.

Findings of previous research conducted in the UK (Abdel-Maksoud, Dugdale & Luther, 2005; Bhimani, 1994; Drury, Braund, Osborne & Tayles, 1993) provided confirmation that UK manufacturing companies are now reporting using a broad set of non-financial performance measures such as customer measures, quality measures, efficiency measures and employee measures. Gomes, Yasin and Lisboa (2007) findings
indicated the significance of non-financial measures among Portuguese manufacturing companies especially those related to customer and quality. Recently, Verbeeten and Boons (2009) findings indicated that Dutch firms use non-financial measures of performance (i.e. employee measures, customer measures, process measures, quality measures) to a larger extent.

In respect to other countries, Ismail (2007) found that Egyptians private companies rely on both financial and non-financial measures of performance evaluation. The profit margin, as a financial measure, is the most commonly used performance measure. Customer satisfaction is the most commonly used non-financial measure of performance evaluation. In China, Xiong et al. (2008) conducted a survey of senior executive and senior financial officers of large or mid-size firms. The results of the study showed that most Chinese firms use both financial and non-financial measures in their PMS. In particular, the top three performance measurement criteria used were strategy related measures (66.5%), financial measures (63.8%) and objective and subjective measures (62.7%). The bottom three performance measurement criteria were customer oriented measures (49.8%), internal process measures (49.3%) and learning and innovation measures (30.8%). Jusoh et al. (2008) found that non-financial measures are used among Malaysian manufacturing companies to a greater extent. For example, the use of customer measures such as on-time delivery, customer response time, number of customer complaints and surveys of customer satisfaction are high among Malaysian manufacturing companies. Furthermore, the study found that Malaysian manufacturing companies place a major weight on the use of internal business process measures, but innovation measures do not seem to be widely used.
In the context of Jordan, few studies have investigated non-financial performance practices. The limitations of these studies are that they take the performance measures in aggregate form (Said, HassabElnaby & Wier, 2003). Zwelef and Nour (2005) found that Jordanian banks use both financial and non-financial measures to evaluate their performance. In particular, the study findings indicated that Jordanian banks use financial measures, customer measures, internal business process measures and learning and growth measures. Additionally, Hawamdah (2006) found that Jordanian listed industrial companies use both financial and non-financial performance measures. Zuriekat (2007) surveyed Jordanian listed manufacturing companies and found that the operational and customer category is used to a larger extent. The results also indicated that innovation, employee, supplier and quality categories are used to a moderate extent but the environment category tends not to be used by Jordanian manufacturing companies. In respect to the Jordanian public sector, Ababneh (2008) found that the customs department pays more attention to the growth and learning dimension of the BSC followed by internal process and then customer satisfaction.

Overall, the above discussion indicates that non-financial performance measures are very common currently in manufacturing companies in different countries. In this context, Hutaibat (2005) stated:

This study's results and those of previous studies indicate that most companies, in both developed and developing countries, used a mixture of financial and non-financial performance measurements. However, it seems non-financial measures are more popular than financial ones among companies in developing countries (p. 195).

However, Hyvönen (2007) calls for further research in non-financial performance measures and argues that there has not been much research on non-financial management accounting systems.
3.6 The BSC framework

The BSC is a well known approach that complements traditional financial measures of business unit performance (Kaplan & Norton, 1992). The term “balanced” relates to the balance between financial and non-financial performance measures, between lagging and leading indicators and between internal and external perspectives of performance measurement (Jusoh et al., 2008). The BSC is a measurement system which helps organisations to translate their vision and strategy into action, and provides a comprehensible overview of organisational performance. Introduced by Robert Kaplan and David Norton in 1992, the BSC is a system that measures both the current performance of an organisation and drivers for future performance. According to Elshishini (2001, p. 6) the BSC 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. In particular, the BSC as Kaplan and Norton (1992, p. 72) reported provides answers to the following four questions:

1. How do customers see us?
2. What must we excel at?
3. Can we continue to improve and create value?
4. How do we look to shareholders?

Therefore, the BSC allows managers to look at their business from four important perspectives including the financial perspective, customer perspective, internal business perspective, and innovation and learning perspectives (see Figure 3.1). Thus, the BSC approach combines the traditional financial measures with non-financial measures of customer, internal business processes, and organisation innovation and learning (Huang, 2009). Kaplan and Norton summarized this as follows:

By combining the financial, customer, internal process and innovation, and organisational learning perspectives, the balanced scorecard helps managers
understand, at least implicitly, many interrelationships. This understanding can help managers transcend traditional notions about functional barriers and ultimately lead to improved decision making and problem solving. The BSC keeps companies looking forward instead of backward (1992, p. 79).

Braam and Nijssen (2004, p. 338) summarised the development stages of the BSC approach as follows: In 1996 Kaplan and Norton extended their view stressing the importance of aligning the scorecard information with the business strategy. Therefore, to translate the strategic goals efficiently into tangible objectives and measures, they suggested four interrelated management processes. These processes include: clarifying and translating vision and strategy, communicating and linking strategic objectives and measures, business planning and target setting, and enhancing strategic feedback and learning. Finally, in 2001 Kaplan and Norton introduced five principles to keep strategy as the focus of organisational management processes. These include: translate the strategy into operational terms, align the organisation to the strategy, make strategy everyone’s everyday job, make strategy a continued process and mobilize change through executive leadership. Thus, the use of a BSC means putting a handful of strategically critical measures together in a single report, in a way that makes cause-and-effect relationships transparent and keeps managers from focusing too much on improving one measure at the expense of others (Hoque & James, 2000). This process as Ittner et al. (2003) indicated is a good method for using financial and non-financial measures to communicate the multiple, linked goals that an organisation must reach to achieve its long-term objectives. In their study, Speckbacher et al. (2003) identified three types of BSC:

- Type one: a specific multidimensional framework for strategic performance measurement that combines financial and non-financial strategic measures.
- Type two: a Type one BSC that additionally describes strategy by using cause-and-effect relationships.
- Type three: a Type two BSC that also implements strategy by defining objectives, action plans, results and connecting incentives with the BSC.

However, Ittner et al. (2003) pointed out that the BSC model enhances performance by translating strategy into specific objectives and measures that are linked in a causal chain of leading and lagging indicators covering the four scorecard perspectives.

**Figure 3.1: The BSC framework**

Adapted from Kaplan and Norton (1996b, p. 76)

### 3.6.1 The BSC perspectives

An essential core element of the BSC is the number of the perspectives used (Speckbacher et al., 2003). However, the number of perspectives used differs from one
company to another because it depends on the strategy and the competitive market for each company (DeBusk et al., 2003). Thus, the number of perspectives used is situational in that a company may employ only two perspectives or even more than the original four perspectives (Ittner et al., 2003; Speckbacher et al., 2003). Therefore, advocates of the BSC approach suggest that each unit in the organization should build and use its own scorecard (Lipe & Salterio, 2000).

Kaplan and Norton (1992) identified four categories of measures (see Figure 3.1). These four categories as Tapanya (2004, p. 45) indicated represent the views of four essential stakeholders in any firm. Kald and Nilsson (2000) pointed out that the four perspectives of the BSC should be balanced against each other, that is, no one perspective should be allowed to predominate over the others. In order not to lose focus; one should limit the number of measures to approximately 20, since the BSC is a system used mainly to evaluate organisational performance. However, Otley and Fakiolas (2000) argued that the use of the BSC approach is proving popular and adopts a wider framework than that of earlier accounting and traditional financial performance measures. The four perspectives of the BSC will be discussed in turn.

3.6.1.1 Financial perspective

This perspective identifies how the business wishes to be viewed by its shareholders (Nørreklit, 2000). Financial measures are the oldest and still most commonly used measurement tool in management accounting (Tapanya, 2004). These measures focus on what has happened in the past and include mainly those measures dealing with organisational profitability. In their study, Hoque and James (2000) suggested several financial measures. These include: operating income, sales growth and return on investment (ROI). Maltz et al. (2003) suggested the following financial measures: profit
margin, revenue growth, cash flow, net operating income, revenue per employee, profit per employee, stock price/market capitalisation, economic value added (EVA), growth in common equity, EPS, ROI and ROE. These measures differ amongst companies, because there is no standard set of financial measures applicable across different contextual organisational frameworks and environments.

3.6.1.2 Customer perspective

This perspective represents the relationship between an organisation and its customers (Maltz et al., 2003). Customers’ concerns as Kaplan and Norton (1992) pointed out tend to fall into four key categories. These include: time, quality, performance and service and their cost. Lead time measures the time required for the company to achieve its customers’ needs. Quality measures the defect level of incoming products as measured by the customer. The combination of performance and service measures how the company’s products or services contribute to creating value for its customers. Kaplan and Norton (2001) summarized the importance of the customer perspective as follows:

The core of any business strategy is the customer-value proposition, which describes the unique mix of product, price, service, relationship, and image that a company offers. It defines how the organisation differentiates itself from competitors to attract, retain, and deepen relationships with targeted customers. The value proposition is crucial because it helps an organisation connect its internal processes to improved outcomes with its customers (p. 93).

The focus of this perspective is on customer satisfaction and the resulting changes in market share, new customer acquisition, customer retention, and customer profitability (Kaplan, 2001; Wright, Smith, Jesser & Stupeck 1999). Michalska (2005, p. 754) pointed out that customer measures refer to the degree of meeting the customers’ needs and include the price level, customers’ rankings, matching of deliveries with orders, time of the realization of orders, participation in the market, percentage of new customers, percentage of customers kept, customers’ satisfaction, and acquaintance with
the brand. In their study, Hoque and James (2000) used the following customer measures: survey of customer satisfaction, number of customer complaints, market share, percentage of shipments returned due to poor quality, on-time delivery, warranty repair cost, customer response time and cycle time from order to delivery.

To sum up, the customer perspective captures the ability of the organisation to provide high quality products and services. It is also a very important perspective in helping organisations to improve their financial results by connecting the business processes with customers (Jusoh et al., 2008).

3.6.1.3 Internal business process perspective

The internal business process measures should focus mainly on the internal processes which will have the greatest effect on customer satisfaction and financial objectives of an organisation. In other words, the critical business processes enable an organisation to deliver on the value propositions of customers in targeted market segments and satisfy shareholders expectations of high financial results (Kaplan & Norton, 1996c, p. 62). Thompson and Mathys (2008, p. 385) indicated that internal processes are central to getting things done in an organisation because, once managers identify the relevant products and services that influence customer satisfaction or financial performance, the next step is identifying the key processes that influence these outcomes.

In this perspective, Michalska (2005) identified three groups of processes. Firstly, innovative processes in which the company focuses mainly on meeting the apparent and hidden needs of its customers. Secondly, operational processes in which the company creates the product and delivers it to its customers. Finally, processes of after-sale service in which the company tries to increase the value of the work. In general, the key
indicators of this perspective include: material efficiency variance, ratio of good output to total output at each production process, manufacturing lead time, rate of material scrap loss and labour efficiency variance (Hoque et al., 2001). Maltz et al. (2003, p. 194) reported that the most frequently selected process measures include: time to market for new products and services, quality of new product development and project management processes, quantity and depth of standardized process, quality of manufacturing process, and quality initiative processes. In their study, Chow and Van der Stede (2006) used ten measures. These included production volume, labour productivity, machine productivity, material usage, setup efficiency, manufacturing cycle time, inventory levels, product defects, new product introductions, and new product design efficiency.

This perspective is a critical perspective in the BSC model since it is the driver of customer satisfaction which in turn is a key driver of financial performance.

3.6.1.4 Learning and growth perspective

Learning and growth come from three principle sources: people, systems, and organisational procedures. These three sources represent the infrastructure that any company must build in order to create and maintain long-term growth and improvement because intensive global competition requires that companies continually improve and enhance their abilities for delivering value to customers and shareholders by increasing investments in these three sources (Kaplan & Norton, 1996c).

Learning and growth activities focus on translating strategies into action to enhance the ability of the organisation, through its employees, to compete in the future and to achieve its current and long-term goals (Thompson & Mathys, 2008). This perspective
includes the tools that identify the development of the company such as rotation of workers, expenses on new technology, expenses on employees’ training, and time to introduce innovation in a market (Kaplan, 2001; Michalska, 2005). Learning and growth measures, in general, focus on factors that facilitate continuous improvement in the company such as employee satisfaction, employee suggestions per year, store computerization, hours of training invested in brand managers per year (Banker, Chang & Pizzini, 2004). In their study, Hoque et al. (2001) used the following learning and growth common measures: number of new patients, number of new product launches, time-to-market new products, and employee satisfaction.

Finally, this perspective enables managers to build a complete strategy map in their companies by defining the employee capabilities and skills, technology and corporate climate needed to improve and support an effective strategy (Kaplan & Norton, 2001).

3.6.2 Effectiveness and performance consequence of BSC usage

The BSC is a system of measurement which can be used mainly to assess and evaluate organisational performance. The BSC approach has other benefits. Michalska (2005) summarizes the main advantages of the BSC as follows:

It is important to underline that the balanced scorecard being the useful tool in supporting management processes, it permits the estimation of a firm through different perspectives (financial, customer, internal processes, knowledge and development)- through which are equalized many aims and options. This method is unique, mostly due to two elements: it brings all workers closer to a strategy and permits the estimation of the degree of realization of this strategy and firm’s working not only through the financial results. The card makes possible obtaining the measurable results of activities of these areas, which up to now could not be seized in numbers. These advantages strongly speak for the BSC and encourage its implementation and by this, the systematic monitoring of the firm’s successes (p. 758).

The fundamental concept of the BSC, as Sedera et al. (2001) pointed out, is to derive the objectives and measures from the overall corporate vision and strategy and to use
the four perspectives of the BSC to monitor and achieve these objectives. A good BSC should have a mix of core outcome measures such as profitability, market share, customer satisfaction, customer retention, and employee skills, and performance drivers such as cycle times in order to communicate how the outcomes are to be achieved.

Evans (2004) reported that a good BSC includes both leading and lagging measures. Lagging measures (outcomes) tell us what has happened, while leading measures (performance indicators) predict what will happen. For example, a customer survey is considered a leading indicator for customer retention, while customer retention is itself a lagging indicator. Papalexandris, Ioannou, Prastacos and Soderquist (2005) pointed out that a typical BSC is composed of a balanced blend of 15-25 measures. These measures are split into two groups: performance drivers, which are leading indicators of performance, and performance outcomes which represent lagging measures of performance. However, Papalexandris et al. (2005) encouraged companies to incorporate more measures in the leading perspective (learning and growth and internal process) than in the lagging (financial and customer) perspectives. Moreover, the BSC must still maintain a strong emphasis on financial results, like sales growth, return on investment, or economic value added (Kaplan & Norton, 1996c). Similarly, Sedera et al. (2001) argued that a properly developed BSC should represent both financial and non-financial measures from all levels of the organisation, maintain an equilibrium between; firstly, external measures and internal measures, secondly, past performance measures and future performance measures, and finally, objective measures and subjective measures of performance and include only measures that are elements in a chain of cause-and-effect relationships that communicate the meaning of the company's strategy. In this context, Kaplan and Norton (1996d) argued that the use of a cause-and-effect relationship provides linkages between the strategic goals and performance measures.
which enable the employees to achieve their company’s mission. In particular, the cause-and-effect relationship builds on the assumption that the growth and learning measures are the drivers of internal business process measures. The measures of internal process are in turn the drivers of the measures of the customer perspective, while these measures are the drivers of the financial measures (Kaplan & Norton, 1996a).

The BSC is an effective managerial tool to help managers make sound decisions on what to improve or celebrate (Lawton, 2002). In this context, Michalska (2005, p. 757) advocates that implementing the BSC permits monitoring of the degree of the assignments’ realization, and also permits quick detection in the worked out strategy. Thus, the BSC becomes an important management accounting tool for the estimation of the effectiveness of the whole organisation. This is simply because it contains drivers of future financial performance (Kaplan & Norton, 2001). In this context, Leung, Lam and Cao (2006) argued that the presence of a broad set of non-financial measures in the measurement system means that the BSC captures not only an organisation’s current performance, but also the drivers of its future performance. By using the BSC, a company can monitor the results in four perspectives and estimate the strategy in the light of successes that have been achieved (Michalska, 2005, p. 757). According to El-shishini (2001) BSC provides a comprehensive approach for translating a company’s strategic objectives into a set of financial and non-financial measures. In addition, the BSC satisfies several managerial needs by collecting together, in a single report, the different strategies of a company such as becoming customer oriented, reducing response time, improving quality, emphasising teamwork, reducing new product launch times and directing managers’ actions towards the achievement of long-term goals. Furthermore, the BSC enables managers to make trade-offs between different measures by getting them to consider all the important operational measures together. Thus, the
BSC is an integrated system of planning and control since it ties strategy, process and managers together and can provide the planners in a firm with a way of testing a sophisticated model of cause-and-effect which in turn provides managers with a basis to manage results (Atkinson et al., 1997; Huang, 2009). Michalska (2005, p. 753) identified many uses for BSC. These include: construction of firms strategy, monitoring, translating the aims of each division, cell, team and individual worker of the firm’s strategy, analysis of cause-effect relationships and motivation. In this context, Tuan and Venkatesh (2010) argued that using the BSC as a measurement system allows all business units and work groups to focus on the key drivers of future success for them. This in turn contributes to the achievement of overall corporate strategies and objectives.

Key studies have examined the performance impacts of BSC use (Banker et al., 2004; Braam & Nijssen, 2004; Crabtree & DeBusk, 2008; Davis & Albright, 2004; Hoque & James, 2000; Ittner et al., 2003; Verbeeten & Boons, 2009). In general, the results of these studies have shown mixed results. Hoque and James (2000) found that the intensity of BSC usage is associated with improved performance. The study also surprisingly found that this effect does not depend significantly on organisation size, product life cycle, or market position. Ittner et al. (2003) examined the relationship between BSC usage, measurement system satisfaction and organisational performance. The study found that intensity of BSC usage is positively associated with higher measurement system satisfaction but not with improved accounting and stock market performance. Braam and Nijssen (2004) findings suggested that the BSC can enhance organisational performance, but managers should be careful of the requirements for its use. That is, a comprehensive set of relevant financial and non-financial measures may provide managers with insights to optimize their companies’ strategy and to improve its
competitive position and performance (Braam & Nijssen, 2004). However, Braam and Nijssen (2004) findings indicated that BSC usage is negatively associated with organisational performance if this usage is not aligned to company strategy. This result is similar to that of Banker et al. (2004). Banker et al. (2004) found that performance evaluation is influenced by strategically linked measures more than non-linked measures only when evaluators are provided more details about business unit strategies. Davis and Albright (2004) conducted a study to identify whether an improvement in financial performance of bank branches occurred after implementing a BSC and whether the change in financial performance is significantly greater than performance observed in a similar setting where a traditional PMS using only financial measures is employed. Their study found strong evidence to support the proposition that the BSC can be used to improve financial performance. Their findings indicated that branches in the BSC group outperformed non-BSC branches on a common set of composite financial measures. Recently, Crabtree and DeBusk (2008) found that the BSC is an effective strategic management tool that leads to improved shareholder returns. Their findings from different industries show that BSC firms outperform non-BSC firms by 27.12% in the market value of equity sample, by 30.17% in the book-to-market sample, and by 27.58% in the net assets sample. Jusoh et al. (2008) found evidence that the use of multiple performance measures via overall BSC measures contributes to a more positive outcome. In contrast, Verbeeten and Boons (2009) found no support for the claim that aligning the PMS- for example BSC- to the strategic priorities of an organisation positively affects performance.

The balance of the evidence indicates that there is some connection between the use of the BSC approach and more positive financial outcomes and performance. However, further studies will be necessary to clarify the situation.
3.6.3 Limitations of the BSC

Kaplan and Norton (1996b) promoted the BSC as a strategic management tool to compete with other PMS, and argued that, “A properly constructed Scorecard should tell the story of the business unit’s strategy. The measurement system should make the relationships (hypotheses) among objectives (and measures) in the various perspectives explicit so that they can be managed and validated” (p. 65).

In these words Kaplan and Norton determine that BSC construction and application needs a linkage between performance measures and organisational strategy. Furthermore, their arguments tell us that the application of a BSC approach is not easy. In this context, Paranjape et al. (2006) argued that the implementation of the BSC is operationally difficult. Chang (2007) argued that it may be difficult for an organisation to implement the BSC effectively, since its four perspectives may be different from the strategic model in terms of what senior management wants.

In respect to the main assumptions of the BSC approach, Nørreklit (2000) argued that if a cause-and-effect relationship requires a time lag between cause and effect, then this is problematic since the time dimension is not part of BSC. For example, it is difficult to identify when the financial effect of an action will occur. Therefore, the lack of a time dimension in the BSC obscures both the difference and the relationship between operations and development. However, the findings of Nørrektil’t’s (2000) study indicated that the BSC has problems with some of its key assumptions. First, there is not a causal but rather a logical relationship among the areas analysed. Customer satisfaction does not necessarily yield good financial results. Assessing the financial consequences of increased customer satisfaction requires a financial calculus. Chains of action which yield a high level of customer value at low costs lead to good financial
results. Therefore, the BSC makes invalid assumptions, which may lead to the anticipation of performance indicators which are faulty, resulting in sub-optimal performance. Second, the BSC is not a valid strategic management tool, mainly because it does not ensure any organizational rooting, but also because it has problems ensuring environmental rooting. Consequently, a gap must be expected between the strategy expressed in the actions actually undertaken and the strategy planned. Therefore, presenting the BSC as a strategic management tool has attracted increasing criticism (Chang, 2007; Otley, 1999). In addition, Speckbacher et al. (2003) found that many firms do not see the cause-and-effect assumption as a prerequisite for a BSC-based reward system.

Ismail (2007) surveyed Egyptian private sector companies to examine performance evaluation measures and to identify obstacles that may limit the adoption of the BSC among them. The survey respondents were asked to express their thoughts on reasons why BSC usage may be limited. An inadequacy of information systems was the most significant obstacle. The other obstacles include lack of information to adopt BSC, management’s attitude that non-financial measures have less importance in performance evaluation than financial measures, the high cost of acquiring and maintaining such systems of performance evaluation, ambiguities within the company’s strategies, and a lack of software packages supporting BSC respectively. In the same context, Thompson and Mathys (2008) identified four problems that occur with the effective application of the BSC. Firstly, a lack of understanding of the importance of processes within organisation. Secondly, a lack of understanding of alignment between items within the BSC. Thirdly, the need for appropriate metrics. Finally, the need for an understanding of how organisational strategy relates to the scorecard.
The BSC was also criticized for not being comprehensive enough to consider the other elements internal and external to the organisation such as employees, competitors, suppliers, community, regulators, future, technology and environment (Chang, 2007; Henri, 2004; Hubbard, 2009; Iselin et al., 2008; Maltz et al., 2003; Neely et al., 2005; Nørreklit, 2000). Nørreklit (2000, p. 78) argued the BSC does not presuppose any continuous observations of competitors’ actions and results or the monitoring of technological developments, which makes it static rather than dynamic and this may affect the sustainable improvement of an organisation, since it does not have the ability to face any unexpected events.

The BSC is a complex and costly measurement system. Therefore, one important issue in the BSC approach is a cognitive difficulty associated with using the common and unique measures of the BSC. It is important to understand how cognition affects use of the BSC in order to understand how managers’ cognitive capabilities may limit the BSC’s potential benefits. The best manager makes evaluations about the different parts of an organisation within a short time frame, based on both common and unique features. The cognitive difficulty appears when people use common and unique measures differently (Lipe & Salterio, 2000). In this context, Booth (1997) argued that the BSC is a complex system and it is not easy to construct a mixed set of measures and constitute an effective BSC. Thus, Booth (1997, p. 36) listed the common faults in building a BSC as follows: (1) a reliance on generic measures that could apply to any company, (2) a weak learning perspective with people factors being treated superficially and corporate learning being deficient, (3) an absence of leading measures, and (4) no view on how the various measures interact.
It is necessary to conclude that the BSC is a potentially powerful management tool that may help organisations to improve their competitive position and reach organisational objectives, but management needs to carefully plan and manage its implementation and use (Braam & Nijssen, 2004). A more simple approach is measurement diversity.

3.7 Measurement diversity approach usage

The usage of performance measures has two dimensions. These include the level of use or the frequency of use- which is the focus of this thesis- and the manner of use. The level and manner of performance measure use relates respectively to an organisation’s quantity and quality of application of the measures (Braam & Nijssen, 2004; Wadongo, Odhuno, Kambona & Othuon, 2010).

Ittner et al. (2003) argued that proponents of SPM advocate two general approaches for developing SPM systems. The simplest approach calls for companies to measure and use a diverse set of financial and non-financial performance measures (measurement diversity). Similarly, Henri (2006) argued that measurement diversity refers specifically to the extent to which a company measures and uses information related to a broad set of financial and non-financial measures. Thus, measurement diversity emphasises the multiplicity and variety of performance measures that can be grouped into financial performance and non-financial performance to develop a more comprehensive PMS (Hall, 2008; Henri, 2006). Other researchers (Moers, 2005; Van der Stede et al., 2006) defined performance measurement diversity as the use of multiple performance measures, including the use of subjective performance measures. Moers (2005) defined subjective performance measures as a superior’s subjective judgments about qualitative performance indicators. Thus, measurement diversity approach focuses mainly in this study on using a broad set of financial and non-financial performance measures. This
diversity in measures, however, is beneficial (Van der Stede et al., 2006) because White (2008) found that financial measures and non-financial measures are positively correlated. Notably, DeBusk et al. (2003) found that the number of performance measurement components and their relative composition is situational and differs from one organisation to another.

As indicated in sub-section 3.6.3, one of the criticisms of the BSC approach is the failure to highlight contributions from employees, suppliers, community and environment. Therefore, many researchers try to build new and more improved models. The general feature of these models is that they are built on the idea of supplemented traditional financial measures with a diverse set of non-financial measures including those perspectives that the original BSC did not consider. For example, Maltz et al. (2003) reported that the lack of focus on a company’s employees is perhaps the most notable weakness in the BSC. This is because many companies have emphasised the importance of human resources management and treat their employees as a critical component of their success. In this context, Iselin et al. (2008) stated that, “…there are multi-perspective systems in practice that are broader than the BSC. These systems have one or two additional perspectives that usually cover environmental and social matters” (p. 72). Therefore, Maltz et al. (2003) suggested a new model that includes five major dimensions: financial, market, process, people, and future. Similarly, Hubbard (2009) criticized the BSC approach, and argues that the current approach needs more perspectives. However, Hubbard suggests that the current BSC model should include three more elements. These elements include: non-market, environmental and social elements. Thus, Hubbard suggested a model which called for a sustainable balanced scorecard (SBSC). The SBSC model includes a small number of key indicators in six different perspectives covering internal and external, short-term and long-term,
environmental, social and economic, and a variety of different stakeholder perspectives. These studies, however, focus on providing a broad set of measures that cover different parts of an organisation (Hall, 2008). Malina and Salto (2004) argued that firms evidently have flexibility to choose the portfolio of measures and controls that they expect to work best in their situations. Similarly, Chenhall and Langfield-Smith (2007) stated, “… a selection of non-financial indicators should be employed, based on the organisation’s strategy, and include measures of manufacturing, marketing and research and development” (p. 267).

Thus, Scott and Tiessen (1999) used a diverse set of measures covering six categories to investigate the importance of performance measurement for team performance. These categories include: financial, productivity, quality, service, innovation and personnel. Ittner et al. (2003) used ten categories of performance measures to measure the relationship between measurement diversity approach and organisational performance in USA financial firms. These categories include: financial, customer, employee, operations, quality, alliances, suppliers, environment and community. Widener (2006) used five different types of performance measures (employee, financial, operational, return ratios and productivity) and argued that this approach may provide different and more meaningful insights than those provided by previous studies that primarily investigate a dichotomy of financial versus non-financial performance measures. Gomes et al. (2007) used 63 financial and non-financial measures relevant to the Portuguese manufacturing companies across the following eight categories: financial, process, human resource management, quality, customer, environment, social responsibility and innovation. Recently, Iselin et al. (2008) investigated the extent to which 25 measures are emphasised in Australian manufacturing companies. These measures, however, were spread over six perspectives. These perspectives include: financial, learning and growth,
internal business processes, customer, environmental and social. More recently, Veen-Dirk (2009) used 23 financial and non-financial performance measures to investigate if the importance attached to these measures differs for evaluation and reward of production managers of Netherlands industrial companies. Hwang et al. (2009) used a performance index includes a diversity of financial and non-financial measures across four categories (financial, customer, leadership and technology) to investigate whether this performance index can predict the future performance of Taiwan banks.

The aforementioned studies indicate that a measurement diversity approach offers a reasonable theoretical framework for a broad set of performance measurement studies currently, and becomes a fundamental component for the PMS of most organisations.

Building on the above discussion, this study uses a performance measurement diversity approach in this study. The measurement diversity approach is very common in Jordanian companies. Hutaibat (2005) found that Jordanian companies do not rely on one single performance measure; instead, they use a range of techniques to ensure the accuracy and validity of their evaluation. This is, because one of the criteria to evaluate private companies in Jordan for the purpose of the KAIIA\(^5\) is to ensure that the PMS of each company includes a diverse set of financial and non-financial measures.

As indicated in section 3.5, in the last two decades, Jordan has undertaken major steps on its path to penetrate the international markets (see also Chapter 2, sub-section 2.4.1). The EAP, and signing agreements with WTO and EC, increased the pressure facing Jordanian industry. Furthermore, the JISM was established in 1995 in Jordan. JISM

\(^5\) The KAIIA for Excellence in the private sector was established in 1999 as the highest level of quality and excellence recognition in Jordan. It aims at enhancing the competitiveness of Jordanian businesses by promoting quality awareness and performance excellence. As well as recognising quality and business achievements of Jordanian organisations (King Abdullah II Centre for Excellence, 2009).
focuses mainly on the product quality to meet local and international standards and provides services in standardization, certification and innovation (Rawabdeh, 2002).

Based on the outcomes of the above discussion, this thesis is built on a broad set of measures which includes thirty measures across six categories that include financial measures, internal business process measures, innovation and learning measures, customer measures, community measures and environmental measures. These measures are considered generic measures, commonly used by manufacturing companies (see, for example, Franco-Santos, 2007; Gomes et al., 2007; Henri, 2006; Hoque & James, 2000; Hoque et al., 2001; Iselin et al., 2008; Ittner et al., 2003; Jusoh et al., 2008; Maltz et al., 2003; Widener, 2006).

Recently, Iselin et al. (2008) argued that there is much that is not known about the extent to which the usage of multidimensional performance measurement models affects organisational performance. The next section will review the relationship between different types of performance measures and organisational performance.

3.8 Performance consequence of multiple measures usage

Previous studies that investigate the relationship between different types of performance measures and organisational performance revealed mixed and inconclusive results (Henri, 2006). Therefore, previous studies (e.g. Banker et al., 2000; Dunk, 2005; Hemmer, 1996; Henri, 2004; Iselin et al., 2008; Ittner & Larcker, 1998; Ittner & Larcker, 2001; Jusoh et al., 2008; Shields & White, 2004; Widener, 2006) called for further studies to investigate this relationship. In this context, Hemmer (1996) also argued that there is a little evidence about the effect of non-financial measures on organisational performance. Ittner and Larcker (1998) argued that despite increasing
adoption of performance measure diversity, few studies have examined the performance consequences of their use. Thus, Banker et al. (2000) stated, “Little empirical evidence is available on the relation between non-financial measures and financial performance” (p. 65). Similarly, Ittner and Larcker (2001, pp. 375-376) stated:

The performance effects of the balanced scorecard and other value driver techniques remain open issues. Despite widespread adoption of these practices, we still have little hard evidence that company performance improves with their use. Additional research on the performance effects of these practices can make a significant contribution to the managerial accounting literature.

In addition, Dunk (2005) stated, “…the relation between non-financial measures capturing operational activities and financial performance is far from clear” (p. 93). Furthermore, Dunk (2005) stated, “…there is little substantive work to evidence a linkage between measures and financial or non-financial performance” (p. 96). This thesis, however, extends the previous research in the field in that it aims to investigate the effect of usage of four types of performance measurement on organisational performance, namely, financial measures, non-financial measures, measurement diversity and the BSC approach.

The argument that justifies the effect of different types of performance measures on organisational performance is built on motivation and control theory. Performance measures usage compares actual performance with goals and motivates employees to achieve a higher performance. These measures also act as a control system enabling the enhancement of good performance and the correction of poor performance. Both of these effects lead to higher performance. The performance effect occurs contemporaneously with the use of performance measures. Employees understanding that performance reporting and control is occurring will motivate them to higher performance (Iselin et al., 2008). Non-financial measures such as quality and innovation increase customer loyalty, which in turn affects positively organisational performance.
In contrast, poor product quality reduces customer loyalty as dissatisfied customers take their business elsewhere or pay less for the products, which in turn reduces organisational performance (Nagar & Rajan, 2001). Thus, multiple performance models which combine financial and non-financial performance measures will enable managers to better meet the needs of a wide range of organisational stakeholders (Brignall, 2007). Financial performance measures tend to focus on short term profitability whilst non-financial performance measures focus on long term profitability. As such, there has been a shift in the methods of performance measurement towards complementing financial measures with a set of new non-financial measures (Chenhall & Langfiels-Smith, 2007). In general, previous research in the field supports the significant relationship between measurement diversity and organisational performance. In their study, Ittner et al. (2003) found that firms making extensive use of a broad set of financial and non-financial measures (i.e. measurement diversity approach) than firms with similar strategies have higher measurement system satisfaction and stock market return. The study also found little evidence that strategic performance measurement practices are associated with ROA and sales growth. Evans (2004) found that organisations in different sectors with more mature PMS report better results in terms of customer, financial and market performance. Research findings by Van der Stede et al. (2006) indicated that organisations with more extensive PMS- especially those that include objective and subjective non-financial measures- have higher performance outcomes. Van der Stede et al. (2006) concluded that a mismatch between performance measurement and strategy is associated with lower performance only when firms use fewer measures than firms with similar quality-based strategies, but not when they use more. Their findings also indicated that both non-financial and financial performance improve following the implementation of an incentive plan that includes non-financial performance measures. Chow and Van der Stede (2006) examined the extent to which
firms combine financial, quantitative non-financial and subjective performance measures. Their study has found that each type of these measures play different roles in supporting a firm’s operations. Furthermore, Jusoh et al. (2008) found a positive relationship between organisational performance and greater internal business process and innovation and learning measures usage. In contrast, the study findings revealed that both the usage of financial and customer measures did not contribute significantly towards firm performance.

In respect to non-financial measures, research findings by Banker et al. (2000) indicated that non-financial measures of customer satisfaction are significantly associated with financial performance. Nagar and Rajan (2001) found that non-financial quality measures such as defect rates are leading indicators of future sales. Said et al. (2003) found a positive relationship between the use of non-financial measures in compensation contracts and both stock returns and return on assets. Banker, Potter and Srinivasan (2005) found that the non-financial measures used in the incentive program of USA hotels were significantly associated with financial performance as measured by individual business unit revenues and operating profit. Similarly, both Institute of Management Accountants (IMA) and American Institute of Certified Public Accountants (AICPA) surveys revealed that the more extensive the use of non-financial performance measures the better the firms’ ability to enhance performance in strategically critical areas such as customer performance, product innovation and employee capabilities (Shields & White, 2004). Recently, Hwang et al. (2009) findings indicated that non-financial performance measure is highly related to current and future financial performance indexes. In contrast, Perera, Harrison and Poole (1997) found no association between increasing the use of non-financial performance measures and organisational performance for firms follow a customer-focused strategy. Hoque (2005)
found that the direct effect of the use of non-financial performance measures on organisational performance is not significant.

However, the above discussions and findings indicated, in general, that the use of multiple performance measures in PMS is fundamental to the success of organisations.

3.9 Summary

Based on the extant performance measurement literature, this chapter presents the various studies which have examined the different types of PMS. The reviewed literature shows that each performance measurement type has its usefulness and limitation and that an organisation should use the most relevant type. In respect of the traditional financial performance measures, previous research has suggested that these measures have many limitations. Therefore, more attention has been given to non-financial measures which are considered necessary in the current competitive environment.

Many performance measurement models have been developed in recent years. These models focus mainly on combining traditional financial measures with non-financial measures. One of the most dominant systems in the recent years is the BSC approach. The BSC approach stresses the importance of using a combination of financial and non-financial measures and those measures should be aligned with organisational strategy. This approach, however, also has limitations that refer mainly to its complexity, difficulty in implementing it effectively and not being comprehensive enough to consider the other elements both internal and external to the organisation. Therefore, a different approach to performance measurement is suggested in the literature, which calls for companies to use a more diverse set of financial and non-financial performance
measures. The general feature of the measurement diversity approach is that it is built on the idea of supplemented traditional financial measures with a more diverse set of non-financial measures including those perspectives that the original BSC did not consider and are relevant to different organisational context.

This thesis, therefore, focuses on combining financial measures with a broad set of non-financial measures through using a performance measurement diversity approach. Few studies have examined the performance consequences of performance measures usage. Thus, previous research calls for further studies to investigate the relationship between different types of performance measures and organisational performance. This is because previous studies that investigated this relationship revealed mixed results. This thesis extends the previous research in the field in that it investigates the effect of usage of four performance measurement practices (i.e. financial measures, non-financial measures, measurement diversity and BSC approach) on Jordanian industrial companies’ organisational performance.

The choice of performance measures is a contextually bounded issue. Therefore, contingency theory provides the framework necessary for the next chapter which will analyse the effect of various contextual variables on the extent of performance measurement diversity approach usage.
Chapter 4
The Contingency Theory of Performance Measurement

4.1 Introduction

The contingency theory approach\(^6\) is essential for understanding a measurement diversity approach (Ittner & Larcker, 1998). Studying the gaps, arguments, aspects and criticisms of previous contingency-based research, this chapter identifies and determines the model and variables utilized in this research. Seven contingent factors are assessed for their effect on the extent of performance measurement diversity usage\(^7\).

The chapter is structured as follows: Section 4.2 reviews the emergence of contingency theory with its initial and contemporary focus on organisation structure, contingent factors, MCS and organisational performance. Section 4.3 focuses on the gaps in contingency theory-based research to identify the contingent factors relevant to this study. Based on the previous research in the field, sub-sections 4.3.1, 4.3.2, 4.3.3, 4.3.4, 4.3.5, 4.3.6 and 4.3.7 discuss the contingent factors adopted in this study and their effect on the extent of performance measures usage. Section 4.4 analyses the different criticisms of contingency theory based-research and how the current research attempts to overcome these criticisms. Finally, section 4.5 presents the conclusion of this chapter.

\(^6\) The contingency theory approach is a common approach in management accounting research that is conducted in both developed and developing countries. In the context of Jordan, different studies have been conducted based on the contingency theory approach (e.g. Hutaibat, 2005; Zuriekat & Al-Sharari, 2008).

\(^7\) “Performance measurement diversity”, “combination of financial and non-financial measures”, “measurement diversity”, “multiple performance measures”, “multidimensional performance measurement”, and “multi-criteria measures” are concepts that are used interchangeably and synonymously in the previous contingency-based literature (see, for example, Chenhall & Langfield-Smith, 2007; Dossi & Patelli, 2008; Franco-Santos, 2007; Hall, 2008; Henri, 2004, 2006; Hussain & Gunasekaran, 2002; Iselin et al., 2008; Ittner & Larker, 1998; Ittner et al., 2003; Malina & Selto, 2004; Moers, 2005; Otley, 1999; Van der Stede et al., 2006).
4.2 Contingency theoretical justification

The contingency approach emerged in the organisation theory literature in the early to mid-1960s. The contingency framework is relatively new in that there are no references to contingency theory in the accounting literature before the mid-1970s (Otley, 1980). The theory was only recognised by the accounting literature in the mid-1970s. The initial emphasis was on the effect of some common factors on the organisational structure (Zuriekat, 2005). In this context, Drazin and Van de Ven (1985) stated that “…central to a structural contingency theory is the proposition that the structure and process of an organisation must fit its context (characteristics of the organisation’s culture, environment, technology, size, or task), if it is to survive or be effective” (p. 515).

This 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, history, and other organizational factors. 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. Management accounting system must adapt with internal and external factors in order to help managers to achieve business goals (Anderson & Lanen, 1999; Haldma & Lääts, 2002; Otley, 1980). According to Hayes (1977) it is possible for a relationship to occur between the contingent variables and accounting system without the presence of organisational structure in this relationship. In this context, Otley (1980) argued that it is better to consider the relationship between the contingent variables and the choice of the accounting information system without considering the organisational structure.

The contingency approach is located between two approaches mainly used to study the effects of control systems on outcomes. The first one is the situation-specific approach and the second one is the universalistic approach (Fisher, 1995).
Contemporary contingency theory of management accounting focuses primarily on explaining how particular circumstances (that is contingencies) shape the form of the PMS (Reid & Smith, 2000). Otley (1980) stated that:

The contingency approach to management accounting is based on the premise that there is no universally appropriate accounting system applicable to all organisations in all circumstances. Rather a contingency theory attempts to identify specific aspects of an accounting system that are associated with certain defined circumstances and to demonstrate an appropriate matching (p. 413).

The arguments above suggest that one of the initial aims of contingency theory is to examine the effect of different contingent factors on the extent of performance measurement usage. However, some studies use organisational performance as a dependent variable in this relationship, while other studies have not (Chenhall, 2003). Fisher (1995, 1998) suggested a model for contingency research in management accounting, which is concerned with examining the relationship between contingent factors, organisational control and organisational performance (Anderson & Lanen, 1999; Haldma & Lääts, 2002; Otley, 1980) (see Figure 4.1).

Previous research uses this contingency model to examine performance evaluation measures and analyse factors that may affect the selection and usage of those measures (Ismail, 2007). These studies have several limitations. Firstly, most of the previous research on contingency theory focuses on financial control systems and ignores non-financial control systems. Secondly, many of the empirical studies on contingency theory have examined only few contingent variables and one control system attribute (Chapman, 1997; Fisher, 1995; Van de Ven & Drazin, 1985). Finally, as indicated in Chapter 3, the relationship between different performance measurement practices and organisational performance (financial and non-financial dimensions of performance) is
ambiguous. In this research, model 4.1 is modified and employed to test two important relationships in this stage in Jordan:\footnote{It will be a fruitful opportunity for future studies to build on the result of this research to test model 4.1 as a whole in Jordan.}

1. The effect of various contingent factors on the extent of performance measurement diversity usage.
2. The relationship between different performance measurement practices and organisational performance.

**Figure 4.1: Contingency framework**

![Contingency Framework Diagram](image.png)

Ideally, empirical accounting research should be conducted in the context of relevant theories. This can be particularly difficult for studies focusing on topical accounting and management issues (Lipe & Salterio, 2000). Some previous studies which focussed on industries that operate under institutional and government controls, such as banks use both contingency and institutional theory. In this context, a study by Hussain and Gunasekaran (2002) suggested that pressure from government on firms (i.e. banks) led these firms to focus primarily on financial measures of performance rather than non-financial measures of performance.

The contingency approach has become one of the dominant methods for research on control system usage (Dent, 1990; Fisher, 1995). Widener (2004) pointed out that
contingency theory provides an understanding for the implementation of non-financial controls. Since the purpose of this study is to investigate the extent of usage of a diverse set of financial and non-financial measures of performance, a decision has been taken to build this study on the contingency theory of management accounting.

Based on the above discussion, the theoretical justification for this study requires further investigation into the relationship between the contingent variables and the extent of performance measures usage.

### 4.3 Contingent factors and performance measures usage

It has been noted that the most important change in management accounting is the broad emphasis and publicity attached to organisational performance measurement during the last decade. Recently, special performance measurement frameworks focussing on the integration of organizational strategies and performance measurement with the mixed use of financial and non-financial measures have been introduced (Jänkälä, 2007). As indicated in Chapter 3, previous management accounting research often criticises the idea of relying solely on financial performance measures and stresses the importance of using a combination of financial and non-financial measures. In this context, Otley (1999) suggested that multiple performance measures which include financial and non-financial measures and track customer satisfaction and innovation together with quality production, are very important for an organisation to gain a competitive advantage. Therefore, Otley (1999) called for further studies in non-financial measures and criticizes the previous studies in that they have focussed more on financial measures. Otley (1999) stated that, “Accounting measurement was stressed and non-financial performance measures were neglected” (p. 365).
As indicated in Chapter 3, proponents of strategic performance measurement suggested two general approaches for developing performance measures. The first one is measurement diversity. This calls for firms to measure and use a diverse set of financial and non-financial measures. The second approach is the use of measurement techniques such as the BSC (Ittner et al., 2003). Additionally, Chapter 3 (sub-section 3.6.3) indicated that previous literature reports several weaknesses in the BSC including the failure to highlight contributions from many other elements. For example, Hubbard (2009) criticized the BSC approach, and argued that the current approach needs more diverse perspectives such as environmental and social perspectives. Thus, previous scholars (Bryant et al., 2004; Iselin et al., 2008; Ittner et al., 2003; Maltz et al., 2003; Widener, 2006) called for further research that considers a measurement diversity approach. This extends the BSC approach and calls for supplementing traditional financial measures with a broad set of non-financial measures regardless of an organisation’s strategy (Ittner et al., 2003).

In Jordan’s context, performance measurement diversity approach is common in most of the Jordanian companies. This is because one of the criteria to evaluate private companies in Jordan for the purpose of the KAIIA is to ensure that the PMS of each company include theses performance measures. In this context, Abu Khadra and Rawabdeh (2006) stated, “The King Abdullah II Award for excellence (KAIIA) is the highest level of recognition of quality and continuous improvement; and has become the most important initiative aimed at reshaping thinking and behaviour in Jordanian industrial companies” ( p. 426). Furthermore, the international competition increased the pressure facing Jordanian companies to change their performance measurement practices. In addition, performance standards need to be evaluated in Jordanian companies to ascertain how products standards are being perceived so as to provide
useful information for consumer, standards setters, and manufactures and to identify opportunities for improvement and future development from such feedback (Rawabdeh, 2002). This research extends prior research by considering a measurement diversity approach. The thesis examines the extent of usage of a diverse set of financial and non-financial measures among six categories including financial measures, internal business process measures, innovation and learning measures, customer measures, community measures and environmental measures. Consequently, the focus of this study is on the frequency or level of usage of performance measures independent of the firm’s strategy (see Braam & Nijssen, 2004; Henri, 2006; Ittner et al., 2003).

Euske et al. (1993) argued that the usage of performance measures is influenced by the surrounded circumstances. Similarly, Chenhall (2007, p. 163) argued that contingency-based research has a long tradition in the study of MCS. Furthermore, Kaplan and Norton (1992, 1993, 2000) suggested the need to focus on financial and non-financial performance measures and this may well be contingent upon organizational circumstances. The central premise of contingency theory is that there is no universally relevant control system that can be used in all circumstances (Fisher, 1995; Otley, 1980). Gosselin (2005) reported that organisations should use new performance measures and those measures should be aligned with various contextual factors such as organisational strategy. Therefore, contingency theory suggests that the appropriateness, effectiveness and use of PMS are affected by the circumstances or contexts in which an organisation operates (Chenhall, 2003; Chenhall & Morris, 1986; Fisher, 1998; Haldma & Lääts, 2002; Henri, 2004; Maltz et al., 2003; Otley, 1980, 1999; Paranjape et al., 2006). In this context, Fisher (1998) stated that, “Contingency theory states that the design and use of control systems is dependent upon the context of the organisational

10 See Chapter 3 for more details.
setting” (p. 47). Otley added, “…contingency theory of management accounting suggests that there is no universally applicable system of management control, but the choice of appropriate control techniques will depend upon circumstances surrounding organizations” (1999, p. 367). In a similar vein, Haldma and Lääts (2002, p. 383) stated:

> It is suggested that the particular features of an appropriate accounting system will depend upon the specific circumstances in which an organization finds itself. How effective the design of an accounting system is depends on its ability to adapt to changes in external circumstances and internal factors.

Furthermore, Maltz et al. (2003, p. 188) stated that, “The appropriate set of measures depends on the firm’s size, technology, strategy, and the particular industry and environment in which a firm operates”. The mentioned arguments indicate that the role of contingent factors is critical in explaining the motivation of organisations in designing and using performance measurements. Different contingent factors are investigated to test their effect on the design and use of control and PMS. As shown in Figure 4.2, Mockler and Dologite (1997) classified the contingent factors that are likely to affect the choice and design of PMS into three categories.
Fisher (1995) classified the contingent variables examined in prior studies into five categories. The first broad category consists of variables related to the external environment. The second category of contingent variables includes competitive strategy and mission. The third category consists of contingent factors related to a firm’s technology and interdependence. The fourth category consists of industry, firm and business unit variables, such as firm size, business unit size, firm diversification and firm structure. The fifth category consists of knowledge variables.
Empirical research on management accounting has applied contingency-theoretical approaches and attempted to find out what the key factors are influencing the design of PMS of effective organizations, how popular and widely used various management accounting practices are in different settings and whether the use of non-financial or comprehensive management control formation leads to better performance of organizations. Thus, this body of research has looked for example at the effect of market competition and technology (e.g. Haldma & Lääts, 2002; Hoque et al., 2001; Hussain & Gunasekaran, 2002; Mia & Clarke, 1999), regulation (e.g. Ittner, Larcker & Rajan, 1997), business strategy (e.g. Govindarajan & Gupta, 1985; Hoque, 2004), organisational structure (e.g. Gerdin, 2005a), environmental uncertainty (e.g. Hoque, 2005) and organisational culture (e.g. Henri, 2006). However, after reviewing all the contingency-based studies during the previous twenty years, Chenhall (2007, p. 163) identified six classes of contingent factors that are likely to affect and explain the effectiveness of performance measures usage. These factors include: environment, technology, size, structure, strategy and culture.

The discussion above indicates that the important contingent factors likely to affect the usage of performance measures are environmental uncertainty, advanced manufacturing technology, size, market competition, business strategy and culture. In addition to these factors some researchers have tried to add new factors into the contingency theory paradigm (e.g. Abdel-Kader & Luther, 2008; Haldma & Lääts, 2002). I believe that in addition to the factors mentioned above, it is necessary to test the effect of other factors which are also relevant to a specific business environment such as Jordan as a developing country (see Chapter 2, section 2.3 for more details). This is because each organisation must be designed according to its circumstances in order not to suffer any decrease in its performance (Franco-Santos, 2007).
Through the discussion above, it has been revealed that the contingency theory approach is essential for understanding much of the measurement diversity approach (Zuriekat, 2005). This thesis extends previous research and considers seven contingent factors to assess their effect on the level and frequency of performance measurement diversity usage among Jordanian industrial companies. These seven contingent factors include: advanced manufacturing technology, business strategy, intensity of market competition, perceived environmental uncertainty, organisational culture, workforce diversity and organisation size. These factors as indicated above are relevant to the specific business environment of Jordanian companies (see also Chapter 2, section 2.3 and Sub-sections 4.3.1 to 4.3.7). Notably, there is no single study that has investigated all these contingent variables at the same time (Macintosh & Daft, 1987).

The following sections discuss and review these seven factors and their effects on performance measurement diversity approach usage. Firstly, each factor will be reviewed from the viewpoint of contingency theory, and then its effect on performance measurement will be investigated based on the previous empirical studies that adopted a contingency theory approach.  

4.3.1 Advanced manufacturing technology (AMT)

AMT is about how the organisation’s work processes operate and includes hardware, materials, people, software and how knowledge is used during the production process (Chenhall, 2007; Perera et al., 1997). AMT represents a wide variety of modern computer-based systems devoted to the improvement of manufacturing activities and thus the enhancement of organisational competitiveness (Small & Yasin, 1997). In

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11 Three studies (Chenhall, 2003, 2007; Langfield-Smith, 1997) have reviewed a broad set of contingency-based empirical studies on the relationship between MCS and various contingent variables.
particular, AMT is related to the processing characteristics of organisations and is one of the most notable innovations in manufacturing during the last few decades (Abdel-Kader & Luther, 2008).

AMT emerged when conventional manufacturing technology and computer-based control technology converged and include as examples Computer Aided Design (CAD), Computer Aided Manufacturing (CAM), Computer Integrated Manufacturing (CIM), Computer Numerical Control (CNC), Computer Aided Engineering (CAE) and Flexible Manufacturing Systems (FMS). The use of AMTs, such as CAD, CAM, CIM and FMS has had a profound effect on organization, their infrastructure, functional relationships, and business and functional strategies (Kotha & Swamidass, 1998).

Kotha and Swamidass (1998, 2000) classified AMTs into four dimensions. The first dimension is Product Design Technology (PDT) and includes technology such as CAD. The second dimension is Process Technologies (PT) and includes technology such as CAM. The third dimension is Planning Technologies and the final dimension is Information Exchange Technologies.

Contingency theory research indicates that technology affects the design and use of PMS (Covaleski, Dirsmith & Samuel, 1996). Hussain and Gunasekaran (2002) reported that high competition pressure and technological development encourage organisational management to use multidimensional performance measurement. Chenhall (2007) determined three generic types of technology that are important to MCS design from the organisational literature. These include complexity, task uncertainty and interdependence. Based on these types of technology, Chenhall (2007) also identifies the relationship between technology and MCS in the following two ways.
First, organizations producing highly specialized, non-standard, differentiated products are likely to employ complex unit/batch technologies. These will tend to involve processes that have low analysability of processes. In addition, managers are likely to have imperfect knowledge of processes and low ability to measure outputs. A need for flexible responses to specific customers increases interdependencies across the value chain involving reciprocal interactions with customers, suppliers and functional units such as marketing, production, purchasing and research and development. One might expect that these types of technologies would require controls that encourage flexible responses and high levels of open communication within the workforce and systems in order to manage the interdependencies. Traditionally, mechanistic MCS based on financial controls alone do not seem to suit these circumstances. Therefore, this technology in reality requires MCS based on multiple financial and non-financial measures of performance. Second, organizations that produce standard, undifferentiated products employing capital intensive, automated processes are likely to employ mass production and process technologies. These involve highly analysable processes and few exceptions. Knowledge of processes and measures of output will therefore be more readily available. Additionally, interdependencies are moderate and sequential. This technology requires standardized controls such as the traditional, formal financial MCS. However, manufacturing technologies need to be consistent with business strategies because successful deployment of technology helps to build a competitive advantage (Hyvönen, 2008). In their contingency-based study, Hoque et al. (2001) argued that CAM for example supports cost leadership and customer satisfaction strategies and the PMS in an organisation must reflect the activities that are critical to these strategies. Therefore, the financial measures of performance by these elements are considered inadequate for achieving this goal. In order to assess these activities, CAM companies, for example, need to process information on these strategic activities. One way to
achieve this aim is to adopt a multidimensional approach to PMS (i.e. performance measurement diversity) that allows managers to assess their organization’s performance not only in financial terms, but also in terms of customer satisfaction, efficiency, innovation and employee productivity.

To crystallize the evidence provided in the previous literature, it is argued that AMT is associated with the use of a diverse set of financial and non-financial measures of performance (e.g. Abdel-Maksoud et al., 2005; Banker, Potter & Schroeder, 1993; Hoque et al., 2001; Perera et al., 1997). Banker et al. (1993) surveyed 40 USA plants and found that the implementation of advanced manufacturing technologies is significantly associated with non-financial, quality and productivity measures to shop-floor employees. Perera et al. (1997) gathered data from 105 Australian manufacturing companies and found that AMT is positively associated with non-financial measures usage. Additionally, Hoque et al. (2001) asked the respondents of 71 New Zealand manufacturing units to indicate the extent to which their organisations used CAM in the factory. The study found that greater emphasis on multiple measures for performance evaluation is associated with more frequent use of computer-aided manufacturing process. Baines and Langfield-Smith (2003) found that the increased use of AMT will result in greater reliance on non-financial management accounting information.

Similarly, Abdel-Maksoud et al. (2005) surveyed 303 UK manufacturing firms to investigate the effect of various contingent factors on the extent of usage of non-financial measures. One of the contingent factors is AMT. They measured this factor by asking the respondents to rate the level of applications of a range of technologies, namely, FMS, CAD, CIM, CNC, CAE and CAM. The study findings indicated that while the use of non-financial measures may be associated with advanced technologies, this does not seem to be a key driver in the spread of such measures. Companies
adopting advanced manufacturing technologies are still likely to adopt measures very selectively, typically with emphasis on delivery performance and customer satisfaction, rather than efficiency, quality or human resource measures.

AMT allows for manufacturing flexibility, increases manufacturing productivity and increase opportunities for interactions between firms and customers, between customers, and between firms (Ramani & Kumar, 2008; Swamidass & Kotha, 1998). Traditional PMS have been criticised for their inadequacy as an evaluation tool for present day manufacturing technology. In this context, Kim et al. (1997) argued that companies must be capable of manufacturing high quality products at low cost, as well as delivering products to customers in a timely fashion in order to survive in today’s competitive markets. This is a major challenge for many markets in the present global economies.

In Jordan, industrial companies have recently responded to this challenge by investing millions of dollars in AMT. However, the effect of AMT on PMS is not entirely clear at this stage. Al-kawaldeh (2001, p. 70) stated that, “A sense of renewed optimism in Jordan’s future prospects has encouraged the private sector to invest in high-technology industries”. However, using technology in Jordan is easy due to the fact that the country is relatively liberal (Tubaishat et al., 2006).

Based on the previous argument and findings, this research considers AMT to be an important contingent variable influencing the extent of performance measurement diversity usage in Jordanian industrial companies.
4.3.2 Business strategy

Business strategy actually has two dimensions. These include a mission (or goals) and a competitive strategy (Jänkälä, 2007). Consequently, business (or competitive) strategy focuses on how an organisation competes in the market place (Porter, 1980). Waweru, Hoque and Uliana (2004) argued that with globalization a company can survive only if its cost, quality, and product capabilities are as good as those of their competitors. However, Croteau and Bergeron (2001) defined the business strategy as the outcome of decisions made to manage an organisation with respect to its environment, structures, and process that affect its performance. In other words, the PMS is a crucial element of organisational structure as well as an important determinant of organisational performance.

Kaplan and Norton (1992) argued that multiple measures of performance which combine financial measures with non-financial measures should be used with all strategic choices. In the context of contingency theory, Chan, Burns and Yung (2000) argued that business strategy can be a significant determinant of the PMS in any organisation. Chenhall (2003) also argued that business strategy has been known as a necessary variable in the previous contingency theory literature. Ittner et al. (2003) proposed that organisational performance is positively associated with the extent to which performance measurement practices are linked to the strategy of an organisation. Furthermore, Verbeeten and Boons (2009) argued that organisations will improve their performance only if they align managerial practices with the strategic priorities of their organisations.

Despite the importance of the relationship between strategy and PMS, this relationship is still not clear (Hyvönen, 2007). Strategy is somewhat different from other factors in
that it is not an element of context. Rather it is the means whereby managers can influence the nature of the external environment, the technologies in use, the structural arrangements and the control culture and the MCS (Chenhall, 2005).

Several generic taxonomies have been developed and subsequently used in contingency-based studies including prospectors-analysers-defenders, build-hold-harvest and product differentiation-cost leadership. Contingency based research suggests that certain types of MCS will be more suited to particular strategies (Chenhall, 2007). Miles and Snow (1978) determined four types of business strategy. These include: prospector, defender, analyser, and reactor. Organisations following the prospector strategy wish to have access to the largest possible market. They are also characterised by their attempts to innovate and promote changes in their industry. Prospectors tend to adapt their PMS to strategy and, therefore, focus more on non-financial measures of performance. Organisations following the defender strategy have a restricted market and stress production efficiency. They emphasise the excellence of their products, the quality of their services, and their lower prices. Defenders put more emphasis on financial measures of performance. Organisations that adopt the analyser strategy share both prospector and defender characteristics, but in moderation. These organisations seek to be the first to introduce some new products in the market, but are satisfied to remain in second place with certain products that offer a good quality/price ratio. Finally, organisations supporting the reactor strategy ignore new opportunities, and cannot maintain markets already acquired or take true risks (Croteau & Bergeron, 2001, Gosselin, 2005).

In respect to a strategic mission, it is reflected in three strategies: build, hold and harvest. According to Gupta and Govindarajan (1984) firms with a build mission are
willing to sacrifice short-term earnings and cash flow in order to achieve increasing market shares in the long run. Therefore, these types of firms put more emphasis on non-financial measures of performance. A hold mission describes a willingness to protect and maintain market share in order to earn sufficient returns on investment. The harvest mission implies a short-term orientation and firms with this mission pursue the maximization of profits and cash flow. Companies that follow hold and harvest strategy rely more on the traditional financial measures of performance.

On the other hand, Porter (1980, 1985) has determined three types of competitive strategies as shown in Figure 4.3. These strategies include product differentiation, low-cost production or cost leadership and focus. Porter argued that product differentiation is necessary to obtain customer satisfaction by facilitating product flexibility and timely delivery. Low cost strategy is very important to sell at a lower price than others. An organisation applying a focus strategy concentrates on a special segment of the markets that have possibilities for the organisation emphasizing either cost leadership or differentiation. However, Porter (1980, 1985) argued that for an organization to compete effectively, it must focus on either a differentiation strategy or a low cost strategy (see also Chenhall & Langfield-Smith 1998a). Consistent with Porter’s product differentiation strategy is customer-focused strategy. This form of strategy provides a potential for firms to effectively differentiate their products from competitors by satisfying customer demands for product features or for timely delivery and after sales service (Hyvönen, 2007).
**Figure 4.3: Porter’s business competitive strategies**

<table>
<thead>
<tr>
<th>Strategic Advantage</th>
<th>Uniqueness perceived by the customer</th>
<th>Lowest cost position</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Industry wide</strong></td>
<td>Differentiation</td>
<td>Cost leadership</td>
</tr>
<tr>
<td><strong>Particular segment</strong></td>
<td></td>
<td>Focus</td>
</tr>
</tbody>
</table>

Adapted from Hambrick (1983, p. 689)

Many contingency-based studies (e.g. Anderson & Lanen 1999; Brignall, 1997; Chenhall, 2003, 2007; Chenhall & Langfield-Smith, 1998a; Chong & Chong, 1997; Fisher, 1995; Govindarajan & Gupta, 1985; Langfield-Smith, 1997) argued that organisations adopting generic strategies like product differentiation, prospector or build are using more non-financial measures of performance than firms adopting other types of strategies. In this context, Abdel-Kader and Luther (2008) argued that low-cost strategy implies a tight control system.

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12 Using non-financial measures means using a diverse set of financial and non-financial measurements since no company in practice can depend solely on non-financial measures. Therefore, scholars assert that non-financial performance measures can be employed to overcome the disadvantages of relying only on financial measures (for a review see Ittner & Larcker, 1998, Said et al., 2003; Verbeeten & Boons, 2009).
Gupta (1987) surveyed 58 firms in USA and found that non-financial subjective evaluation was positively associated with a differentiation as a competitive strategy but not with low cost as a competitive strategy. Chenhall and Langfield-Smith (1998a) surveyed 78 Australian manufacturing firms and found that a differentiation strategy is positively associated with the usage of multiple measures of performance and a low cost strategy is positively associated with financial measures of performance. Baines and Langfield-Smith (2003) found that a change toward a differentiation strategy will result in the increased use of advanced management accounting practices in general. Similarly, Hyvönen, (2008) used a case study from six Finnish companies and found that firms that follow a differentiation strategy also emphasise contemporary performance measures (i.e. measurement diversity), but those firms that emphasise low cost strategy place more emphasis on traditional financial performance measures. Recently, Balsam, Fernando and Tripathy (2011) found that firms pursuing a low-cost strategy place a significantly higher weight on financial measures while firms pursuing a differentiation strategy place significantly lower weight on such measures.

On the other hand, the Baines and Langfield-Smith (2003) results indicated that a change toward differentiation strategy will not result in greater reliance on non-financial management accounting information. Zuriekat (2005) surveyed 163 UK manufacturing companies and found that a low cost strategy has a positive and significant impact on the extent of performance measurement diversity usage but a differentiation strategy has no positive impact on the extent of performance measurement diversity usage. The study also found that low cost strategy and differentiation strategy have no significant effect on the extent of BSC usage. These findings differ from earlier findings in the contingency literature.
Some contingency-based studies also revealed mixed results about the relationship between performance measurements and different types of strategy. Govindarajan and Gupta (1985) found a positive association between non-financial performance measures and a business unit’s strategy which can be used to identify a manager’s bonus. In the context of customer-focused strategy, Perera et al. (1997) found a positive relationship between customer focused-strategy and the use of non-financial performance measures. Anderson and Lanen (1999) investigated the management accounting practice in 14 Indian companies and found that prospector firms focus more on non-financial measures of performance than defender firms. Guilding (1999) found that companies following a prospector or build strategy are more likely to use multiple measures of performance. Research findings by Said et al. (2003) indicated that the use of non-financial measures use is significantly associated with the innovation oriented strategy and quality-oriented strategy. Boulianne (2007) found that both prospector and defender firms need non-financial information for decision-making process. Recently, the results of a survey of 45 Dutch firms by Verbeeten and Boons (2009) indicated that specific strategic priorities (i.e. the importance of market/customer orientation, innovation and personnel development) tend to be associated significantly with the use of non-financial performance measures. More recently, Jusoh (2010) found that prospector strategy positively influences the extent of performance measurement diversity usage, while analyser strategy has a significant and positive impact on the use of time-focused customer measures.

However, Porter’s strategies are more relevant to this thesis for four reasons. Firstly, several studies suggest that there is a level of consistency between the organisational and control characteristics of defender and cost leadership, and a prospector and differentiation strategy (Langfield-Smith, 1997). Secondly, firms that place a strong
emphasis on product differentiation and low price strategies gain benefits from a set of management accounting practices (Chenhall & Langfield-Smith, 1998a). Thirdly, Porter’s strategies are relevant to Jordanian companies which operate in a competitive business environment because they are clearer than other strategies (Langfield-Smith, 1997). Finally, Porter’s strategies build on previous findings and have relevant scope, which means that it is academically well accepted (Dess & Davis, 1984; Govindarajan, 1988; Govindarajan & Fisher, 1990; Hambrick, 1983). Based on the above discussion and arguments, this thesis considers Porter’s strategy as a contingent variable influencing the extent of performance measurement diversity usage in Jordanian industrial companies.

4.3.3 Intensity of market competition

Market competition is one of the external factors that comprise the organisation’s environment (Chong & Rundus, 2004). Contingency theory suggests that an organisation must be aligned with its environment in order to achieve its objectives (Hayes, 1977). In contingency theory-based research, market competition is considered one of the important factors that may affect the extent of usage of control and PMS (Chong & Rundus, 2004; Haldma & Lääts, 2002; Hoque et al., 2001; Hussain & Gunasekaran, 2002; Mia & Clarke, 1999). Early, Khandwalla (1972) argued that great competition encourages managers to control the costs and to evaluate the different activities such as production, marketing and finance. Bhimani (1994) argued that using both financial and non-financial measures is an important step for companies to cope with the intensity of market competition. Furthermore, Mia and Clarke (1999) argued that as market competition intensifies, firms make a greater use of the information provided by the management accounting system. They demonstrated that organisations using information via a management accounting system can effectively deal with
market competition and thereby enhance organisational performance. Thus, increased market competition encourages organisations to offer new products and services at a reasonable price to their customers. The result as Hoque et al. (2001) argued is that an organization needs to monitor a diverse range of market factors such as competition for price and market share, number of competitors and competitors’ actions in order to attain competitive advantage. Such organisations need a system that includes a broad set of financial and non-financial performance measures.

In addition, Otley (1999) argued that multiple performance measures which include financial and non-financial measures and track customer satisfaction, innovation together with quality production, are very important for an organisation to gain competitive advantage. Hoque and James (2000) argued that organisations in a strong market position have a greater demand for internal communication. It is likely that these organisations would put greater emphasis on the use of sophisticated management systems such as multiple measures of performance. On the other hand, those organisations in a weak market position may not require a great deal of internal communication which implies a smaller demand for the use of multiple measures of performance. Hoque et al. (2001) reported that organisations confronted with intense market competition are likely to make greater use of multiple measures of performance in order to benefit from various values. These values increase through product innovations and improvements, which subsequently increase shareholders’ value. This increase in value can only be achieved through activities like new product launching, increasing value for customers and improved operating efficiencies. These, in turn, allow new markets to be penetrated and profits to increase. Recently, Al-Omiri and Drury (2007) argued that companies facing intensely competitive market environments
tend to use a greater number of product and service lines. This differentiation in products and services requires more sophisticated management accounting systems.

In general, the findings of previous studies indicated that intensity of market competition is positively associated with the extent of performance measurement diversity usage. Mia and Clarke (1999) found that the intensity of market competition is a determinant of the use of the management accounting system which, in turn, is a determinant for business unit performance. Hoque et al. (2001) reported a positive significant relationship between the usage of multiple performance measures and the intensity of market competition. Research findings by Haldma and Lääts (2002) indicated that changes in management accounting practices based on 62 Estonian manufacturing companies are associated significantly with the extent of competition faced in the market place. Zuriekat (2005) found that companies facing greater competitive pressures are more likely to use a diverse set of financial and non-financial measures.

Companies are generally faced with different degrees of market competitions. Likewise, Jordanian companies are facing a high level of internal and external competition. Jordan has signed a free trade agreement with a number of countries. Following these agreements, Jordan has encouraged foreign investment by offering foreign companies many incentives and exemptions (Jordan Investment Board, 2007). Hutaibat (2005) surveyed 103 Jordanian industrial companies and used a contingency approach to examine the management accounting practices among them. One of his findings is that competition in the Jordanian market is very high. He argued that this finding is the result of the new free trade agreements with other countries, such as the USA, Canada and Europe. Waweru et al. (2004) argued that globalisation has exposed companies in
developing countries to strong competition. Most of them now have to cope with a declining market share, while several others have been forced out of the market. Companies operating in developing countries now require quality and timely information to replace their current management accounting systems. Therefore, this thesis adopts market competition as a contingent variable influencing the extent of performance measurements diversity usage in Jordanian industrial companies.

4.3.4 Perceived environmental uncertainty (PEU)

PEU was an early contingent factor examined for its effect on the design of management accounting systems. PEU is an important factor in studying and explaining why firms adopt different management accounting practices (Abdel-Kader & Luther, 2008). The fundamentals of the relationships between environmental uncertainty and management accounting systems lie at the core of early contingency theories of organizations. The simplified idea is that the environment shapes organizational structures and organizational performance depends on the match or fit between the organization and its environment (Bourgeois, 1985; Hoque, 2005; Jänkälä, 2007).

The importance of PEU in management accounting studies according to Chenhall and Morris (1986) is that this factor makes control more difficult because of the uncertainty of future events. The distinction between dimensions within the external environment, such as uncertainty, hostility and complexity are important to MCS design. Uncertainty is obviously the most studied fundamental dimension of the external environment in empirical contingency theoretical studies. However, uncertainty defines situations in which probabilities cannot be attached to events and even the elements of the environment may not be easily predictable (Chenhall, 2007).
PEU is defined as a lack of information to make decisions, not knowing how to respond to the different problems and not knowing the result and outcome of decisions (Duncan, 1972). Furthermore, 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). However, despite the disagreement concerning both conceptualization and measurement of environment, most of the previous studies focus on the objective external environment as the primary influence on organisational decision making and performance (McCabe, 1990). Early, on Khandwalla (1977) identified four dimensions of PEU. These included turbulence, hostility, diversity and complexity (cited in Chenhall, 2007, p. 172). However, after one year, Miles and Snow developed a measure of environmental uncertainty in 1978, calling it the perceived environmental uncertainty. The scale had 25 items, with six subscales having from two to six items each. The subscales included suppliers, competitors, customers, financial markets, government and regulatory agencies, and unions (Buchko, 1994).

PEU has a much stronger impact on the design of a PMS and includes several factors external to an organisation such as suppliers’ action, customer demands, tastes and preferences, deregulation and globalisation, market activities of competitors, production and information technology, government regulation and policies, economic environment and industrial relations. Companies are adapting to this uncertainty by adopting PMS that allow flexibility and support a fast response capability (Hoque, 2004). Following a contingency approach, Budding’s (2004) used an interview method to determine the most important sources of environmental uncertainty. He stated:

The actions of the central government were suggested to be the most important source of uncertainty. All managers mentioned this uncertainty. A second type of uncertainty, especially for the social security departments, is uncertainties due to cooperation with other organizations outside of the municipality. The third type of
uncertainty is uncertainty stemming from customers. The uncertainty stems from the fact that one does not know in advance the demand for services for a certain period, as well as in the changing composition of the customers. The fourth type of environmental uncertainty stems from local politics, but the interviewees stated that the unpredictability of this type of uncertainty is quite limited (pp. 293-294).

Considering the importance of PEU in contingency theory, Hoque (2005) tried to search for a contingent effect of environmental uncertainty on the relationship between the use of non-financial performance measures and organisational performance. This is because, as he argued, several recent studies linking the use of non-financial performance measures to organisational performance have produced mixed results because these studies eliminated or controlled the effect of environmental uncertainty in their studies. Considering different management accounting research, Hoque (2004) stated:

It can be argued that there is a greater need for increased communication within firms operating in high levels of environmental uncertainty. This need for greater communication may be satisfied with greater usage of non-financial measures as these measures provide management with a framework that helps them assessing uncertainty in a wide range of areas such as market demand, customer satisfaction, innovation, supplies and employees (p. 489).

Similarly, it was argued that when a firm’s environmental uncertainty increases, the firm tends to increase the use of advanced management accounting practices and the use of externally oriented, forward-looking and non-financial management accounting information (Abdel-Kader & Luther, 2008; Chenhall & Morris, 1986; Jänkälä, 2007).

Empirical findings of contingency-based MCS studies support the view that environmental uncertainty is positively associated with the use of broad scope information. The works of Chenhall and Morris (1986) found that using a broad scope of non-financial information is positively associated with PEU. Chenhall and Morris suggested that organisations that face unpredictable change may find that traditional financial evaluation systems, which are generally dealing with matters internal to the
organization, are an ineffective control tool because they are primarily historical and financial-oriented. The same argument was also reported by Gordon and Narayanan (1984). The rationale is that broad scope information is argued to decrease the environmental uncertainty that organizations face, because it helps managers to cope with perceived uncertainty by creating needed organizational knowledge when they receive and process comprehensive information on their business environment (Chehhall & Morris, 1986). Similarly, findings of previous studies (Gul, 1991; Hoque, 2005) indicated that PEU requires a broad set of financial and non-financial measures. Hoque (2004, p. 489) stated that, “…the choice (or type) of measures for performance evaluation is environmentally determined: higher levels of environmental uncertainty affecting the performance of firms are associated with greater emphasis on non-financial measures in performance evaluation”. In this context, Hwang et al. (2009) findings indicated that predictive ability is one of the important benefits of non-financial measures.

Hoque (2005) used a modified version of environmental uncertainty, derived from an early contingency theory as well as from the current literature (e.g. Gordon & Narayan, 1984; Govendarajan, 1984; Hoque, 2004; Hoque & Hopper, 1997) to measure environmental uncertainty. Based on the importance of this factor as a contingent factor that is likely to affect performance measurements usage, this thesis utilises PEU as a contingent variable influencing the extent of performance measurement diversity usage in Jordanian industrial companies.

4.3.5 Organisational culture

Organisational culture is another factor that likely affects the use of financial and non-financial performance measures. In this context, Henri (2006, p. 82) stated, “…as a part
of control practices and organizational activities, the use of PMS and the diversity of measurement are also influenced by organizational culture”. Despite the importance of organisational culture in examining the variation in the use of performance measures, few studies have considered organisational culture as a contextual factor. Chenhall (2007, p. 188) stated, “Little work has been completed in the area of organizational culture and MCS design”. Similarly, Ismail (2007, p. 512) stated, “… one of the issues that was not tested is the impact of organizational culture on the performance evaluation system, which may influence management’s selection of performance evaluation indicators”. Therefore, an understanding of this contingent factor is necessary to examine and evaluate PMS.

Researchers propose a number of definitions for culture. Chow, Shields and Chan (1991, p. 210) defined culture as the common mindset about beliefs, behaviours, values and goals that distinguish one group from another. Lim (1995, p. 16) interpreted culture as a set of beliefs, values, assumptions, and behaviours commonly held by a society. Culture can therefore be understood as a pattern of shared values, beliefs, assumptions and variables that are embedded in organisations and distinguish one organisation from another.

Most of the research in the field (e.g. Bhimani, 2003; Henri, 2006) that investigated the effect of organisational culture on performance measurement design used a competing value model. Organisational culture based on this model is classified into four categories (Cameron & Quinn, 2006). The competitive or rational (market) culture places the emphasis on competitive advantage, market superiority and an external focus. The entrepreneurial or the developmental (adhocracy) culture focuses on innovation, risk-taking, developing new knowledge and an external focus. The bureaucratic
(hierarchy) culture emphasises regulations, formal rules, procedures and an internal focus. The consensual or group (clan) culture emphasises loyalty, tradition and an internal focus (Bhimani, 2003; Deshpande & Farley, 2004). However, market and hierarchical culture refer to the value of control, while the adhocracy and clan culture refer to the value of flexibility (see Figure 4.4).

Organisational culture types associated with flexibility values are likely to use a broad set of financial and non financial measures. Alternatively, cultural types associated with control values are likely to use and focus only on financial measures of performance (Henri, 2006). In this context, Franco-Santos (2007) argued that market and hierarchical cultures (control) are likely to rely on financial performance measures for evaluating and rewarding their executives. In contrast, adhocracy and clan cultures (flexibility) are likely to rely on non-financial measures for rewarding their executives. Therefore, one can argue that organisational culture differentiates organisations based on their managerial practices and affect the use of performance measurements (Henri, 2006; Pothukuchi, Damanpour, Choi, Chen & Park, 2002).
Figure 4.4: Competing Value Model

Adapted from Cameron & Quinn (2006, p. 46)

Kerr and Slocum (1987) found those organisations that follow a market culture are likely to rely extensively on traditional (i.e. financial) performance measures for rewarding their executives. Bhimani (2003) used the competing value model of organisational culture and found that organisational culture can affect the design, usage and effectiveness of MCS. More recently, Henri (2006) presented one of the most important contingency-based studies to investigate the effect of organisational culture on performance measurement diversity usage. Henri (2006) surveyed data from 383 Canadian manufacturing companies to examine the relationship between organisational culture and the design and use of control systems. Henri (2006) specifically focused on examining the effect of organisational culture (i.e. control and flexibility) on two attributes of PMS, namely, the diversity of measurement (i.e. broad set of financial and non-financial measures) and the nature of use (i.e. monitoring, attention focusing,
strategic decision making and legitimization). The results of study revealed that top managers of firms that reflect a flexibility dominant type tend to use a diverse set of financial and non-financial measures and to use PMS to focus organizational attention, support strategic decision-making and legitimate actions to a greater extent than top managers of firms reflecting a control dominant type. The same result was found in Bititci, Mendibil, Nudurupati, Garengo and Turner (2006). Similarly, Franco-Santos (2007) found that organisational culture has a significant impact on the use of financial and non-financial measures in executives' annual incentive payments. These findings indicate that organisational culture is a contingent factor that is likely to influence the design and usage of PMS, and in particular one attribute of PMS, namely, the diversity of measurement. Recently, Verbteen and Boons (2009) findings also indicated that the usage of non-financial measures of performance is influenced positively by organisational culture.

This thesis adopts organisational culture as a contingent variable that is likely to affect the frequency of usage of performance measures for the following reasons. Firstly, few of the previous studies have investigated this factor. Secondly, this factor is important in respect to Jordanian companies in order to open the way for this study to be compared with other studies in other sectors and countries.

Quinn and Kimberly (1984) argued that each organisation has its own culture based on a combination of values. In this context, Cameron and Quinn (2006) argued that more than 80% of the several thousand organisations they studied have been characterized by one or more of the culture types shown in the competing value model. Those that do not have a dominant culture type either tend to be unclear about their culture or emphasise the four different cultural types nearly equally. In the context of Jordan, Smith (1987)
summarized the organisational culture of Jordanian companies in that, status is more important than ability and kinship ties in the decision-making process (cited in Hutaibat, 2005, p. 29). Hutaibat (2005) also argued that in Jordan the title of a person is more important than his/her ability. However, Jordanian culture was traditionally dominated by interpersonal networks (Rabaai, 2009). Thus, it can be concluded that organisational culture in Jordan emphasises flexibility values with a clan (group) focus (see Chapter 2, section 2.3). Furthermore, from my experience I argue that the organisational culture among Jordanian companies is clan oriented rather than any other type. Thus, this research considers one of the four cultural types in this stage, namely, group culture, which emphasises the flexible values to investigate the effect of organisational culture on the extent of performance measurement diversity usage.¹³

4.3.6 Workforce diversity

Workforce diversity is a new contingent factor in management accounting literature. The most important features of workforce diversity are the race and gender of employees (Shoobridge, 2006). Despite the importance of workforce diversity in organisations, little empirical evidence is available to demonstrate its effect on management accounting practices. In this context, Kochan et al. (2003) argued that diversity is a reality in labour markets today. To be successful in working with and gaining value from this diversity requires a sustained, systematic approach and long-term commitment. Success is facilitated by a perspective that considers diversity to be an opportunity for everyone to learn from each other how to accomplish their work better. Organisations that invest their resources in taking advantage of the opportunities that diversity offers should outperform those that fail to make such investments.

¹³ It will be fruitful opportunity for future research in order to consider the whole competing value model to assess the effect of the four culture types on the extent of performance measurement diversity.
Kochan et al. (2003) stated, “…the company’s initiatives for managing diversity are reflected in staffing procedures, performance appraisals and training. Several national awards have recognised the company’s excellent programs for creating and managing diversity” (p. 13). In this context, Foldy (2004) argued that workforce diversity increases the prevalence of alternative perspectives and new ideas. Similarly, Shoobridge (2006) argued that education and experience have an important impact on business performance. Current management accounting practices need educated and trained employees.

In the context of Jordan, employees are an important part of a country’s human capital. Therefore, Jordan strives to prepare the workforce to meet current and anticipated demand by implementing employee training and developing programs that meet organisational needs, implementing programs that promote employee satisfaction and retention, maintaining a healthy work environment, and offering tangible and intangible incentives to employees whose performance is graded “excellent” during a specific period (Kayed, 2005). These activities are supported by two advantages in the Jordanian workforce composition, which are gender diversity and nationality diversity. However, the acceptance of female employees in organisations is one of the most important changes in the composition of the Jordanian workforce which has dramatically increased since Jordan, Israel, and the USA signed a joint trade agreement in 1996 establishing QIZs in Jordan (Halpern, 2004). Many foreign employees are now working in Jordan as a result of the free trade agreements with their countries. Moreover, a majority of the employees working in clothing companies in different industrial areas come from East Asia, because QIZs are very attractive for these companies which are
exempted from both duties and quotas\textsuperscript{14} (Gaffney, 2005). In addition, hundreds of thousands of workers in the Gulf have lost their jobs as a result of the gulf crisis and returned back to Jordan, some of these workers are not Jordanian (Ahmed & Williams-Ahmed, 1993). Finally, As a result of the current financial crisis, many Jordanian workers who work in American companies, European companies and the Gulf area (specifically in Dubai, United Arab Emirates) have lost their jobs and are moving back to Jordan. This also provides a more skilled workforce available to Jordanian companies.

Based on the discussion above and despite the lack of empirical studies on the effect of workforce diversity on management accounting practices and in particular on performance measurement practices, this thesis considers this factor to be a relevant internal contingent factor that is likely to affect the extent of performance measures diversity usage in Jordanian industrial companies. This procedure is used by Haldma and Lääts (2002) who attempted to identify new contingent factors that are likely to affect management accounting practices in Estonia. Their findings, however, introduced new contingent factors that are likely to affect the management accounting practices such as the legal accounting environment and a shortage of qualified accountants. Similarly, Abdel-Kader and Luther (2008) considered customer power for the first time as an external contingent factor that is likely to affect the management accounting practices.

\textsuperscript{14}The FTA between USA and Jordan extended the US-Israel FTA to include QIZs in Jordan that would allow manufacturing companies to export to the USA duty-and quota-free. Since the QIZs provide duty-free entry into the USA, companies from East Asia can save a significant amount for their distributors (who normally pay the duties). These duties are significant enough to force Asian companies that are still subject to these duties to search abroad for low-cost zones where they are exempt. The QIZs were very attractive for clothing manufacturers, because they were exempt from both duties and quotas. Quotas are even more expensive than duties, because they were historically sold directly by the government to companies. Chinese and other East Asian firms were significantly hurt by these quotas since they were forced to pay a large amount to get a license to export (Gaffney, 2005).
practices in the UK. The results of their study confirmed that customer power should be considered as an added external variable in the contingency theory paradigm.

Based on contingency theory, a study conducted by Abdel-Maksoud et al. (2005) investigated the effect of workforce characteristics on the importance of non-financial measures of performance. They found that employee measures are significantly more important in companies with a small number of employees. Moreover, their findings indicated that annual average shop-floor wages and salaries’ show significant correlation with interest in efficiency and customer measures.

The internal dimension of workforce diversity includes those human differences that exert a powerful, sustained effect on people behaviour such as gender, age, ethnicity, race, sexual orientation and physical abilities. These are the primary dimensions of diversity because they are not under human control (Kinicki & Williams, 2006). Workforce diversity will be assessed for the purpose of this thesis using factors such as gender, nationality, qualification and physical abilities. Hopefully, future research will include the other dimensions of workforce diversity.

4.3.7 Organisation size

Organisation size is considered a fundamental contextual factor in organisational theory and its contingency theoretical approach (Chapman, 1997; Chenhall, 2007). The previous contingency theory literature suggests that organisation size is likely to affect the design and the use of MCS. Most of the contingency-based studies investigated this factor and considered its effect on management controls together with other contextual factor especially in larger entities. The role of management controls in smaller or
medium sized entities has received little attention in the contingency-based literature (Chenhall, 2007).

Previous contingency-based studies indicated that organizational size appears to be an important predictor of the existence and generality of more advanced MCS in firms (Jänkälä, 2007; Maiga & Jacobs, 2003). The reason for this as Chenhall (2007, p. 183) argued is that large organizations often develop close associations with suppliers and customers, which blur the boundaries between organizations, thereby increasing further the size of the organisation. Increased size also provides organizations with the resources to expand into global operations and markets, sometimes by way of mergers, takeovers, licensing or other collaborative arrangements. These developments create additional administrative concerns due to increased levels of complexity within the production processes and with managing interdependencies with global partners. Similarly, Finch (1986) argued that larger organisations have more than enough resources and managerial expertise in comparison to small organisations. Therefore, large organisations must develop PMS that can use a broad set of information (i.e. financial and non-financial measures).

Empirically, Puxty and Lyall (1989) found a positive and significant relationship between the size of British industrial companies and their use of management accounting practices such as a budgeting system. Hoque and James (2000) found that BSC usage is positively associated with large Australian manufacturing companies. Laitinen (2001) investigated management accounting practices in small Finnish technology firms and found a positive relationship between performance measurement practices and firms’ size. This relationship is the result of the high pressure of competition. Similarly, Zuriekat (2005) found that the size of manufacturing companies
in the UK has a positive and significant impact on the usage of performance measurement diversity and BSC. In contrast, Libby and Waterhouse (1996) found no relationship between size and management accounting change. Gosselin (1997) found no statistically significant relationship between organisation size and the decision to adopt activity-based management and activity-based costing. Similarly, Hoque et al. (2001) found no relationship between business unit size and multiple performance measures usage. The same result was found by Mohamed and Hussain (2010). The above mixed results support the argument of previous research in management accounting (Hutaibat, 2005; Maiga & Jacobs, 2003) which indicated that there is no consensus on the effect of organization size on management accounting practices. This thesis uses this factor as a contingent factor that is likely to affect the extent of usage of performance measurement diversity in Jordanian industrial companies.

There are several ways of estimating size including profits, sales volume, assets, share valuation and employees. The use of financial measures can make comparisons between organizations difficult as different accounting treatments can be found between firms. Most contingency-based MCS studies have defined and measured size as the number of employees (Chenhall, 2007). Consequently, this thesis measures organisation size using the number of employees.

4.4 Contingency theory criticisms

The contingency theory of organisations has been mainly criticised for issues regarding its application and empirical testing. According to Chapman (1997) and Fisher (1995) contingency theory lacks clarity as many empirical studies on contingency theory have examined only one contingent variable and one control system attribute. In this context, Van de Van and Drazin (1985, p. 358) stated, “...a major limitation of many studies
has been an overly narrow focus on only one or a few contextual dimensions, which limit the studies from exploring the effects of multiple and conflicting contingencies on organisation design and performance” (p. 358).

The weakness of survey instruments also causes problems. Much of the empirical research has been carried out through the use of questionnaire surveys. A weakly designed questionnaire will affect the findings of study. Therefore, the use of multiple methods (questionnaire and interviews) may be helpful in addressing some of these problems (Fisher, 1995).

Another weakness with contingency-based studies is the lack of concern about organisational performance. According to Fisher (1995), previous research poorly defines organisational performance. To combat this shortage, non-financial dimension must be used in conjunction with the financial dimension to effectively define and measure organisational performance (Avci, Madanoglu & Okumus, 2011; Dunk, 2005; Matsuno & Mentzer, 2000).

Most of the previous research on contingency theory has focused on budgeting and standard costing systems. Thus, non-financial control systems should also be investigated along with financial control systems (Fisher, 1995).

Despite the criticisms and gaps in contingency theory research, the current thesis tries to overcome these criticisms and extend the previous contingency-based research which used only one or two contingent variables by utilising seven contingent variables. This thesis also extends the previous research which focused on financial control systems in that this research uses six categories of financial and non-financial measures of
performance (measurement diversity approach) relevant to the different organisations. Similarly, the thesis uses two dimensions of organisational performance (financial and non-financial) to examine the effect of using different performance measurement practices on organisational performance. Finally, this research used factor analysis to validate the different construct in this research. This was done to overcome the limitation of previous studies which conduct a reliability test for the different variables without conducting a factor analysis.

To sum up there is strong theoretical and empirical support for the use contingency theory. It has become one of the dominant paradigms for research on management accounting in general (Chenhall, 2007; Dent, 1990). A contingency-based approach attempts to map variables and demonstrate potential relationships between these variables (Hyvönen, 2008). Therefore, contingency theory provides the appropriate theoretical framework for this thesis.

4.5 Summary

This chapter outlined the contingency theory of organisation and its importance to achieve the research objectives (see Section 4.2). To help this thesis achieve the third objective of this research which seeks to investigate the effect of several contingent factors on the extent of performance measurement diversity usage, this thesis used a contingency theory approach to choose the seven contingent factors that are likely to affect performance measurement diversity usage. As a result, seven contingent variables were identified based largely on the extant literature. These include: advanced manufacturing technology, business strategy, intensity of market competition, perceived environmental uncertainty, organisational culture, workforce diversity and organisation size. This chapter discussed the relevant arguments in contingency theory and
investigated the previous contingency-based research that theorises and examines the relationship between the contingent variable that are employed in this study and the performance measurement diversity usage.

Despite the criticisms and gaps in contingency theory research, there is strong theoretical and empirical support for the use contingency theory in this research as it suggests that the effectiveness and use of a PMS are affected by the circumstances or contexts in which an organisation operates. Thus, a decision has been taken to build this research on the contingency theory of management accounting.

The next chapter presents the theoretical model and hypotheses associated with this research.
Chapter 5
Theoretical Model and Hypotheses Development

5.1 Introduction

The main objective of this chapter is to build a theoretical model and develop hypotheses. These are based on the key arguments, findings and recommendations from the literature review of PMS and contingency theory (see Chapters 3 and 4). Given the research objectives, the study has two models. The first research theoretical model is formulated on the basis of the third research objective. The second research theoretical model is formulated on the basis of the fourth research objective (see Chapter 1, section 1.2).

The thesis has two sets of hypotheses. The first set of hypotheses includes eight hypotheses related to the third research objective which seeks to examine the effect of each of the contingent factors identified in chapter 4 on the extent of performance measurement diversity usage (see Figure 5.3). The second set of hypotheses includes four hypotheses related to the fourth objective which seeks to examine the organisational performance impact of using each of the following performance measurement practices: (1) financial performance measures, (2) non-financial performance measures, (3) measurement diversity approach, and (4) BSC approach (see Figure 5.4).

This chapter is structured as follows. Section 5.2 presents the research questions. Sections 5.3 and 5.4 present the theoretical models. Section 5.5 develops the different hypotheses of the study. Finally, section 5.6 concludes the chapter.
5.2 Research questions

This thesis investigates the level of use of a broad set of financial and non-financial measures in one of the most important sectors in Jordan which is the industrial sector. This research also tries to assess the effect of various contingent factors on the extent of performance measurement diversity usage. The research also assesses the performance impact of using such measures. In addition, there are another four research objectives (see Chapter 1, section 1.2). The first two objectives are descriptive objectives (see Chapter 7 for more details) and the last two objectives are qualitative objectives (see Chapter 9 for more details). To achieve the research objectives, the following questions are addressed:

1. What is the extent of usage of financial and non-financial performance measures among Jordanian industrial companies and what are the main purposes for their use?
2. What is the extent of the diffusion of BSC among Jordanian industrial companies?
3. What is the effect of the various contextual factors on the extent of performance measurement diversity usage in Jordanian industrial companies?
4. What is the effect of the usage of financial measures, non-financial measures, measurement diversity approach and BSC approach on organisational performance in Jordanian industrial companies?
5. What are the major benefits for using a diverse set of performance measures among Jordanian industrial companies?
6. What are the major difficulties faced by management in its current performance measurement system? Are there any solutions?

5.3 Building the first research theoretical model

Figure 5.1 shows the first theoretical model of this study which was built to achieve the third research objective (see Chapter 1, section 1.2). The model has two parts. The first
part is concerned with seven contingent factors: advanced manufacturing technology, business strategy, intensity of market competition, perceived environmental uncertainty, organisational culture, workforce diversity and organisation size. The second part is concerned with performance measurement diversity usage. The model examines the effect of the seven contextual factors on the extent of performance measurement diversity usage in Jordanian industrial companies.

The arguments that explain the rationale of constructing the first research theoretical model are primarily based on previous theoretical and empirical contingent-based research of management accounting and in particular the PMS research. The theoretical justification is built on contingency theory which suggests that the appropriateness, effectiveness and the use of PMS are affected by the circumstances or contexts in which an organisation operates. This will attempt to fill the gap in the literature which has few empirical studies that analyse the effect of multiple contingent factors on the extent of performance measures diversity usage especially in developing countries such as Jordan (see Chapter 4, section 4.3). Furthermore, this will overcome some of the limitations of contingency theory which are identified in Chapter 4 (section 4.4).

The examination of PMS literature discussed in Chapter 4 identified many contingent factors that are likely to affect the design and usage of PMS. These factors include environment uncertainty, advanced manufacturing technology, size, market competition, business strategy and culture. In this context, Maltz et al. (2003) stated that, “…the appropriate set of measures depends on the firm’s size, technology, strategy, and the particular industry and environment in which a firm operates” (p. 188). Furthermore, Chenhall (2003) stated, “…early accounting researchers drew on this work
to investigate the importance of environment, technology, structure and size to the
design of MCS” (p. 128).

Due to their recognised importance in contingency theory (see Chapter 4, section 4.3)
and in respect to the specific business environment of Jordanian companies, this thesis
considers seven contingent factors to assess their effect on the level and frequency of
performance measures diversity usage among Jordanian industrial companies. These
seven contingent factors include: advanced manufacturing technology, business
strategy, Intensity of market competition, perceived environmental uncertainty,
organisational culture, workforce diversity and organisation size. Thus, this research
extends prior research by examining the effect of multiple contingent factors on the
extent of use of financial and non-financial measures (i.e. performance measurement
diversity usage) (see Figure 5.1).
5.4 Building the second research theoretical model

Figure 5.2 shows the second theoretical model of this study which is composed of two parts. The first part is concerned with four performance measurement practices: financial measures usage, non-financial measures usage, measurement diversity usage and the BSC approach usage. The second part is concerned with organisational performance. The arguments that explain the rationale for constructing the second research theoretical model are based on three reasons.
Firstly, calls by previous researchers in PMS to investigate the relationship between different dimensions of PMS and organisational performance (Dunk, 2005; Hemmer, 1996; Henri, 2004; Iselin et al., 2008; Ittner & Larcker, 1998; Jusoh et al., 2008; Shields & White, 2004; Widener, 2006). In this context, Hemmer (1996) argued that there is a little evidence on the effect of non-financial measures on organisational performance. Ittner and Larcker (1998) also argued that despite increased adopting of performance measure diversity, few studies have examined the performance consequences of their use. Similarly, Henri (2004, 2006) argued that the relationship between non-financial measures on organisational performance is unclear because previous studies that investigated this relationship revealed mixed and inconclusive results. Recently, Iselin et al. (2008) also argued that there is much that is not known about the extent to which the multiple measures of performance affect organisational performance (see Chapter 3, section 3.8 for more details).

Secondly, since this thesis is the first to examine the relationship between the different perspectives of PMS and organisational performance in Jordan, it is important at this stage to investigate whether the effort of Jordanian companies in using such measures resulted in improving organisational performance.

Thirdly, to fill the gaps in the previous research that mainly focuses on financial performance measures and their effect on the financial dimension of organisational performance. Therefore, this thesis considers three performance measurement practices (i.e. non-financial, measurement diversity and the BSC approach) in addition to financial dimension to investigate their effect on organisational performance. In respect to organisational performance, Fisher (1995) argued that organisational performance is poorly defined in previous studies as most of the previous studies relied primarily on the
financial dimension. Measuring organisational performance by several criteria is more relevant than depending on only one criterion (Dunk, 2005; Govindarajan, 1988). The non-financial dimension must be used with the financial dimension to effectively define and measure organisational performance (Dunk, 2005). Thus, this thesis utilises the financial and the non-financial dimension to measure organisational performance. Consistent with previous studies (Hoque, 2004, 2005; Hoque & James, 2000), organisational performance was measured by analysing seven dimensions of performance including ROI, margin on sales, capacity utilisation, customer satisfaction, product quality, personal development and market development.

Figure 5.2: Second Research Theoretical Model
5.5 Hypotheses development

This section is divided into two subsections. The first sub-section presents the hypotheses that are related to the contingent variables that affect the extent of performance measurement diversity usage. The second sub-section describes the hypotheses that are related to organisational performance consequence of using financial measures, non-financial measures, measurement diversity and the BSC approach.

5.5.1 Contingent variables and the extent of performance measurement diversity usage

The design and use of the control system is dependent on the circumstances in which an organisation operates. However, due to the lack of empirical studies on the effect of contextual variables on the extent of performance measurement diversity usage, different researchers have called for further research drawing on contingency theory and examining how different contingency variables affect the extent of performance measurement diversity usage (Ittner & Larcker, 1998; Tapany, 2004). Thus, this thesis assesses the effect of various contingent factors on the extent of performance measurement diversity usage in Jordanian industrial companies (see Section 5.3). The rationale for choosing these factors is related to their recognised importance in contingency theory, and in respect to the specific business environment of Jordanian companies (see Chapter 4, section 4.3 and Chapter 2, section 2.3).

5.5.1.1 Advanced manufacturing technology and the extent of performance measurement diversity usage

Advanced manufacturing technology (AMT) allows companies to operate in highly dynamic and competitive industries to acquire manufacturing flexibility (Hutchison & Das, 2007). Currently, many companies feel that their traditional financial measures are
inhibiting the introduction of innovative processes and technologies (Abdel-Kader & Luther, 2008). In this context, Perera et al. (1997) argued that increasing advances in manufacturing technology requires companies to adopt non-financial measures given their ability to measure factors that cannot be measured by traditional cost and financially-oriented PMS.

Furthermore, Haldma and Lääts (2002) argued that while technological progress continues, the accounting system itself may become more sophisticated. Similarly, Abdel-Maksoud et al. (2005) argued that non-financial performance measures usage is positively associated with AMT. A study by Hoque et al. (2001) found that greater use of multiple measures of performance is associated with more frequent use of computer-aided manufacturing process. Based on the arguments above and the results of previous empirical studies (see Chapter 4, sub-section 4.3.1), it can be expected that companies that use more advanced manufacturing technology are more likely to need and use performance measurement diversity approach. Therefore, it can be hypothesized that:

**H1: A greater use of advanced manufacturing technology has a positive impact on the extent of performance measurement diversity usage.**

### 5.5.1.2 Business strategy and the extent of performance measurement diversity usage

Contingency theory literature argues that business strategy is one of the important factors that affect the use of MCS and managerial practices (Abdel-Kader & Luther, 2008; Abernethy & Lillis, 1995; Chan et al., 2000; Verbeeten & Boons, 2009). However, Kaplan and Norton (1992) argued that multiple measures of performance should be used with all strategic choices. Previous literature (Hoque, 2004; Ittner et al., 2003) argued that a positive relationship between strategic choice and organisational performance exists through management’s choice and use of PMS. However, many
contingency theoretical studies (e.g. Brignall, 1997; Chenhall, 2003, 2007; Chong & Chong, 1997; Fisher, 1995; Govindarajan & Gupta, 1985; Langfield-Smith, 1997) argued that organisations adopting generic strategies such as product differentiation are using more non-financial measures of performance than firms adopting other types of strategy.

Porter (1980) argued that a product differentiation strategy is necessary to enhance customer satisfaction by facilitating product flexibility, and timely delivery. Therefore, companies that follow a differentiation strategy will focus more on employing a broad set of financial and non-financial measures. Alternatively, the low cost strategy is important if the organisation aims to sell at a lower price than its competitors. Therefore, companies that follow a low cost strategy are focusing more on financial measures of performance. In general, the findings of previous studies (e.g. Chenhall & Langfield-Smith, 1998a; Hyvönen, 2008) supported this argument.

Based on the arguments above and in respect of the findings of previous studies (see Chapter 4, sub-section 4.3.2) it can be hypothesized that:

**H2a**: Differentiation strategy has a positive impact on the extent of performance measurement diversity usage.

**H2b**: Low-cost strategy has a negative impact on the extent of performance measurement diversity usage.

### 5.5.1.3 Intensity of market competition and the extent of performance measurement diversity usage

Market competition is considered to be another important factor that affects the extent of use of PMS in contingency theory. Previous researchers (Al-Omiri & Drury, 2007; Bhimani, 1994; Hoque & James, 2000; Hoque et al., 2001; Mia & Clarke, 1999; Otley, 1999) argued that intensity of market competition encourages companies to put more
emphasis on performance measurement diversity usage. The findings of previous studies (Haldma & Lääts, 2002; Hoque et al., 2001; Mia & Clarke, 1999; Zuriekat, 2005) also demonstrated that intensity of market competition has a positive impact on the extent of performance measurement diversity usage.

Based on the arguments above and in respect of the findings of previous studies (see Chapter 4, sub-section 4.3.3), it can be argued that organisations facing intensity of market completion are likely to put greater emphasis on the use of performance measurement diversity. Thus, it can be hypothesised that:

**H3: Intensity of market competition has a positive impact on the extent of performance measurement diversity usage.**

### 5.5.1.4 Perceived environmental uncertainty and the extent of performance measurement diversity usage

Perceived environmental uncertainty (PEU) was one of the contingent factors examined for its effect on the design of MAS (Abdel-Kader & Luther, 2008). It has been argued that where environmental uncertainty levels are high, organisations tend to focus more on non-financial measures of performance as these measures create greater efficiency throughout the organisation (Abdel-Kader & Luther, 2008; Chenhall & Morris, 1986; Jänkälä, 2007; Kaplan & Norton, 2001; Said et al., 2003). Furthermore, Hoque (2004) argued that the choice of measures for performance evaluation is determined by environmental uncertainty. That is to say, higher levels of environmental uncertainty are associated with greater emphasis on non-financial measures in performance evaluation. On this point, Gordon and Narayanan (1984) found that high levels of PEU are positively associated with a broad scope of information (for example, a diversity of financial and non-financial measures). Similarly, findings of previous studies (e.g. Chenhall & Morris, 1986; Gul, 1991; Hoque, 2005) have supported the positive
relationship between PEU and a greater usage of a diverse set of performance measurements. Recently, Schulz, Wu and Chow (2010) found that PEU was significantly and positively associated with the use of a comprehensive PMS.

Based on the arguments and findings of previous scholars (see Chapter 4, sub-section 4.3.4), it can be hypothesised that:

**H4: Perceived environmental uncertainty has a positive impact on the extent of performance measurement diversity usage.**

### 5.5.1.5 Organisational culture and the extent of performance measurement diversity usage

Organisational culture has been overlooked in recent PMS studies even though numerous scholars have argued that organisational culture is an important contingent factor that is likely to affect MCS. Therefore, an understanding of this contingent factor is necessary to examine more deeply the PMS (Henri, 2006). Bhimani (2003) found that organisational culture can affect the design, usage and effectiveness of MCS. Similarly, Henri (2006) examined the relationship between organisational culture and the diversity of measurements. The findings of the study revealed that organisational culture influences the degree of measurement diversity that organisations use to evaluate their performance. These findings mean that organisational culture is a contingent factor that is likely to influence the design and usage of PMS, and in particular the diversity of measurement (Franco-Santos, 2007).

It was revealed from the discussion in Chapter 4, sub-section 4.3.5 that organisational culture in Jordan emphasises flexibility values with a group type focus (Hutaibat, 2005; Rabaai, 2009). The discussion also revealed that group (clan) culture type which emphasises the values of flexibility such as loyalty and tradition (see Chapter 6, sub-
section 6.5.3.5) is associated with the usage of a broad set of financial and non-financial measures (e.g. Franco-Santos, 2007; Henri, 2006; Kerr & Slocum, 1987).

Based on the discussion above and findings of previous researchers (see Chapter 4, sub-section 4.3.5), it can be hypothesized that:

**H5: Pursuing a group culture type that is associated with flexibility values has a positive impact on the extent of performance measurement diversity usage.**

**5.5.1.6 Workforce diversity and the extent of performance measurement diversity usage**

As indicated in Chapter 4 (sub-section 4.3.6), workforce diversity is a new contingent factor in management accounting literature. However, despite the importance of the workforce in organisations, little empirical evidence (Abdel-Maksoud et al., 2005) has been provided to demonstrate its effect on management accounting practices. In particular, the relationship between workforce diversity and the extent of use of performance measures is ambiguous. However, Kochan et al. (2003) argued that different aspects of workforce diversity do affect work relationships among employees. Thus, it is relevant to argue that this factor has an effect on the use and design of PMS in an organisation.

Many changes have affected the composition of the Jordanian workforce. These changes include acceptance of females and foreign employees into Jordanian companies. Despite the lack of empirical studies on the effect of workforce diversity on management accounting practices and in particular on performance measurement practices, this study considers this factor as an internal contingent factor that is likely to affect the extent of performance measurement diversity usage.
Based on the discussion above and arguments of previous researchers (see Chapter 4, sub-section 4.3.6), it can be argued that workforce diversity has a positive effect on performance measurement diversity usage. Thus, it can be hypothesised that:

**H6**: Workforce diversity has a positive impact on the extent of performance measurement diversity usage.

### 5.5.1.7 Organisation size and the extent of performance measurement diversity usage

Most of the contingency-based studies have investigated organisation size and considered its effect on management controls together with other contextual factors (Chenhall, 2007). However, research on the relationship between size and performance measures usage revealed mixed results. Hoque et al. (2001) found that the business unit size does not appear to be significantly associated with multiple measures of performance usage. In contrast, previous research has argued that a large organisation is more likely to adopt and use more sophisticated management accounting practices than smaller organisation (Abdel-Kader & Luther, 2008; Chenhall, 2007; Finch, 1986; Haldma & Lääts, 2002). However, previous studies (e.g. Hoque & James, 2000; Zuriekat, 2005) have found a positive relationship between organisation size and performance measurement diversity usage. Recently, Marc, Peljhan, Ponikvar, Sobota and Tekavcic (2010) found that organisation size was one of the most important determinants of performance measurement diversity usage.

The discussion above has indicated that performance measurement diversity usage is positively associated with an organisation size. Therefore, it can be hypothesised that:

**H7**: Organisation size has a positive impact on the extent of performance measurement diversity usage.
Based on the hypotheses developed above, Figure 5.3 presents the first set of hypotheses. These hypotheses are related to the third research question of the study which seeks to examine the effect of contingent factors on performance measurement diversity usage (H1, H2a, H2b, H3, H4, H5, H6 and H7).

Figure 5.3: Hypothesized Model-First Set of Hypotheses (H1-H7).
5.5.2 Organisational performance consequences of performance measures usage

It has been argued in section 5.4 that few studies examined the relationship between different dimensions of PMS and organisational performance. However, even those that were interested in this relationship have produced mixed findings. Therefore, this research contributes to the literature on management accounting and in particular literature on PMS (e.g. Ittner et al., 2003) by investigating this relationship further. The performance measurement practices specified in figure 5.2 are addressed to examine the impact of their use on organisational performance in industrial companies in Jordan.

5.5.2.1 Financial measures usage and organisational performance

Various traditional financial performance measures are used to evaluate the effectiveness and efficiency by which operating divisions use financial and physical capital to create value for shareholders. They also provide expanded financial information to the interested users through the various components of monthly, quarterly and annual financial reports such as the balance sheet, profit and loss statement, and cash flow statement (Tapanya, 2004). On the other hand, starting in the early 1980s, management accounting researchers have identified the increasing irrelevance of traditional control and performance measurement practices (Davis & Albright, 2004).

Recently, performance measurement literature has suggested that when monitoring their organisational performance managers tend to place relatively little emphasis on traditional financial measures of performance such as operating income or return on investment. This can be explained in terms of traditional performance measures being unable to satisfactorily reflect firm performance affected by today’s changing business
environments (Hoque, 2005; Hoque & James, 2000). In this context, Hemmer (1996) argued that traditional financial measures are backward-looking since they focus mainly on past results and cannot reflect the future results of managerial action. Similarly, Henri (2004) argued that traditional control systems act against the successful of organisations. This is because traditional financial performance reporting systems do not include information about the drivers of future financial performance (Iselin et al., 2008). These criticisms refer to recent major corporate collapses in which good financial performance was quickly followed by company failure (Iselin et al., 2008, p. 72). However, Iselin et al. (2008) found that the emphasis on reporting financial measures is positively associated with financial performance. On the contrary, Ittner et al. (2003) found that greater emphasis on financial performance measures is not significantly associated with organisational performance. In particular, the study found that greater emphasis on financial measures is not significantly associated with measurement satisfaction. The study also found a negative but not significant relationship between greater emphasis on financial measures and ROA, sales growth and one-year stock return. Van der Stede et al. (2006) found no association between the number of financial performance measures and organisational performance. A study by Jusoh et al. (2008) revealed that financial measures usage does not affect organisational performance. As a result, it can be expected that using traditional financial measures alone in today’s business environments will affect organisational performance negatively. Based on the arguments above and findings of previous researchers (see Chapter 3, section 3.4), it can be hypothesized that:

**H 1: The extent to which the firm uses financial measures is negatively associated with organisational performance.**
5.5.2.2 Non-financial measures usage and organisational performance

Firms are increasingly implementing new PMS to evaluate managerial performance and to track non-financial metrics such as customer and employee satisfaction, product and service quality, market share, productivity, and innovation (Ittner & Larker, 1998; Johnson, Anderson & Fornell, 1995; Said et al., 2003). Shield and White (2004) argued that non-financial performance measures are more future-oriented than traditional financial measures, thus managers rely heavily on them in making decisions that will benefit their organisations in future. However, several recent studies linking non-financial measures of performance to organisational performance have produced mixed findings (Hoque, 2005). Ittner and Larker (1998) did not find a positive relationship between non-financial measures of quality and customer satisfaction and organisational performance. Ittner et al. (2003) found that using non-financial measures is associated with improved performance assessed by only a one-year stock return but not with that assessed by ROA, sales growth and a three-year stock return. Furthermore, Hoque (2005) found that the direct effect of the use of non-financial performance measures on organisational performance is not significant. Recently findings by Jusoh et al. (2008) revealed that using non-financial measures of internal business process and innovation and learning led to improved organisational performance.

In general findings of previous studies (Banker et al., 2000; Hwang et al., 2009; Ittner & Larcker, 2003; Said et al., 2003; Sim & Killough, 1998) revealed a positive relationship between the use of non-financial measures and organisational performance. Based on the arguments above and findings of previous researchers (see Chapter 3, section 3.8), it can be hypothesized that:

**H2: The extent to which the firm uses overall non-financial measures is positively associated with organisational performance.**
5.5.2.3 Measurement diversity usage and organisational performance

It has been indicated in Chapter 3 (section 3.7) that a performance measurement diversity approach focuses on using a broad set of financial and non-financial measures. In this context, Hemmer (1996) argued that financial performance measures should be supplemented by non-financial measures in order to positively affect organisational performance. Similarly, Ittner et al. (2003) argued that firms may achieve enhanced performance through a greater reliance on performance measurement diversity approach.

Franco-Santos (2007) found that the use of measurement diversity in executives’ annual incentives is negatively related to organisational performance. However, considerable empirical research supports a positive relationship between measurement diversity usage and organisational performance. In this context, Sim and Killough (1998) found that organisations that use a broad set of financial and non-financial measures in their operations achieve higher performance. Boulianne (2002) found that using broad scope of information in prospector-type firms will improve their performance. Similarly, Said et al. (2003) found that firms use a broad set of measurements have higher levels of return on assets and higher levels of market returns. Furthermore, Van der Stede et al. (2006) found positive and significant correlation between performance and measurement diversity. Based on the arguments above and findings of previous researchers (see Chapter 3, section 3.8), it can be argued that the use of a measurement diversity approach will positively affect organisational performance.

H3: The extent to which the firm uses performance measurement diversity is positively associated with organisational performance.
5.5.2.4 BSC usage and organisational performance

It has been argued in Chapter 3 (section 3.6) that the BSC is a measurement system that provides a comprehensive overview of organisational performance. The BSC measures are linked together in a cause-and-effect relationship covering four perspectives. These include: financial, customer, internal business process, and learning and growth (Jusoh et al., 2008). Davis and Albright (2004) argued that organisations that utilize the BSC program should experience better financial performance than organisations that do not utilize such a program. However, Maiga and Jacobs (2003) found that BSC usage has no direct effect on organisational performance. Ittner et al. (2003) found a negative association between BSC usage and ROA. On the other hand, Hoque and James (2000) found a positive relationship between BSC usage and organisational performance. Similarly, Davis and Albright (2004) did provide evidence that BSC usage can be used to improve organisational performance in banks. Their findings indicated that branches which adopted the BSC approach outperformed those who did not adopt BSC. Furthermore, Jusoh et al. (2008) found that firm performance is positively associated with BSC approach usage. Crabtree and DeBusk, (2008) found strong evidence that the BSC approach leads to improved shareholder returns. Based on the findings of above empirical studies and the arguments of previous research (see Chapter 3, sub-section 3.6.2), it can be hypothesized that:

**H4: The extent to which the firm uses the BSC approach is positively associated with organisational performance.**

Based on the hypotheses developed above, Figure 5.4 presents the second set of hypotheses which are related to the fourth research question which seeks to examine the effect of the usage of different performance measurement practices on organisational performance (H1 to H4).
**5.6 Summary**

This chapter sets out the two theoretical models of this research. The gaps and justifications for building the first model was discussed in section 5.3 of this chapter. Figure 5.1 shows the relationship between two parts of the model. The first part is concerned with seven contingent variables which are advanced manufacturing technology, business strategy, intensity of market competition, perceived environmental uncertainty, organisational culture, workforce diversity and organisation size. The second part is concerned with performance measurement diversity usage. The gaps and justification for building the second theoretical model were discussed in section 5.4. Figure 5.2 explained the second research theoretical model. The figure shows the relationship between the two parts of the model. The first part of the model presents four performance measurement practices. These include: financial measures usage, non-financial measures usage, performance measurement diversity usage and BSC approach usage. The second part is concerned with organisational performance.
Based on the previous arguments and findings detailed in Chapters 3 and 4, this chapter developed two set of hypotheses. The first set of hypotheses includes eight hypotheses related to the third research objective which seeks to examine the effect of each of the contingent factors on the extent of performance measurement diversity usage (see Figure 5.3). The second set of hypotheses includes four hypotheses related to the fourth objective which seeks to examine the organisational performance impact of using several performance measurement practices (see Figure 5.4). The next chapter introduces the research methodology for this study.
Chapter 6
Research Methodology

6.1 Introduction
This chapter presents a detailed description of the research approaches, design and methodology used in this study. This chapter is divided into eight major sections. The next section presents the approach and the paradigm of the study. Section 6.3 explains the different types of business research and where this study is placed among them. Section 6.4 presents the mixed method approach of data collection. In particular, subsection 6.4.1 discusses the quantitative approach by outlining the different stages of questionnaire development. Sub-section 6.4.2 discusses the qualitative approach by focusing on the semi-structured personal interviews, the design and associated procedures. Section 6.5 presents the scale items used to measure the constructs of the study. Section 6.6 explains the statistical techniques used to analyse the data to accomplish the research objectives. Section 6.7 presents the procedures that were used to measure the validity and reliability of the instrument. Finally, section 6.8 summarizes the chapter.

6.2 Theoretical research approaches
The theoretical approach is the philosophical stance that supports a chosen research methodology as well as justifying the reasons for conducting such research, sets out the values of the research and provides a guide to ethical research behaviour (Holloway, 2006). Research should be carried out under a paradigmatic scheme. Paradigms are not discussed in all research texts and are given varied emphasis and sometimes conflicting definitions. In some research texts, paradigms are discussed at the beginning of the text with research design, while others may make only passing reference to paradigms at a much later stage or make no reference to paradigms at all (Mackenzie & Knipe, 2006).
There are many paradigms mainly derived from epistemology as shown in Table 6.1. Epistemology is the theory of knowledge embedded in the theoretical perspective of the research and thereby in the methodology. It refers to the behaviour of the researcher in knowledge discovering (Holloway, 2006). Table 6.1 shows the three main epistemological approaches available to researchers, which are objectivism, constructivism and subjectivism and their related theoretical perspectives. This research project adopts the objectivist epistemology which assumes that things exist as meaningful entities independently of consciousness and experience that they have truth and meaning residing in them as objects (Crotty, 1998).

Table 6.1: Epistemological approaches

<table>
<thead>
<tr>
<th>Epistemology</th>
<th>Theoretical perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objectivism</td>
<td>Positivism</td>
</tr>
<tr>
<td>Constructivism</td>
<td>Interpretivism</td>
</tr>
<tr>
<td></td>
<td>Symbolic interactionism</td>
</tr>
<tr>
<td></td>
<td>Phenomenology</td>
</tr>
<tr>
<td></td>
<td>Hermeneutics</td>
</tr>
<tr>
<td>Subjectivism</td>
<td>Critical inquiry</td>
</tr>
<tr>
<td></td>
<td>Feminism</td>
</tr>
<tr>
<td></td>
<td>Postmodernism</td>
</tr>
</tbody>
</table>

Adapted from Crotty (1998, p. 5)

It is important for the researcher to determine the research paradigm. As Guba and Lincoln (1994) argued, paradigm is a set of basic beliefs that must be incorporated to determine the relationship between variables. These beliefs, however, must be accepted simply in faith, because there is no way to establish their ultimate truthfulness. Thus, paradigms provide researchers with the necessary assumptions to choose the appropriate methods to conduct the intended research.
A number of theoretical paradigms are discussed in the literature. These include: positivist (and post-positivist), constructivist, transformative, critical, pragmatism and constructivism. Of these paradigms, positivism is chosen as the theoretical perspective of this research. It is used to derive the research methodology of user and preparer surveys and statistical analyses as the research method. Positivist research emphasises the importance of having results that describe the phenomenon studied and that can be reproduced through a different research study (Davila & Oyon, 2008). Positivism paradigm offers a scientific explanation of research, the use of quantitative data, surveys, statistics and objective measure for testing hypotheses (Neuman, 2000). It relies on quantification, prediction and on the idea that using the correct techniques will provide a defensible result. This approach assumes that reality is objective, transcending an individual’s perspective which is expressed in the observable statistical regularities of behaviour (Wildemuth, 1993). The positivist paradigm faces many criticisms because it does not take the reality of people and their actual capacity into account (Neuman, 2003). It is known that human attitudes, ideologies and values affect science because science itself is created by people (Hirschman, 1985).

Despite the above criticisms, positivism supports both quantitative and qualitative methods. It also emphasises the deductive approach which focuses on some research issues such as the testing of theories and hypotheses by using large sample and cross-sectional studies (Davila & Oyon, 2008; Johnson & Onwuegbuzie, 2004). From a positivist perspective, interpretative accounting research offers a refreshing view that enriches our understanding of accounting (Davila & Oyon, 2008, p. 889). Thus, to overcome some of these criticisms, this research project uses the objective-positivist approach with interpretive or qualitative approach partially to enhance the validity of research findings (Modell, 2005; Van der Stede et al., 2005).
Although the most commonly used mixed methods designs are linked to positivist/post-positivist paradigm assumptions, the combination of qualitative and quantitative methods can be used within any research paradigm (Giddings & Grant, 2006). Positivist and interpretive researchers are not limited to quantitative and qualitative methods. As shown in Table 6.2, both quantitative and qualitative method can be used under each of the two paradigms (Petter & Gallivan, 2004). This suggests that it is the paradigm and research question, which should determine which research data collection approach (qualitative/quantitative or mixed methods), will be most appropriate for a study. In this way, researchers are not quantitative, qualitative or mixed methods researchers, rather a researcher may apply the data collection most appropriate for a particular research study. It may in fact be possible for any and all paradigms to employ mixed methods rather than being restricted to any one method, which may potentially diminish and unnecessarily limit the depth and richness of a research project (Mackenzie & Knipe, 2006).

Table 6.2: Paradigms and methods

<table>
<thead>
<tr>
<th>Paradigm</th>
<th>Methods (primarily)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positivist/ Post-positivist</td>
<td>Quantitative although qualitative methods can be used within this paradigm.</td>
</tr>
<tr>
<td>Interpretivist/ Constructivist</td>
<td>Qualitative methods predominate although quantitative methods may also be utilised.</td>
</tr>
</tbody>
</table>

Adapted from Mackenzie and Knipe (2006, p. 199)

To sum up, the present research is a cross-sectional study that uses the positivist paradigm with the interpretive paradigm in that it uses both quantitative and qualitative research techniques to collect the data to answer the research questions.
6.3 Exploratory, descriptive and hypotheses testing research

Business research consists primarily of three types. These include: exploratory, descriptive and hypotheses testing. Exploratory research is conducted to clarify ambiguous problems (Zikmund, 2003). In such a case, preliminary work needs to be done to gain familiarity with the phenomena in the situation by interviewing individuals and through focus groups. Thus, pilot studies on a small scale, by interviewing individuals are common in exploratory research (Sekaran, 2003). Descriptive research seeks to determine the answers to who, what, when, where and how questions (Zikmund, 2003). Hypotheses testing research seeks to determine the nature of certain relationships among variables. It also establishes cause-and-effect-relationships (Sekaran, 2003).

In general, this PhD study is an exploratory and descriptive research in the context of Jordan. Further, the present research incorporated the features of all the main types of research. However, the exploratory research was conducted through the pilot study (see Sub-section 6.4.1.1) and the last two questions which aim to identify the perceived benefits and problems of performance measurement. The first two questions are descriptive questions in that the first question tries to determine which measures of performance are being used by Jordanian industrial companies and the main purposes of their usage. The second question investigates the diffusion of BSC among Jordanian industrial companies. In respect to the hypotheses testing research, two questions are related to this type of research. In particular, the third question tries to assess the effect of various contingent factors on the extent of performance measurement diversity usage and the fourth question tries to assess the affect of different performance measurement practices on organisational performance (see Chapter 5, section 5.2).
6.4 Mixed method approach of data collection

The choice of data collection methods depends on the facilities available, the time span, researcher skills and other costs and resources associated with gathering data (Frechtling & Sharp, 1997; Sekaran, 2003). The most common methods to collect data are questionnaires and interviews (Easterby-Smith et al., 2002).

Management accounting is a dynamic field with no one school of theory that is dominating its research agenda. The nature of this field has always forced its researchers to be open-minded and attentive to research evolution outside its domain. The diversity and the increasing conversation across different schools—from the economic/quantitative school to the interpretative/case-based tradition and the critical/historical perspective—makes management accounting a very promising field going forward (Davila & Oyon, 2008). Thus, repeated calls for validating empirical research by combining qualitative and quantitative methods have recently been made in management accounting research conducted within the different paradigms (Modell, 2005).

This thesis utilises a survey research which involves both quantitative and partially qualitative approaches. The decision was taken to use multiple methods to collect the data to extend the previous contingency-based research which depends mainly on the questionnaire to collect the data. In this context, Fisher (1995, p. 47) stated, “The use of multiple methods may be helpful in addressing some of the problems of questionnaire-based research”. In recent years, management accounting researchers (e.g. Ahrens & Chapman, 2006; Davila & Oyon, 2008; Modell, 2005; Van der Stede et al., 2005) call for a complement to the quantitative approach with a greater or lesser element of using a qualitative approach to enhance the validity of research findings.
The purpose of a study and its associated research questions affects important survey design decisions, such as the choice of a cross-sectional or longitudinal design, the choice of data collection method and the determination of the level of analysis (Van der Stede et al., 2005). Notably, the decision as to whether one should use a quantitative or qualitative research strategy is not clear-cut; it is largely determined by the goals and questions of the research (De Beuckelaer & Wagner, 2007). In general, Bryman (2004, p. 760) argued that researchers combine the use of quantitative and qualitative research for a variety of purposes, such as (1) triangulation: to ensure that data are mutually reinforcing, (2) preparation: to prepare for quantitative research, (3) expansion and complementary: so that one set of data is employed to expand upon the other set, and (4) different issues: quantitative and qualitative data are collected in relation to different research questions.

The aim of the mixed research methods as a third research paradigm is not to replace either of these approaches but rather to draw from the strengths and minimize the weaknesses of both approaches in single research studies (Johnson & Onwuegbuzie, 2004). Using both quantitative and qualitative methods offers some advantages in dealing with validity threats stemming from the biases inherent in any single method. For example, using both quantitative and qualitative methods also increases the validity of the study results (Patton, 1990). Furthermore, the mixed-method approach gives the researcher the opportunity to investigate the research issues from different perspectives and collect a variety of data (Greene & Caracelli, 1997). In addition, using the interview method in addition to a questionnaire survey may add to a more holistic and richer contextual understanding of survey results (Modell, 2005). The qualitative data may provide valuable information that may not be provided by a quantitative technique.
Thus, the present research uses quantitative and qualitative approaches to provide a good idea about some aspects of PMS among Jordanian industrial companies.

This thesis utilises a survey research approach which involves both quantitative and partially qualitative approaches. In particular, the quantitative approach was based on a questionnaire which was used to collect data to achieve the first four objectives of this research. This research also has other objectives dealing mainly with some important issues related to the usage of performance measures in a developing country like Jordan. These issues include the perceived benefits and difficulties of using such measures. Thus, a qualitative approach based on semi-structured interviews was used in this research to investigate these issues.

6.4.1 Quantitative approach and questionnaire development

This thesis uses the quantitative approach to describe the extent of usage and diffusion of performance measures and to test the hypotheses of the study. Thus, this section presents a justification for using this approach.

The method used to conduct the research depends mainly on the nature of the research questions. The questions in this research include many variables and relationships that need to be tested. These variables and relationships are the core idea of quantitative research (Lincoln & Kalleberg, 1990).

According to Neuman (2003), quantitative research builds on a language of variables, hypotheses, units of analysis and causal explanation. According to Zikmund (2003), the purpose of quantitative research is to determine the extent of some phenomenon in the form of numbers (i.e. quantitative data). Quantitative research tests theories that are
valid at the population level. It assumes general research outcomes, has a high level of abstractness, and relies heavily on principles of statistical testing. Research outcomes are expected to be, at least in principle, independent of the researcher involved in the research project. Thus, in cross-national research, a strong self reference bias may be expected due to the fact that the researcher’s research decisions are based on the researcher’s own cultural beliefs, values and norms (De Beuckelaer & Wagner, 2007). However, quantitative research focuses more on instrument design, construct measurement, sampling and such issues which are associated with a primarily deductive approach (Holloway, 2006). Thus, quantitative research is an effective tool to decrease the bias level and to increase the internal and external validity of measures (Guba & Lincoln, 1994).

The quantitative approach was used in this research to collect the descriptive data that are related to the first two objectives of the study (see Chapter 1, section 1.2). Furthermore, the study has two models that need to be tested. The first model provides some insight into the effect of various contextual factors on the extent of performance measurement diversity usage. Therefore, this model includes two parts. The first part is concerned with the seven contingent factors and the second part is concerned with performance measurement diversity usage (i.e. financial and non-financial measures usage). This model, however, was built to achieve the third objective of this research (see Chapter 5, section 5.3). The second model includes two parts. The first part of the model is concerned with four performance measurement practices. The second part is concerned with organisational performance. This model was built to achieve the fourth objective of the research (see Chapter 5, section 5.4). Accordingly, the quantitative approach was used to collect adequate data to empirically test the hypotheses of this thesis and to improve the quality of the research outcomes. Thus, a postal (i.e. mail)
questionnaire was used to collect the intended data from a comprehensive sample of industrial companies in Jordan.

The survey research consisted of three stages. The first stage was developing the questionnaire instrument used to collect data for the purpose of this research. The second stage comprised the choice of sampling criteria and the selection of the study sample frame. The third stage consisted of the distribution of the questionnaire to the firms included in the sample frame and the collection of the data from those companies.

6.4.1.1 Pre-test and the two-stage pilot study

Relevancy and accuracy are the basic measures for judging questionnaire results. Relevance is ensured when no unnecessary information is collected whereas accuracy is ensured when the collected information is reliable and valid (Zikmund, 2003). A pre-test was carried out to ensure the relevancy and accuracy of the questionnaire. Van der Stede et al. (2005) conducted a study to assess whether there have been any improvements in the use of survey method in the field of management accounting research over time, one of their findings was the use of pre-testing procedure in management accounting research had increased over time but only in a small range. Thus, Van der Stede et al. (2005) considered that a pre-test of a survey instrument is one of the important procedures employed to overcome the weaknesses of the survey method.

In addition to the reviewed literature in Chapters 3 and 4 and prior to conducting the pilot study, three actions were achieved. Firstly, nearly all items in the questionnaire were adapted from published work (see Section 6.5). Secondly, the researcher consulted several academic scholars and experts in the management accounting field, performance
measurement field and research methodology to assess the construct validity and to elicit their comments and opinions on the suitability of the questions of the English copy of the survey instruments. Their comments were incorporated which improved the validity of the questionnaire. Thirdly, since the native language of the respondents is the Arabic language, the researcher then translated the questionnaire into Arabic. As recommended by Henri (2006), special attention was devoted to the translation of each word. Each of the questionnaire items was evaluated. In particular, the questionnaire was evaluated by two Jordanian academics to ensure the accuracy and reliability of the translation. Their comments have improved the quality of the questionnaire. Back translation was achieved to ensure the consistency between the English version and Arabic version of the questionnaire (Zikmund, 2003). In particular, the Arabic version of the questionnaire translated back to English by independent bilingual Jordanians to ensure equivalence of the questionnaire translations. The questionnaires in both languages were compared to ensure that there are no differences.

After the development of the questionnaire, it must be pre-tested. The main purpose of the pilot study is 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). In this context, Presser et al. (2004) argued that the pilot study or pre-testing is the only way to evaluate in advance whether a questionnaire causes problems for respondents. As recommended by Hunt, Sparkman and Wilcox (1982), the researcher conducted an initial pre-test for the Arabic copy of instruments with two academic specialists in questionnaire design before conducting the pilot study. Their comments were given in face-to-face discussions. As a result, some sections of the questionnaire were constructed and rewritten. Even though the literature

15 The same procedures were followed in translating the information letter, consent forms and interview main questions.
on performance measurement is extensive, only a few studies were conducted in Jordan and other developing countries. Thus, the pilot test was conducted in this research to explore and understand the different issues of the study from the point of view of Jordanian practitioners and experts.

A sample size between 12 and 30 is sufficient for a pilot study (Hunt et al., 1982). Following the recommendations of Reynolds and Diamantopoulos (1998), a sample of 15 relevant respondents were selected. This sample includes 12 financial managers and 3 academics. The 12 financial managers were chosen from 12 companies that represent the different sectors and sizes of industrial companies in Jordan.

As shown in Table 6.3, the researcher contacted the potential respondents by phone and explained the reason for contacting them. After respondents had agreed to participate in the study, the researcher obtained the agreement of nine participants to be interviewed. The other participants asked the researcher to hand the questionnaire to them.

<table>
<thead>
<tr>
<th>Number of respondents</th>
<th>Respondents for interviews</th>
<th>Respondents received questionnaires by hand</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>9</td>
<td>6</td>
</tr>
</tbody>
</table>

Each section of the questionnaire was followed by a section for feedback comments from the participants. Respondents were asked to complete and give comments on the

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16 To ensure the richness of the data, the sample for the pilot study was chosen to represent the majority of industrial companies. Three of the companies refused to share in the pilot study and agreed to share in the main survey. Thus, researcher contacted new three companies who agreed to participate in the pilot study.

17 Those include six companies and three academics.

18 The 12 industrial companies who participated in the pilot study were not included in the main study.
content and form of the questionnaire (Henri, 2006). In particular, the participants were asked to evaluate the questionnaire by stressing the following:

- Assessing the availability of the performance measures on the PMS of Jordanian industrial companies. Consistent with previous studies (e.g. Gomes et al., 2007; Henri, 2006; Maltz et al., 2003; Widener, 2006; Van der Stede et al., 2006) in the field, the participants were asked to comment on the choice of measures or to suggest (or delete) any additional performance measures they thought would be common across firms\(^\text{19}\),

- Assessing the suitability of the question used to identify the main purposes of using performance measures and to add any other purposes not mentioned in the list,

- Assessing the suitability of the contextual factors- advanced manufacturing technology, business strategy, intensity of market competition, perceived environmental uncertainty, organisational culture, workforce diversity and organisation size- used in this research in the Jordanian market environment and the suitability of their operationalization,

- Assessing the suitability of the terminology to Jordanian industrial companies, and

- Exploring unanticipated mistakes such as difficult expressions, unclear concepts, double questions, missing alternatives and leading questions (Hunt et al., 1982; Zikmund, 2003).

Accordingly, the pilot study was completed over two stages. In the first stage, the researcher conducted nine personal interviews during October and early November 2009. The results of this stage of the pilot study were as follows:

\(^{19}\) The final version of the questionnaire also includes space for respondents to write in additional performance measures that are actually used in their companies and to rate their extent of usage (see Sub-section 6.4.1.2 for more details).
1. The first version of the questionnaire includes 43 financial and non-financial measures. The participants added new two measures and argued that these measures are common among Jordanian companies. These measures include: defect rate and customer retention\textsuperscript{20}. Additionally the pilot study resulted in deleting fifteen measures including net cash flows, earnings per share, material efficiency variance, ratio of good output to total output at each production process, employee satisfaction, market share, number of customer complaints, percentage of shipments returned due to poor quality, number of overdue deliveries, number of warranty claims and government citations. Also, the deleted measures include the two measures of supplier perspective which are on-time delivery and input into product/service design and the two measures of future perspective which are R&D expenditures and capital expenditures. Consequently, supplier perspective and future perspective were removed from the study. The terminology of some measures was also changed due to the feedback comments of participants. Accordingly, the final version of the questionnaire includes thirty financial and non-financial measures across six perspectives. Table 6.4 shows the result of the pilot study in respect to the performance measures usage\textsuperscript{21}.

<table>
<thead>
<tr>
<th>Number of measures before the pilot study</th>
<th>Added measures</th>
<th>Deleted measures</th>
<th>Number of measures after the pilot study</th>
</tr>
</thead>
<tbody>
<tr>
<td>43</td>
<td>2</td>
<td>15</td>
<td>30</td>
</tr>
</tbody>
</table>

2. Most of the respondents participants argued that their companies use a series of advanced manufacturing technologies and the two dimensions listed on the

\textsuperscript{20} Defect rate was added by three participants and customer retention was added by three participants.

\textsuperscript{21} Amendment was made only if two participants or more agreed on it.
questionnaire are not sufficient. To overcome these criticisms, the researcher added four new manufacturing technology dimensions, namely, (1) Computer Numerical Control (CNC), (2) Computer Aided Engineering (CAE), (3) Computer Integrated Manufacturing (CIM), and (4) Flexible Manufacturing Systems (FMS) (Swamidass & Kotha, 1998; Abdel-Maksoud et al., 2005). Further, the order of the original two dimensions was changed as a result of the comments from participants.

3. Most of the respondents stated that the workforce diversity factor is ambiguous and needs more factors to be measured. They argued that the acceptance of women in different managerial positions varies among Jordanian companies. Similarly, they argued that the acceptance of non-Jordanian in high managerial position in some companies is not easy even for those who have special qualification requirements. Some of the respondents argued that some companies prefer to use males only. Finally, respondents argued that some companies use people who have special needs such as people with disabilities but have some qualifications. This discussion led to adding three new questions to measure workforce diversity. These include: (1) my company employs females in different managerial positions, (2) my company employs qualified non-Jordanians in different managerial positions, and (3) my company employs qualified disabled people.

4. Finally, all the interviewees agreed that the 5 point-scale is relevant for them and clearer than the other types of scales.

Following the personal interviews with nine participants and once the questionnaire was refined as a result of the first stage of the pilot study, the researcher handed the revised questionnaire with an information letter to the other six respondents in the middle of November 2009. Respondents were asked to complete and give comments on the content and form of the questionnaire (Henri, 2006). The researcher asked the
participants to contact him if there was any question that needed further clarification. The researcher also asked the participants to write their telephone numbers in order to contact them to discuss their comments if necessary. All six questionnaires were collected by the researcher during the last part of November 2009. In this stage no major modifications were made to the questionnaire except two important suggestions from some participants. One of them wrote that the usage of BSC differs from one company to another. As an example some companies use two perspectives and others use four or five perspectives. Thus, it is necessary for each company to determine the number and type of the perspectives that are used. Therefore, the researcher added a question to the questionnaire for each respondent to determine the type of perspectives used by each company. Other respondents suggested using new concepts and expressions relevant to Jordanian companies. Consequently, all their suggestions regarding the clarity and validity of the questionnaire were incorporated. However, all the amendments of the two-stage pilot study were reflected on the English version of the questionnaire. Again, back translation was achieved to ensure the consistency between the English version and Arabic version of the questionnaire. The questionnaires in both languages were compared to ensure that there are no differences. Once the questionnaire was refined subsequent to the pilot test, the questionnaire (see Appendix B) was then posted to the respondents in the main study.

6.4.1.2 Questionnaire final draft

The primary method of data collection for this study is a questionnaire. The questionnaire is defined as reformulated written questions sent to the participants to record their answers, usually within rather closely defined alternatives (Sekaran, 2003).

22 The same comment was mentioned by one of the interviewees.
The postal or mail questionnaire is the most common survey method used by researchers and an important instrument in a survey especially when the researcher is familiar with the study variables that need to be measured (Bailey, 1994). A mail questionnaire is a self-administered questionnaire sent to respondents through the mail (Zikmund, 2003, p. 212). In addition, the mail questionnaire ensures the anonymity of respondents; it is an effective tool to collect data from a geographically dispersed sample at a relatively low cost (Zikmund, 2003). Thus, a mail questionnaire is used to collect the data in order to achieve the objectives of this study (see, for example, Hoque, 2004).

In addition to Saunders, Lewis and Thornhill (2007) recommendations, the development of the questionnaire is based mainly on three sources. Firstly, previous literature in the field with the research constructs already validated and used in previous management accounting studies. Secondly, consultations with different experts and practitioners in both Australia and Jordan such as PhD students, academics and managers. Thirdly, a pilot study conducted with 15 financial managers and academics as discussed in sub-section 6.4.1.1.

Participants were invited to participate in this survey through an information letter (i.e. covering letter) enclosed on the first page of the instrument (see Appendix A). The letter was printed on the university letterhead. This letter introduced the study and its aims and assured confidentiality and anonymity of the respondents as well as providing the researcher’s contact details. The letter has a statement of how the research has been reviewed by the Human Research Ethics Committee (HREC) as required by Murdoch University. In addition to the information letter, a consent form was embedded in the questionnaire to ensure participants remain anonymous which also includes a question
for the respondents to provide their e-mail addresses if they want a copy of summary result of the study.

The final questionnaire (see Appendix A) which was modified following the results from the pilot study was divided into twelve sections. All of the questions in the questionnaire were close-ended.

The first two sections (A and B) include some demographic questions about the organisation itself (questions A1-A4) and the respondent (questions B1-B6).

Section C includes thirty questions (C1-C30) which look at the extent of usage of a diverse set of financial and non-financial measures among Jordanian industrial companies. In particular, section C of the questionnaire tries to investigate the extent (i.e. frequency) of usage of a broad set of financial and non-financial measures along six categories including thirty measures drawn from the previous studies (Franco-Santos, 2007; Gomes et al., 2007; Henri, 2006; Hoque & James, 2000; Hoque et al., 2001; Iselin et al., 2008; Ittner et al., 2003; Jusoh et al., 2008; Lau & Moser, 2008; Leung et al., 2006; Maltz et al., 2003; Sohn, You, Lee & Lee, 2003; Widener, 2006). To cover all the measures that an organisation uses, section C of the final version of the questionnaire also includes spaces for participants to list and rate other measures that they use but are not included in the questionnaire (Iselin et al., 2008; Widener, 2006).

Section D includes ten questions (D1-D10) investigating the different aims for using performance measures that are listed in section C. Section D, however, provides information about the different uses of these measures in Jordanian industrial companies. Therefore, these questions are adapted from Franco-Santos (2007), Malina
and Selto (2004) and Verbeeten and Boons (2009). They were developed for descriptive purposes and to achieve the second part of the first objective which seeks to identify the main aims of using such measures (see Chapter 1, section 1.2).

Section E includes two questions (E1 and E2). This section tries to determine the diffusion of the BSC approach among Jordanian industrial companies. Based on the work of Ittner et al. (2003) and Krumwiede (1998), question E1 of section E was used to determine the actual companies that use the BSC approach by using a six-point scale to measure the implementation stages of BSC approach among Jordanian industrial companies. Thus, the BSC users are those companies which choose one of the following: “used” or “used extensively” (see Ittner et al., 2003). However, the number of perspectives in the BSC depends on the strategy and competitive market of each company (DeBusk et al., 2003). Thus, companies might use more perspectives in their BSC (DeBusk et al., 2003; Lipe & Salterio, 2000; Schiemann & Lingle, 1999). As a result of the pilot study, question E2 of section E of the questionnaire was adapted from previous studies (Speckbacher et al., 2003; Zuriekat, 2005) to determine the number of perspectives included in the BSC of each company. Notably, the users of BSC were those companies who use two or more perspectives in their BSC. Section E, however, was used in this study to achieve the second objective of the study which seeks to identify the state of BSC approach among Jordanian industrial companies (see Chapter 1, section 1.2).

Sections F, G, H, I, J and K deal with the contingent factors used in this study. The last section (L) includes seven items to measure organisational performance.
The last page of the questionnaire asks the respondents to make any further comments they might wish to contribute and thanks them for their valuable contribution to the study.

A five-point scale is the minimum scale needed to effectively measure the differences between respondents (Hayes, 1998). A scale is a tool by individuals to distinguish how they differ from one another on the variables of interest to the study (Sekaran, 2003). Apart from section E, the five-point Likert scale was used in formatting the questionnaire. The questionnaire length is eight A4 pages which compares with other performance measurement theses, for example 10 pages in Jäckälä (2007) and 8 pages in Tapanya (2004). This, however, is consistent with the Saunders et al. (2007) recommendations, in which they argued that the feasible length of postal questionnaire is between six and eight A4 pages.

### 6.4.1.3 Final survey sampling frame

The population frame of the study consists of all Jordanian industrial companies. The industrial sector was chosen because there is a clear trend in the economic development plans of successive Jordanian governments to support this sector (Al-kawaldeh, 2001). The Jordanian industrial sector is one of the largest sectors listed within the ASE, and which has the greatest need to implement modern concepts of managerial accounting (Al-khadash & Feridun, 2006; Momani & Abu-Al Sondos, 2008). This sector is more relevant to this study since larger organisations make more use of financial and non-financial measures (Hoque & James, 2000; Van der Stede et al., 2006). Industry in Jordan includes a range of manufacturing and mining companies. However, industry contributes significantly in Jordanian GDP, provides the majority of jobs and produces the creativity and innovation that fuels economic progress (see Chapter 2, section 2.5).
This study focuses on medium and large industrial companies using the number of workers per establishment for the definition of medium and large enterprises\textsuperscript{23}. The sample frame for this study includes those industrial companies with 50 employees and above (see, for example, Hutaibat, 2005; Perera et al., 1997; Van der Stede et al., 2006). The proposed sampling frame consists of 372 industrial companies.

6.4.1.4 Final survey procedure and response rate

Once the researcher finalized the instrument and confirmed its appropriateness, a number of procedures were adopted to conduct the final survey and collect the research data.

After the exclusion of those companies which had less than 50 employees and those companies that were in a dissolved and liquidation status (Hutaibat, 2005; Al-Khadash & Feridun, 2006), the final sampling frame consists of 372 industrial companies. The sampling frame and the contact information of Jordanian industrial companies were obtained from the MIT and Amman Chamber of Industry in Jordan during November and December 2009\textsuperscript{24}. The study used the whole sampling frame, 372 companies, as the study sample. The researcher contacted by telephone each company before sending out the questionnaire to give them some idea of the study's objectives, to invite them to participate in the study, to check the accuracy of postal address details and to ensure that each company has an official PMS. Based on the results of the telephone calls, the questionnaires were sent to respondents who agreed to participate in the study by post with a prepaid self-addressed return envelope. Only 27 companies refused to participate.

\textsuperscript{23} The medium enterprises are those with 50-249 employees and the large enterprises are those with more than 250 employees (Ministry of Industry and Trade, 2008).

\textsuperscript{24} To obtain representative sample for the study and to get accurate and reliable information, the researcher screened the information of each firm and ensured its name and the current position by utilizing the web site of both the Ministry of Industry and Trade and Amman Chamber of industry.
in the study. The main reasons of not participating in the study were: management policy of non-participation and lacking time (see Sub-section 6.4.5.1). Another 6 companies were eliminated from the original sample because their phone numbers were disconnected and they ceased contact with the Jordanian Telecommunication Company. Thus questionnaires were posted to 339 companies in early January 2010. The questionnaires were left with the respondent for ten days to enable them to be completed. Follow-up telephone calls were then made.

By the end of January and middle of February 2010 a total of 118 responses were received including 111 usable questionnaires and 7 unusable questionnaires. Follow-up telephone calls were made and resulted in an additional 61 responses including 57 usable questionnaires and 4 unusable questionnaires during March and April. As shown in Table 6.5, this yielded a total of 168 usable responses and a response rate of 49.6%. This rate of response was not surprising because the response rate among Jordanian industrial companies is high\textsuperscript{25}. For example, it was 95% in Al-khadash and Feridun (2006), 84% in Al-Khawaldeh (2001), 35% in Hutaibat (2005), 79% in Zuriekat and Al-Sharari (2008); 80.45% in Ramadan (1991). In addition to Dillman's (2000) recommendations, this response rate also resulted from many procedures that were taken to increase and enhance the response rate and quality of the research. These included:

1. The researcher contacted each company by telephone and spent more than 80 hours in total on the phone. During the telephone call the researcher invited each company to participate in the study by emphasising the following:

\textsuperscript{25} Similar studies conducted in western countries recorded a mixed response rate. For example, it was 82% in Govindarajan (1984), 53.8% in Chong (1996), 78.8% in Chong (1998), 35.1% in Hoque and James (2000), 52% in Hoque (2004), 40% in Chenhall (2005), 65% in Dunk (2005), 50.5% in Gosselin (2005), 65% in Dossi and Patelli (2008), 22.5% in Hall (2008), 20.9% in Henri and Journeault (2008), 44.8% in Burney, Henle and Widener (2009) and 25% in Verbeeten and Boons (2009).
a. The study objectives.

b. The importance of this study.

c. The importance of participation in the study.

d. The confidentiality of respondents' participation in the study.

e. The benefits that this study could provide them.

2. A well-prepared information letter (i.e. covering letter) was sent with each questionnaire. The covering letter disclosed many issues related to the objectives of collecting data, usage of collected data, confidentiality of collected data and rights of respondents.

3. The questionnaire and information letter were prepared in Arabic.

4. A pilot study and pre-test were conducted to ensure the questions and questionnaires were relevant, clear, and easy to answer\(^\text{26}\).

5. A formal letter from the researcher's current sponsor (Tafila Technical University, Jordan) was included with the questionnaire.

6. The questionnaires were sent to respondents who agreed to participate in the study by post with a prepaid self-addressed return envelope\(^\text{27}\). The questionnaire was left with them for 10 days to be completed.

7. Questionnaires were pre-coded to enable non-respondents to be traced.

8. Follow-up telephone calls were made.

### Table 6.5: Sample and response rate

<table>
<thead>
<tr>
<th>Postal questionnaires</th>
<th>Responses</th>
<th>Usable responses</th>
<th>Response rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>339</td>
<td>179</td>
<td>168</td>
<td>49.6%</td>
</tr>
</tbody>
</table>

\(^{26}\) In total, ten versions of the questionnaire were developed until a definitive version was agreed.

\(^{27}\) In total, 406,800 JD (631,437 AUD) were paid on 678 stamped envelopes that were used to send the questionnaires to the selected companies and to return them to the researcher.
6.4.1.5 Check for non-response bias

Non response bias is considered not a problem in high response rate studies (see, for example, Chong, 1998; Govindarajan, 1984; Govindarajan & Gupta, 1985). Despite the satisfactory response rate of the study, I feel it is necessary to investigate the possibility of a non-response bias. This is because further examination of a possible non-response bias is considered necessary to generalize the results of the research to the population of Jordanian industrial companies.

Many methods are available to check for non-response bias. However, two tests were performed to assess the potential for non-response bias. First, I contacted by phone 20 non-respondents and discussed with them their reason(s) for non-participation in the research. The reasons they mentioned were the lack of time, company policy was not to respond to surveys and receiving too many questionnaires lately. Thus, the causes of non-responses did not include any critical non-response bias matter. Second, I compared the early respondents versus the late respondents in terms of industrial sector, annual sales turnover and number of employees (Grafton, Lillis & Widener, 2010). The rationale for using this method is that it increases researcher’s confidence that there is no significant non-response bias in the research (Van der Stede et al., 2006). Furthermore, this method is academically well accepted (Henri, 2006; Widener, 2006). The Chi-square and Mann Whitney tests were used. The results detailed in Tables 6.6, 6.7 and 6.8 indicated that there were no statistically significant ($p$-value $> 0.05$) differences between the data provided by early and late respondents' responses. Thus, it is reasonable to conclude that non-response bias is not significant in this research.
Table 6.6: Chi-square test comparing industry type between early and late respondents

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>15.775</td>
<td>12</td>
<td>.202</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>18.803</td>
<td>12</td>
<td>.093</td>
</tr>
<tr>
<td>Linear-by-linear</td>
<td>1.368</td>
<td>1</td>
<td>.242</td>
</tr>
<tr>
<td>Association</td>
<td>168</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N of valid Cases</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6.7: Chi-square test comparing sales turnover between early and late respondents

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>15.504</td>
<td>9</td>
<td>.078</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>16.242</td>
<td>9</td>
<td>.062</td>
</tr>
<tr>
<td>Linear-by-linear</td>
<td>.916</td>
<td>1</td>
<td>.339</td>
</tr>
<tr>
<td>Association</td>
<td>165</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N of valid Cases</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6.8: Mann-Whitney test comparing employee numbers between early and late respondents

<table>
<thead>
<tr>
<th>Before-after reminder</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of employees</td>
<td>111</td>
<td>86.06</td>
<td>9553.00</td>
</tr>
<tr>
<td>before reminder</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of employees</td>
<td>57</td>
<td>81.46</td>
<td>4643.00</td>
</tr>
<tr>
<td>after reminder</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>168</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Test Statistics

<table>
<thead>
<tr>
<th>Number of employees</th>
<th>Mann-Whitney U</th>
<th>Wilcoxon W</th>
<th>Z</th>
<th>Asymp. Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of employees</td>
<td>2990.000</td>
<td>4643.000</td>
<td>-.581</td>
<td>.561</td>
</tr>
</tbody>
</table>

a. Grouping variables: before and after reminder.
6.4.2 Qualitative approach

The qualitative approach provides the researcher with a deeper understanding of an issue with rich information without statistical analyses. The approach gives the researchers the opportunity to generate varied ideas (Deshpande, 1983). Qualitative studies are committed to understanding the unique experience of the individuals from their perspective of the social world by seeking to develop shared meanings (Pernice, 1996). Some phenomena cannot be explained quantitatively. Therefore, researchers are interested in using other approaches to capture a better understanding for such phenomena. The qualitative method gives the researcher the opportunity to describe and explain the issues rather than just measuring their attributes (Murry, 2003). Qualitative scholars emphasise the richness, depth, texture and reality of the data, because their primarily inductive approach deals with the development of insights and understanding of the meanings involved within the data (Holloway, 2006). Qualitative scholars as well remain sensitive to their own social identities and how these shape the study and learn from participants to understand the meaning of their lives (Marshall & Rossman, 2006).

The present study is the first study in Jordan which tries to investigate the different aspects of performance measurement among Jordanian industrial companies. The present study collected data about the following issues among Jordanian industrial companies: (1) performance measures frequency of usage, (2) performance measures aims of usage, (3) BSC approach diffusion among Jordanian industrial companies, (4) the effect of several contingent factors on the extent of performance measurement diversity usage, (5) the direct effect of different performance measurement practices usage on organisational performance, (6) benefits of using a diverse set of performance measures, and (7) difficulties and problems of using PMS, and the suggested solutions. Thus, this research is comprehensive to a considerable extent. However, some of the
study issues cannot be measured effectively through a quantitative approach such as the benefits and problems of performance measurement due to the limited research in these issues as a whole even in Western countries. Thus, qualitative approach was used in this research for two reasons:

1. To answer primarily the following two questions:
   a. What are the major benefits for using a diverse set of performance measures among Jordanian industrial companies?
   b. What are the major difficulties faced by management in its current performance measurement system? Are there any solutions?
2. To collect more data related to the other questions of the study.

The qualitative research was conducted by using a semi-structured interview with five respondents selected from the same sample of study.

6.4.2.1 Semi-structured personal interview

Interviews can be conducted either face to face or through other methods such as the telephone or the internet (Sekaran, 2003). 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). The personal interview has numerous advantages, as well as some disadvantages (Sekaran, 2003; Zikmund, 2003):

Advantages of using a personal interview:

- Enables the researcher to get answers for all the questions of the study and the researcher can ask other relevant questions not in the interview protocol.
- Enables the researcher to ensure that the responses are properly understood and doubts are clarified by repeating or rephrasing the questions.
• Enables the researcher to ask for a clearer or more comprehensive explanation.
• Allows feedback by both the interviewer and the respondent during the different stages of the interview.
• The researcher can pick up nonverbal cues from the respondent.
• The researcher can detect any discomfort, stress, or problems that the respondent experienced during the interview.
• New factors might be identified, described, and understood.

The main disadvantages of personal interview are the geographical limitations and the high cost especially if the interview needs to be done in an international context like the current study. Furthermore, the respondent might feel uneasy about the anonymity of his/her answers when s/he interacts face to face with the interviewer (Sekaran, 2003).

There are three types of interviews. These include: structured, semi-structured and unstructured. This thesis utilises a semi-structured interview. Semi-structured interviews enable probing for more information (Barriball & While, 1994). Semi-structured interviews are the most widely used interviewing format for qualitative research. Semi-structured interviews are often the sole data source for a qualitative research project and are usually scheduled in advance at a designated time and location suitable for both the interviewer and interviewee. They are generally organised around a set of predetermined open-ended questions, with other questions emerging from the dialogue between interviewer and interviewee. Semi-structured in-depth interviews can occur either with an individual or in focus groups. Most commonly they are only conducted once for an individual or group and take between 30 minutes to several hours to complete. The researcher must prepare in advance the main interview questions. The basic research question may well serve as the first interview question, but between 5
and 10 more specific questions are usually developed to delve more deeply into different aspects of the research issue (DiCicco-Bloom & Crabtree, 2006). However, the researcher did his best to ensure the validity and reliability of the interview through a reasonable design and careful procedures to conduct the interview process.

6.4.2.2 Interview design

Face to face semi-structured interviews are a very important research tool and most of the prior management accounting research has overlooked this approach. One of the advantages of semi-structured interviews is that they enable the researcher to ask other questions emerging from the dialogue between interviewer and interviewee (DiCicco-Bloom & Crabtree, 2006).

After consulting with many academics and practices in Australia and Jordan who contributed to the design of interview questions and also added many sub-questions, the questions were translated into Arabic (see Appendix D). Back translation was undertaken to ensure consistency between the English version and Arabic version of the interview questions (Zikmund, 2003). Some modifications were made to the interview questions after conducting the pilot study. The pilot study led to an increase in the number of sub-questions to cover additional aspects of the study. The final version of the interview questions was then used for the main study (see Appendix C).

The interview questions cover most of the issues related to performance measures and their usage among Jordanian industrial companies. The main questions of the interviews were supplemented by several sub-questions to deeply understand each issue during the interview process (Barriball & While, 1994; Deshpande, 1983; Marshall & Rossman, 2006; Zikmund, 2003).
The final interview instrument includes four sections (A-D). Section A has three main questions, A1, A2 and A3. Question A1 and A2 were adapted from Tapanya (2004) and dealt with the use of financial and non-financial measures. These questions were supplemented by three questions for each of them. Question A3 was a self formulated question. It asks respondents to determine the main factors that affect their performance measures usage. This question was supplemented by one question dealing with the effect of the seven contingent factors mentioned in the main questionnaire on the extent of performance measurement diversity usage. Section B has two main questions, B1 and B2. Question B1 was adapted from Tapanya (2004). This question tries to assess the general trend of the organisational performance over the last three years. This question was supplemented by another question to determine the main reasons for this trend. Question B2 tries to assess the effect of the usage of a measurement diversity approach on organisational performance. Section C has two main questions, C1 and C2. The first question was a self formulated and asked respondents to explain in depth the perceived benefits of using a diverse set of financial and non-financial measures of performance. The second question was adapted from El-shishini (2001) and asks the respondents to choose and specify the major benefits of using the BSC. Finally, section D is the last section and includes one self-formulated question that dealt with the major difficulties and problems a company faces in its current PMS and the suggested solutions. Since the interviews were semi-structured, other open-end questions were explored and discussed with each interviewee.

As indicated in sub-section 6.4.2, the present study conducts an interview for two main reasons:

1. To determine the perceived benefits and difficulties of performance measurement in Jordanian industrial companies. These issues were ignored in previous studies
conducted in the field and were judged essential to a developing country like Jordan. Thus, the researcher asks the respondents to identify and explain in depth the different aspects of these issues.

2. To collect more data and to supplement the data gathered through the paper-based main questionnaire. This purpose was achieved through the following procedures:

- The interview questions were comprehensive, which means they cover most of the sections of the main questionnaire.
- The interviewer almost connected each question in the interview with the similar question in the questionnaire. This procedure enabled the researcher to obtain new data about the different factors listed in the questionnaire. For example, the researcher asked the interviewee about the financial and non-financial measures used currently in their companies in respect to those listed in the questionnaire (Tapanya, 2004). Then the researcher asked the interviewee to mention the other measures that the company uses but are not listed in the questionnaire. Furthermore, the researcher asked the interviewee to mention any other measures that he/she thinks might be useful to their company.

6.4.2.3 Interview procedures

Five companies from five sectors agreed to participate in face-to-face semi-structured interviews through their financial managers. If any company refused to participate, another company from the same sector was contacted by telephone28. An Arabic copy of the information letter, interview consent form, contact information form and the main interview questions were posted to the five financial managers who agreed to participate

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28 Interviews are sensitive issues for most Jordanian companies, because they are used to participate in research through paper-based questionnaires. In addition to this element, time and money constrains prohibited the researcher from using a larger sample (Frechtling & Sharp, 1997). However, the sample of semi-structured interviews was found quite sufficient to achieve the qualitative approach objectives of the research as the opinions of participants reflected a general agreement on the different issues of the research.
in the interview in advance. The information letter provides the participants with a full explanation of the purpose of the interview. Furthermore it has a statement guaranteeing the confidentiality of the participants. The participants were contacted again to set up the interview. Each interview was confirmed a day before the appointment and held in a location suitable to both the participant and the interviewer.

Between January 2010 and February 2010 the researcher conducted interviews with five financial managers from five industrial companies. The financial managers were selected for interviews because their experiences reflected the full scope of issues in this study (Cooper & Schindler, 2006). To maintain cross case comparability, the researcher used a similar semi-structured questions for all the interviews (see Appendix C). Participation in the interview was sought using a consent form. This form includes options for both the interview and for consent to be tape-recorded (see Appendix E). All the interviews were tape-recorded. The interview was conducted in Arabic with some English terms. Each interview lasted from 40 minutes to 90 minutes. After introducing himself, the researcher began with the following general question: could you please tell me about your company PMS? Then, the researcher asked the other main and sub-questions. The researcher encouraged each interviewee to add any additional issues that the current study had not covered. All the interviewees’ enquiries were answered during the interview. At the end of each interview, participants were asked:

- To give feedback or edit any transcripts or tapes.
- To delete any information they do not wish to be used in publications.

No information was deleted as a result of this process. However, only information that referred to the questions of the study was taken and translated into English.
6.5 Measurement of study variables

Chapter 3 and 4 described how the different variables of this research are chosen based on the criticisms and gaps in previous performance measurement and contingency theory-based studies. According to Hair, Black, Babin, Anderson and Tatham (2006, p. 735) a researcher operationalizes a factor by selecting its measurement scale items and scale type. Therefore, each factor must be operationalized in order to be measured. This section presents the operationalization of each factor. Depending on the objectives of the study, the research models include twelve variables that need to be measured. These include: financial measures usage, non-financial measures usage, performance measurement diversity approach usage, BSC approach usage, organisational performance, advanced manufacturing technology, business strategy, intensity of market competition, perceived environmental uncertainty, organisational culture, workforce diversity and Organisation size. The operationalization of these variables is reviewed next.

6.5.1 Performance measures usage

The third objective is undertaken by assessing the effect of several contingent factors on the extent of performance measurement diversity usage. The fourth objective is fulfilled by identifying the effect of four performance measurement practices (i.e. financial measures usage, non-financial measures usage, measurement diversity usage and BSC approach usage) on organisational performance. Four variables need to be measured here. Performance measurement diversity is a dependent variable in the first set of hypotheses (see Chapter 5, sub-section 5.5.1) and is an independent variable in hypothesis number three of the second set of hypotheses. In addition, financial measures

---

29 Regarding financial performance measures usage, non-financial performance measures usage, performance measurement diversity usage and BSC usage an average score is computed to measure the extent of their usage (see, for example, Henri, 2006; Hoque & James, 2000; Hoque et al., 2001; Ittner et al., 2003).
usage, overall non-financial measures usage and BSC are independent variables in the second set of hypotheses (see Chapter 5, sub-section 5.5.2). A total of 30 financial and non-financial measures were selected to measure these dimensions. The following subsections report how each of the four dimensions (i.e. performance measurement diversity, financial, non-financial and BSC approach) was operationalized.

### 6.5.1.1 Performance measurement diversity usage

As indicated in section 3.7 of chapter 3, measurement diversity approach refers specifically to the extent to which a company uses information related to a broad set of financial and non-financial measures. Thus, performance measurement diversity emphasises the multiplicity and variety of performance measures (Hall, 2008; Henri, 2006; Ittner et al., 2003; Moers, 2005; Van der Stede et al., 2006). One of the criticisms of the BSC approach is the failure to highlight contributions from other perspectives such as employees, community and environment (Chang, 2007; Henri, 2004; Hubbard, 2009; Iselin et al., 2008; Maltz et al., 2003; Neely et al., 2005; Nørreklit, 2000). However, measurement diversity is a broad concept (Henri, 2006; Malina & Selto, 2004).

In this study, measurement diversity approach focuses mainly on using a broad set of financial and non-financial measures for performance evaluation in a company (see, for example, Hoque & James, 2000; Hoque et al., 2001). Thus, thirty measures (C1-C30) across six perspectives were selected to measure performance measurement diversity as shown in Table 6.9. These measures are drawn from performance measurement literature (Franco-Santos, 2007; Gomes et al., 2007; Henri, 2006; Hoque & James, 2000; Hoque et al., 2001; Iselin et al., 2008; Ittner et al., 2003; Jusoh et al., 2008; Lau & Moser, 2008; Leung et al., 2006; Maltz et al., 2003; Sohn et al., 2003; Widener, 2006).
These measures are common in most Jordanian companies. This is because one of the criteria to evaluate the private companies in Jordan for the purpose of the KAIIA is to ensure that the PMS of each company include these generic measures. Thus, the choice of these measures was also dependent on the criteria of KAIIA for excellence in Jordanian private sector (King Abdullah II Center for Excellence, 2009). Furthermore, the choice of these measures was revised as a result of the pilot study (see Table 6.4, sub-section 6.4.1.1). The respondents of the pilot study were given the opportunity to omit and suggest these measures depending on their actual usage. The respondents were asked to indicate on a five-point Likert-type scale the extent (i.e. frequency) of their organization’s use of each indicator (see, for example, Hoque et al., 2001). The five response choices are: not at all, to a little extent, to a moderate extent, to a considerable extent, to a very great extent.
Table 6.9: Sample questionnaire on financial and non-financial measures usage

<table>
<thead>
<tr>
<th>Financial Measures</th>
<th>Frequency of usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1. Operating income</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C2. Sales growth</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C3. Return on investment (ROI)</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C4. Return on equity (ROE)</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C5. Costs per unit produced</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C6. Budget variances</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C7. Economic value added (EVA)</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Internal business process measures</td>
<td>Frequency of usage</td>
</tr>
<tr>
<td>C8. Defect rates</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C9. Manufacturing lead time</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C10. Rate of material scrap loss</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C11. Labour efficiency variance</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Innovation and learning measures</td>
<td>Frequency of usage</td>
</tr>
<tr>
<td>C12. Number of new patents</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C13. Number of new product launches</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C14. Time-to-market new products</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C15. Employee training</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C16. Employee skill development</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C17. Employee Safety</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C18. Employee authorisation</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Customer measures</td>
<td>Frequency of usage</td>
</tr>
<tr>
<td>C19. Customer response time</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C20. On-time delivery</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>
Once the data from the survey was collected and screened, factor analysis and a reliability analysis were performed for the 30 measures. A total of 3 measures were deleted from the analysis due to factor analysis (see Chapter 7, sub-section 7.3.1.1).

### 6.5.1.2 Financial measures usage

As indicated in section 3.4 of chapter 3, some of the commonly used financial measures included ROI, ROA, ROE, IRR, EPS, price variance, inventory turnover and accounts receivable turnover. In order to obtain data about the extent of financial measures usage, section C of the questionnaire includes seven financial measures (C1-C7) adapted from Henri (2006), Hoque and James (2000), Hoque et al. (2001) and Widener (2006) (see Table 6.9). Factor analysis resulted in deleting one measure, namely, EVA (see Chapter
7, sub-section 7.3.1.1). However, the extent of financial measures usage is the average score of the means of six measures (C1-C6) which include: operating income, ROI, sales growth, ROE, budget variances and cost per unit produced.

6.5.1.3 Overall non-financial measures usage

As explained in sub-section 3.5.1 of chapter 3, non-financial measures are broad, varied and cover the different aspects of any organisation (Lau & Sholihin, 2005). They include for example customer measures, employee measures, quality and innovation measures, community measures and process measures. Initially, 23 measures (C8-C30) were selected to measure non-financial performance measures usage across five categories (see Table 6.9). Factor analysis resulted in deleting two measures including labour efficiency variance and public image. Also, factor analysis resulted in six non-financial perspectives (community, customer, employee, environment, innovation and internal business process) (see Chapter 7, sub-section 7.3.1.1). Thus, overall non-financial measures usage was represented in this research using twenty one measures across six perspectives. However, an average score of the means of the six perspectives was computed to determine the extent of non-financial measures usage.

6.5.1.4 Extent of BSC usage

As discussed in Chapter 3, section 3.6, the original BSC includes various performance measures across four perspectives including financial perspective, customer perspective, internal business processes perspective, and learning and growth perspective. However, the number of perspectives in the BSC depends on the strategy and competitive market of each company (DeBusk et al., 2003). Thus, companies might use more perspectives in their BSC (DeBusk et al., 2003; Ittner et al., 2003; Lipe & Salterio, 2000; Schiemann & Lingle, 1999; Speckbacher et al., 2003). Question E2 of section E of the
questionnaire was used to determine the number and type of perspectives that were included in the BSC of each company (Speckbacher et al., 2003; Zuriekat, 2005). Based on the work of Ittner et al. (2003) and Krumwiede (1998), question E1 was used to determine the actual companies that use the BSC approach. Therefore, the sample of the companies that actually use the BSC approach was identified depending on the response to this question. Consistent with Ittner et al. (2003), the BSC users are those companies that choose one of the following: used or used extensively.

In order to obtain the extent of BSC usage for each company, the weighted average usage of the perspectives determined in E2 was calculated from the responses obtained in section C for the respondents who selected used or used extensively in E1 and use two or more perspectives in their BSC (Zuriekat, 2005). Consistent with the six perspectives that are mentioned in question E2 of the questionnaire, factor four (employee) and factor seven (innovation) that resulted from factor analysis were combined together to represent the innovation and learning perspective (Iselin et al., 2008; Jusoh et al., 2008; Leung et al., 2006).

6.5.2 Organisational performance

According to Fisher (1995) organisational performance is poorly defined as most of the previous studies measured it using only the financial dimension. It is generally accepted that the measurement of organisational performance can be achieved in two ways. Firstly, performance may be measured subjectively by asking respondents to assess their company’s performance against that of their competitors. Secondly, it may be also measured objectively either by asking respondents to report the absolute values of performance or via secondary sources such as annual reports (Harris, 2001). However, different criteria were used by researchers to measure organisational performance.
Chenhall and Langfield-Smith (1998a) measured organisational performance by using ten perspectives. Matsuno and Mentzer (2000) used four indicators: market share, relative sales growth, percentage of new product sales to total sales, and ROI. These indicators have been measured against those of the organisation’s competitors. Kotha and Swamidass (2000) identified six items to measure organisational performance: after-tax return on total assets, after-tax return on total sales, net profit position, market share gains relative to competition, and the overall performance of a company. These items are measured subjectively by respondents. Hoque and James (2000) measured organisational performance subjectively by using five dimensions of performance: ROI, margin on sales, capacity utilisation, customer satisfaction, and product quality. Parker (2000) identified ROI, and growth in sales (GIS) to determine organisational performance. Chong and Rundus (2004) measured organisational performance subjectively by using seven items. In his study, Zarzecki (2005) examined the effect of contingent fit on the relationship between ownership structure and business unit performance. Zarzecki measured the business unit performance by using the following indicators: ROI, profit, cash flow from operations, cost control, development of new products, sales volume, market share, market development, and personal development and their relative importance to the company.

A recent study conducted in Jordan by Al-Shiab and Abu-Tapanjeh (2005) has used ROA and market-to-book value of equity (MBV) to measure organisational performance. Another study also conducted in Jordan by Abu-Khadra and Rawabdeh (2006) used the following items to measure the financial and non-financial performance: profit, market share, customer satisfaction, learning and training suitability, product delivery, defect rate, and employee turnover.
I argue that managers in Jordanian companies should pay more attention to both financial and non-financial performance of their companies. Consistent with the previous studies in the field (Hoque, 2005; Hoque & James, 2000; Zarzecki; 2005), organisational performance in this research was measured by using seven dimensions of performance. These include: ROI, margin on sales, capacity utilisation, customer satisfaction, product quality, personnel development and market development. The first five dimensions were taken directly from Hoque and James (2000) and the last two dimensions- personnel development and market development- were adapted from Hoque (2005) (see also Zarzecki, 2005). Consistent with prior research (Chenhall & Langfield-Smith, 1998a; Chong & Rundus, 2004; Hoque & James, 2000; Kotha & Swamidass, 2000) respondents were asked to assess their organisation’s overall performance over the last three years relative to that of competitors subjectively using a five-point Likert-type scale ranging from one (significantly below average) to five (significantly above average). The scale represents a multiple perspectives approach in assessing performance (Jusoh et al., 2008). The reliability and validity of the scale were assessed (Hoque, 2004, 2005; Jusoh et al., 2008). The seven items were significantly correlated ($P < 0.01$) with a Cronbach alpha of 0.848 which indicates a satisfactory internal reliability of the scale. For the purpose of analysis, a single global performance score for each firm was calculated by taking the average for all items (Hoque, 2005; Jusoh et al., 2008).

### 6.5.3 Contingent factors

The third research objective seeks to examine the effect of each of the seven contextual variables on the extent of performance measurement diversity usage. To achieve this objective, the study has two variables: performance measurement diversity usage as a dependent variable and the contextual variables as independent variables. Performance
measurement diversity usage was operationalized as indicated in section 6.5.1.1. The study includes seven contingent factors used mainly to assess their effect on the extent of performance measurement diversity usage in Jordanian industrial companies. These factors were measured through section F to section K in the questionnaire. Some of the factors in this study are not common in previous studies, and are relevant to the specific business environment of Jordanian companies. Based on the contingency-based studies that were reviewed in Chapter 4, the next sections show how each of these factors was measured. Additionally, Chapter 7 presents the results of factor analysis and reliability analysis for these factors.

6.5.3.1 Advanced manufacturing technology

As pointed out in Chapter 4, sub-section 4.3.1, AMT represents a wide variety of modern computer-based systems devoted to the improvement of manufacturing activities and thus the enhancement of organisational competitiveness (Small & Yasin, 1997). Previous researchers (Abdel-Kader & Luther, 2008; Abdel-Maksoud et al., 2005; Banker et al., 1993; Hoque et al., 2001; Perera et al., 1997; Swamidass & Kotha, 1998) used different types of manufacturing technology to measure AMT. In this study, AMT consisted of six items (F1-F6) taken directly from Abdel-Maksoud et al. (2005) (see also Abdel-Kader & Luther, 2008; Hoque et al., 2001). The choice of these items was dependent on the results of the pilot test of the study (see Sub-section 6.4.1.1). The six items were computer-aided manufacturing (CAM), computer-aided design (CAD), computer numerical control (CNC), computer-aided engineering (CAE), Computer integrated manufacturing (CIM) and computer integrated manufacturing (CIM). These factors are chosen due to their widespread usage in different sectors (Abdel-Maksoud et al., 2005). These applications were used previously by different researchers, especially
to assess their association with different attributes of performance measures (see Chapter 4, sub-section 4.3.1).

Respondents were asked on a five-point scale, ranging from one (not used at all) to five (used to a very great extent), to indicate the extent to which their companies use each of the AMT applications (see Appendix A, section F). The initial six items that selected to measure AMT were subjected to factor analysis and reliability tests (see Chapter 7, sub-section 7.3.1.2).

6.5.3.2 Business strategy

Initially, Porter (1980, 1985) argued that an organisation must derive its competitive advantage in one of two ways: product differentiation or low cost production. Thus, as explained in Chapter 4, sub-section 4.3.2, this research considers Porter’s strategy as a contingent variable influencing the extent of performance measurement diversity usage in Jordanian industrial companies.

Using a five-point Likert scale, this variable was measured by using two strategic priorities: product differentiation strategy which was measured using questions (G1-G5) and low cost strategy which was measured using questions (G6 and G7) (see Appendix A, section G). Based on Chenhall and Langfield-Smith (1998a), product differentiation strategy was measured by asking respondents to indicate the emphasis placed on it across the following five items: provide high quality products, provide fast deliveries, make changes in design and introduce new products, provide unique product features and provide effective after-sales service and support.
Consistent with Pelham and Wilson (1996), the low cost strategy was measured by using the following two items: pricing below competitors and continuing overriding concern for lowest cost per unit. The scale that was selected to measure business strategy was subjected to factor analysis and reliability tests (see Chapter 7, sub-section 7.3.1.3).

### 6.5.3.3 Intensity of market competition

As mentioned in Chapter 4, sub-section 4.3.3, there is a lot of competition among Jordanian companies due to the new free trade agreements and international cooperation with other countries, such as the USA, Canada and Europe (Hutaibat, 2005; Jordan Investment Board, 2007).

Hoque et al. (2001) operationalized intensity of market competition using the different aspects of any environment competition. These include: price, product development, marketing, market, competitors’ actions and number of competitors in the industry. Based on Hoque et al. (2001) intensity of market competition was measured by using questions (H1- H6) of section H of the questionnaire (see Appendix A, section H). Respondents were asked to assess the intensity of their company’s market competition across six items by using a five-point Likert-type scale ranging from one (not intensive at all) to five (intensive to a very great extent). The six items include: price competition, competition for new product development, marketing (or distribution channels) competition, competition for market share, competitors’ actions and number of competitors in your market segment. Market competition is the degree of competition faced by a company on each of the six factors (Hoque et al., 2001). The results of factor analysis and reliability test for intensity of market competition scale were assessed (see Chapter 7, sub-section 7.3.1.4).
6.5.3.4 Perceived environmental uncertainty

The perceived environmental uncertainty has a much stronger impact on the design of PMS and includes several factors external to an organisation such as suppliers’ actions, customer demands, tastes and preferences, deregulation and globalisation, market activities of competitors, production and information technology, government regulation and policies, economic environment and industrial relations (Buchko, 1994; Budding, 2004; Gordon & Naryanan, 1984; Govindarajan, 1984; Hoque, 2004, 2005; Hoque & Hopper, 1997).

The measure of perceived environmental uncertainty in the present research is based on the instrument used by Hoque (2004, 2005) which was developed mainly by Gordon and Narayanan (1984) and Govindarajan (1984) (see Chapter 4, sub-section 4.3.4). However, perceived environmental uncertainty was measured by using eight items (I1-I8) of section I of the questionnaire (see Appendix A, section I). Respondents were asked on a five-point Likert scale ranging from one (predictable to a very great extent) to five (very unpredictable extent) to indicate the relative predictability of their company external environment across the following eight items: suppliers’ actions, customer demands, tastes and preferences, deregulation and globalisation, market activities of competitors, production and information technologies, government regulation and polices, economic environment and industrial relations. Factor analysis and a reliability test were conducted for the scale (see Chapter 7, sub-section 7.3.1.5).

6.5.3.5 Organisational culture

As pointed out in Chapter 4, sub-section 4.3.5, due to its reliability and consistent with previous studies (Bhimani, 2003; Franco-Santos, 2007; Henri, 2006), this study uses the competing value model to operationalize organisational culture. The arguments and
discussions in Chapter 4 (sub-section 4.3.5) and Chapter 2 (section 2.3) revealed that organisational culture in Jordan emphasises flexibility values with group type focus (Hutaibat, 2005; Rabaa, 2009).

Organisational culture was operationalized in this research as a group (flexibility) culture. Based on Bhimani (2003), Franco-Santos (2007) and Henri (2006), five questions were used to identify organisational culture (see Appendix A, section J). The first question (J1) referred to the dominant characteristics of the organisation. The second question (J2) referred to the organisational glue that holds the organisation together. The third question (J3) referred to leadership style. The fourth question (J4) referred to the organisation’s strategic focus. The final question (J5) referred to management style. Therefore, flexibility values of group culture were measured by using questions (J1-J5). Respondents were asked on a five-point Likert-type scale to what extent does their companies emphasise the following culture values: my company is human-oriented; people seem to share a lot of themselves. The glue that holds my company together is loyalty and tradition. The head of my company is generally considered to be a mentor, a sage, or a parent figure. My company emphasises human development, high level of trust and participation persists. Management style in my company is characterised by teamwork, consensus and participation. Factor analysis and a reliability test were conducted for this scale (see Chapter 7, sub-section 7.3.1.6).

6.5.3.6 Workforce diversity

Despite the importance of workforce diversity in organisations, there is little empirical evidence to demonstrate its effect on management accounting practices (see Chapter 4, sub-section 4.3.6). In addition to the previous literature, the operationalization of this
factor was revised following the results of the pilot test of this study (see Sub-section 6.4.1.1).

Workforce diversity was measured by asking respondents on a five-point Likert-type scale ranging from one (not at all) to five (to a very great extent) to indicate to what extent their companies emphasised the following workforce diversity characteristics (see Appendix A, section K). My company employs both males and females (gender diversity). My company employs Jordanians and non-Jordanians (nationality diversity). My company employs females in different managerial positions. My company employs qualified non-Jordanians in different managerial positions. My company employs qualified disabled people. Factor analysis and a reliability test were conducted for this scale (see Chapter 7, sub-section 7.3.1.6).

6.5.3.7 Organisation size
As pointed out in Chapter 4, sub-section 4.3.7, organisation size is measured using different tools. These tools include profit, sales volume, assets and number of employees. Previous studies (e.g. Dossi & Patelli, 2008; Davila, 2005; Van der Stede et al., 2006) in the field have defined and measured size as the number of employees. This study also measured organisation size as the number of employees. The number of employees was transformed to logarithms to adjust for skewness and kurtosis. Therefore, question A2 of the questionnaire was used to identify the number of employees in each company (see Appendix A, section A).

6.6 Methods of data analysis
As pointed out in Chapter 4, section 4.5, contingency theory of organisations has been criticised for issues regarding its application and its empirical testing. Therefore, several
Statistical methods were used to analyse the data and to test the hypotheses of this research.

Chi-square and Mann Witney test were used to check for non-response bias (see Sub-section 6.4.1.5). A descriptive statistic was used to answer the first two questions which are related to the first two research objectives (see Chapter 5, section 5.2). Factor analysis was conducted for the research study instrument to summarise the original information into a smaller set of factors or components (Hair et al., 2006).

Two sets of hypotheses were developed in this research. To answer the third question of the study which related to the third objective, eight hypotheses were developed (H1, H2a, H2b, H3, H4, H5, H6, H7) (see Chapter 5, sub-section 5.5.1). To answer the fourth question which related to the fourth objective, four hypotheses were addressed (H1, H2, H3, H4) (see Chapter 5, sub-section 5.5.2). Consistent with previous research in management accounting (e.g. Hoque, 2005; Hoque & James, 2000; Hoque et al., 2001; Ittner et al., 2003), parametric tests were used to test the research hypotheses30. To test the hypotheses, correlation analysis and regression analysis were used (for more details, see Chapter 8, section 8.2). The decision of accepting or rejecting the hypotheses depends primarily on regression analysis. In particular, multiple regression analysis was used to test the first set of hypotheses (H1-H7), whereas multiple and simple linear regressions were used to test the second set of hypotheses (H1-H4).

Multiple regression analysis was chosen as the most appropriate technique to test the first set of hypotheses as the variation in the dependent variable (performance

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30 The data of this research meets the assumptions of parametric tests since the test of normality (see Chapter 8, sub-section 8.2.1.2) indicated that the distribution of all variables was normal. Furthermore, it has become customary in business research to treat the ordinal scale as if it were interval (Hair, Babin, Money & Samouel, 2003, p. 157).
measurements diversity usage) is thought to be explained by the presence of more than one independent variables (Hair et al., 2006; see also Hoque et al., 2001). The same argument is applicable on the second set of hypotheses (see, for example, Dunk, 2005; Jusoh et al., 2008). However, the nature of the study models- which explore the relationship between dependent and independent variables- and the small sample size of the study prevented the use of more sophisticated statistical analysis methods such as structural equation modelling (SEM) in testing the study hypotheses. In respect to qualitative data, only quotes that referred to the questions of the study were taken (Hutaibat, 2005). The qualitative data was collected mainly to achieve the last two research objectives. Objective five seeks to identify the perceived benefits of using performance measurement diversity, while objective six tries to assess the difficulties that may face Jordanian companies in their current PMS. To discuss these two issues (i.e. benefits and difficulties) effectively, thematic analysis was used. All the interview transcripts were examined to determine themes associated with these two issues. The results of interviews are presented in Chapter 9.

The next sub-sections explain the different analytical methods used in this research in some detail.

### 6.6.1 Preliminary data analysis

In order to analyse quantitative data gathered from the questionnaires, Statistical Package for Social Sciences (SPSS) version 17 was used. This software has largely been used by researchers as a data analysis technique (Zikmund, 2003). This technique, however, has been used to screen the data of this thesis in terms of coding, missing data and outliers. It is also used to assess the normality of the data using testing for skewness and kurtosis. SPSS was also used to present the descriptive statistics of the study.
variables including frequencies, mean and standard deviation. These analyses were conducted for each of the variables to gain better information about the study sample. The validity of constructs was examined using factor analysis. Further, the reliability of the multi-item constructs was tested. These procedures are discussed further in the next sections.

6.6.2 Treatment of outlier and missing data

Outliers mean that some observations have unique characteristics different from the characteristics of the other observations (Hair et al., 2006, p. 73). These outliers in the data show exceptionally large or small scores (extreme) which affect the normality of the data (Tabachnick & Fidell, 2001). Both Centered Leverage and Cook's Distance were used to check for outliers. The result of Centered Leverage and Cook's Distance tests are presented in Chapter 8.

Missing data usually occurs when a respondent fails to answer some survey questions. Only the completed questionnaires were considered in this study. Any questionnaire with missing data regarding the main questions of the study (i.e. C-L) was eliminated from the study (see Sub-section 6.4.1.4). In respect to the demographic questions (A and B), the screening of the data in SPSS indicated that only three respondents failed to fill the question related to their companies' annual sales and two other respondents failed also to fill in the question related to their gender (see Chapter 7, section 7.2).

6.6.3 Descriptive statistical analysis

Descriptive statistics were used to describe the characteristics of the respondents and to present the data (Sekaran, 2003). Furthermore, descriptive statistics were used to assess the first two research objectives of this study. Various types of descriptive statistics
were used to describe the extent of use of a broad set of performance measures among Jordanian industrial companies and to determine the main purposes for using such measures. Similarly, descriptive statistics were used to describe the diffusion of BSC approach among Jordanian industrial companies (see Chapter 7 for more details). Finally, descriptive statistics were used to describe the different factors used to test the study hypotheses.

6.7 Validity and reliability

The validity and reliability of the instrument used in this study were measured. Validity ensures the ability of a scale to measure the intended concept, whereas reliability of a measure is an indication of the stability and consistency with which the instrument measures the concept and helps to assess the goodness of a measure (Sekaran, 2003, p. 203).

6.7.1 Validity

Several types of validity tests are used to test the goodness of measures. These types include content, criterion and construct (Sekaran, 2003). Content validity ensures that the measure includes an adequate and representative set of items that represent and tap the concept (Sekaran, 2003). To ensure the content validity of this study, several procedures were incorporated. First, major parts of the questionnaire were developed based on research instruments used by previous researchers (see Section 6.5). Second, the researcher consulted several academic scholars and experts in the management accounting field, performance measurement field and research methodology to assess the construct validity. Third, the researcher conducted an initial pre-test for the instrument with two academics specialist in questionnaire design and a panel of academic researchers before conducting the pilot study. Finally, a pilot test was
undertaken with 15 academics and financial managers of industrial companies in Jordan (see Section 6.4.1.1).

Two types of criterion validity can be performed. Concurrent validity which is established when the scale discriminates individuals who are known to be different (Sekaran, 2003, p. 206). The second is predictive validity, which refers to the ability of the measuring instrument to differentiate among individuals with reference to a future criterion (Sekaran, 2003, p. 207).

Construct validity is assessed through convergent and discriminant validity (Sekaran, 2003). Specifying and validating the measurement model involves several stages including assessing content validity, unidimensionality, convergent validity, discriminate validity and reliability (Hair et al., 2006). Unidimensionality refers to the characteristics of a set of indicators that has only one underlying construct (Hair et al., 2006, p. 781). When using multiple item questions, it is imperative to assess the degree to which items represent only one variable. According to Sekaran (2003, p. 207), convergent validity is assessed when the scores obtained with two different instruments measuring the same concept are highly correlated. Discriminant validity is established when, based on theory, two variables are predicted to be uncorrelated and the scores obtained by measuring them are empirically found to be so (Sekaran, 2003, p. 207). In addition to the outcomes of the pre-test and pilot test, unidimensionality, convergent validity and discriminant validity were assessed through the use of factor analysis. The results of factor analysis are presented in Chapter 7, sub-section 7.3.1.
6.7.2 Reliability

The reliability of a measure refers to the degree to which it is free of error and the extent to which a scale produces consistent results (Zikmund, 2003; Hair et al., 2006). Thus, Hair et al. (2006, p. 8) pointed out that more reliable measures will show greater consistency than less reliable measures. This reliability has two dimensions: repeatability and internal consistency (Zikmund, 2003). To assess the reliability of the measurement scale in this thesis, internal consistency was measured. Cronbach alpha is the most common method to measure the internal consistency (Nunnally, 1978). Thus, a Cronbach alpha measure of internal consistency was used to assess the reliability of the measurement scale in this study. The results of reliability tests are presented in Chapter 7, sub-section 7.3.2.

6.8 Summary

This chapter has presented the research approach and paradigm of the study. The chapter has also detailed how the research has been conducted, how each of the study variables has been operationalised and how the research data has been analysed. This research was conducted using mainly the questionnaire as a research tool in addition to semi-structured interviews.

As a main research instrument, the questionnaire was developed based on the related literature and the results of the pilot test. Questionnaires (339) were sent out by post to Jordanian industrial companies. A total of 179 responds were received, representing a 52.8% response rate. However, 11 questionnaires were eliminated due to incompletion, resulting in a final response rate of 49.6% (168 companies). Two alternative methods were employed in this research to test for non-response bias. However, no significant differences were found in the two tests, suggesting that the limitation of a non-response
bias is unlikely to apply. Additionally, in-depth semi-structured interviews were conducted with five financial managers to collect more data and to achieve the last two objectives of the research (5 and 6).

Based on the previous literature presented in Chapters 3 and 4 and the results in the pre-test and the pilot test, this chapter has presented how each variable in this study is measured. The chapter provided a description of the statistical methods utilised in this research to test the study hypotheses related to the third and fourth objectives of the study using the SPSS statistical software program. The chapter also discussed the preliminary data analysis efforts and the descriptive statistics methods used to present the data and to describe the characteristics of the respondents. The issues of validity and reliability were also discussed in this chapter.

In addition to the mentioned efforts in pre-test and pilot test, the next chapter presents the results of validity and reliability analysis of the study scales. It also presents the descriptive statistical analysis which was used to fulfil the first two research objectives of the study that was identified in Chapter 1(section 1.2).
Chapter 7  
Survey Data Analysis and Descriptive Statistic Results

7.1 Introduction

The purpose of this chapter is to report on the data collection used to test the research hypotheses presented in chapter five. It discusses the profile of respondents, provides the results of validity and reliability statistics of data and discusses the results of the descriptive statistics of this research. To achieve the first two objectives, the descriptive statistics focus mainly on answering the following two questions:

1. What is the extent of usage of financial and non-financial performance measures among Jordanian industrial companies and what are the main purposes for their use?
2. What is the extent of the diffusion of BSC among Jordanian industrial companies?

This chapter is structured as follows: Section 7.2 describes the characteristics of the responding companies and individuals. Section 7.3 provides the results of validity and reliability statistics of data using factor analysis and the Cronbach alpha test. Section 7.4 describes the adoption rate and usage of performance measures and also provides a description of the purposes of using performance measures among Jordanian industrial companies. The different aspects of BSC implementation among Jordanian industrial companies are presented in section. 7.5. Finally, section 7.6 summarises the chapter.

7.2 Profile of companies and participants

This section presents the background information of the respondent companies and describes the main characteristics of the individual respondents.
7.2.1 Background information of responding companies

Table 7.1 shows the industry types of the respondent companies. The sample represents all the industrial companies in Jordan. This means that the sample is suitable to achieve the objectives of the thesis. Table 7.2 shows the number of respondent companies’ employees. The thesis focuses on medium and large industrial companies. The sample frame for this study includes those industrial companies with 50 or more employees. 41.7% of the respondent companies had between 50 to 149 employees whilst 58.3% of the respondent companies had 150 employees and above. The mean number of employees was 273. Approximately 56% of the respondent companies had an annual sales turnover of more than JD 10 million\(^{31}\) as shown in Table 7.3. Finally, 69.6% of the respondent companies were 10 years old and above as shown in Table 7.4. Thus, with these characteristics, the sample is judged to be relevant to achieve the objectives of this study (Van der Stede et al., 2006).

### Table 7.1 Final sample classification per industry sector

<table>
<thead>
<tr>
<th>Industry type</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textile, clothing and footwear</td>
<td>12</td>
<td>7.1</td>
</tr>
<tr>
<td>Electrical appliances</td>
<td>7</td>
<td>4.2</td>
</tr>
<tr>
<td>Plastic and rubber products</td>
<td>18</td>
<td>10.7</td>
</tr>
<tr>
<td>Food products</td>
<td>27</td>
<td>16.1</td>
</tr>
<tr>
<td>Typing, paper and packing</td>
<td>11</td>
<td>6.5</td>
</tr>
<tr>
<td>Furniture and wooden products</td>
<td>13</td>
<td>7.7</td>
</tr>
<tr>
<td>Oil and gas industry</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Chemical/pharmaceutical industry</td>
<td>24</td>
<td>14.3</td>
</tr>
<tr>
<td>Mining and quarrying</td>
<td>4</td>
<td>2.4</td>
</tr>
<tr>
<td>Tobacco and cigarettes</td>
<td>3</td>
<td>1.8</td>
</tr>
<tr>
<td>Iron, steel and aluminium industry</td>
<td>20</td>
<td>11.9</td>
</tr>
<tr>
<td>Building materials and construction</td>
<td>16</td>
<td>9.5</td>
</tr>
<tr>
<td>Others such as IT products, automotive products…</td>
<td>12</td>
<td>7.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>168</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

\(^{31}\) AU$1= JD 0.64 as on 31/12/2009.
Table 7.2: Number of employees

<table>
<thead>
<tr>
<th>Employee number</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative percent</th>
</tr>
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<tbody>
<tr>
<td>50-149 employees</td>
<td>70</td>
<td>41.7</td>
<td>41.7</td>
</tr>
<tr>
<td>150-249 employees</td>
<td>35</td>
<td>20.8</td>
<td>62.5</td>
</tr>
<tr>
<td>250-499 employees</td>
<td>41</td>
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<td>86.9</td>
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<td>500-999 employees</td>
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<td>8.9</td>
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<td>1000 or greater</td>
<td>7</td>
<td>4.2</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>168</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Table 7.3: Annual sales

<table>
<thead>
<tr>
<th>Sales turnover (JD)</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 million</td>
<td>23</td>
<td>13.7</td>
<td>13.7</td>
</tr>
<tr>
<td>1-less than 10 million</td>
<td>51</td>
<td>30.3</td>
<td>44.0</td>
</tr>
<tr>
<td>10-less than 20 million</td>
<td>23</td>
<td>13.7</td>
<td>57.7</td>
</tr>
<tr>
<td>20-less than 30 million</td>
<td>24</td>
<td>14.3</td>
<td>72.0</td>
</tr>
<tr>
<td>30-less than 40 million</td>
<td>10</td>
<td>6.0</td>
<td>78.0</td>
</tr>
<tr>
<td>40-less than 80 million</td>
<td>18</td>
<td>10.7</td>
<td>88.7</td>
</tr>
<tr>
<td>80-less than 160 million</td>
<td>9</td>
<td>5.3</td>
<td>94.0</td>
</tr>
<tr>
<td>160-less than 320 million</td>
<td>4</td>
<td>2.4</td>
<td>96.4</td>
</tr>
<tr>
<td>320-less than 640 million</td>
<td>1</td>
<td>0.6</td>
<td>97.0</td>
</tr>
<tr>
<td>More than 640 million</td>
<td>2</td>
<td>1.2</td>
<td>98.2</td>
</tr>
<tr>
<td>No response</td>
<td>3</td>
<td>1.8</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>168</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Table 7.4: Respondent companies' age

<table>
<thead>
<tr>
<th>Age of company</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 10 years</td>
<td>51</td>
<td>30.3</td>
<td>30.3</td>
</tr>
<tr>
<td>10-less than 20 years</td>
<td>67</td>
<td>39.9</td>
<td>70.2</td>
</tr>
<tr>
<td>20-less than 30 years</td>
<td>25</td>
<td>14.9</td>
<td>85.1</td>
</tr>
<tr>
<td>30-less than 40 years</td>
<td>17</td>
<td>10.1</td>
<td>95.2</td>
</tr>
<tr>
<td>40-less than 50 years</td>
<td>4</td>
<td>2.4</td>
<td>97.6</td>
</tr>
<tr>
<td>50-less than 60 years</td>
<td>4</td>
<td>2.4</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>168</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>
7.2.2 Characteristics of respondents

In respect to the individual demographic characteristics, the questionnaires were completed by financial managers or those in a similar position such as the head of the accounting department, assistant financial manager or management accountant. Table 7.5 shows that 71.4% of respondents were financial managers and about 20.2% were head of accounting departments or assistant financial managers. This result supports the reliability of the collected data. Table 7.6 shows that the respondents were highly experienced. In particular, 49.5% of the respondents had worked between 5 and 15 years in their current company and 21.4% of them had worked for more than 15 years. Most of the respondents (71.4%) were aged between 30 and 50 years as shown in Table 7.7, with 22.6% over 50 years.

Jordanian employees are well-educated. Approximately 93% of the respondents had a bachelor degree or higher as shown in Table 7.8 (see, for example, Abu-Nassar & Rutherford, 1996). The main discipline area of university education was accounting (65.5%) as shown in Table 7.9. Finally, Table 7.10 shows that the majority of respondents were males (86.3%).

Table 7.5: Work position of respondents

<table>
<thead>
<tr>
<th>Respondents' work position</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial manager</td>
<td>120</td>
<td>71.4</td>
</tr>
<tr>
<td>Head of accounting department</td>
<td>23</td>
<td>13.7</td>
</tr>
<tr>
<td>Management accountant</td>
<td>5</td>
<td>3.0</td>
</tr>
<tr>
<td>Assistant financial manager</td>
<td>11</td>
<td>6.5</td>
</tr>
<tr>
<td>Other including chief executive, internal auditor, financial analyst, financial planning manger</td>
<td>9</td>
<td>5.4</td>
</tr>
<tr>
<td>Total</td>
<td>168</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 7.6: Work experience with current company

<table>
<thead>
<tr>
<th>Experience in current company</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5 years</td>
<td>49</td>
<td>29.2</td>
<td>29.2</td>
</tr>
<tr>
<td>5-10 years</td>
<td>52</td>
<td>31.0</td>
<td>60.1</td>
</tr>
<tr>
<td>11-15 years</td>
<td>31</td>
<td>18.5</td>
<td>78.6</td>
</tr>
<tr>
<td>16-20 years</td>
<td>17</td>
<td>10.1</td>
<td>88.7</td>
</tr>
<tr>
<td>Over 20 years</td>
<td>19</td>
<td>11.3</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>168</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Table 7.7: Age of respondents

<table>
<thead>
<tr>
<th>Respondents' age</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 30</td>
<td>10</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>30-40</td>
<td>55</td>
<td>32.7</td>
<td>38.7</td>
</tr>
<tr>
<td>41-50</td>
<td>65</td>
<td>38.7</td>
<td>77.4</td>
</tr>
<tr>
<td>Over 50</td>
<td>38</td>
<td>22.6</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>168</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Table 7.8: Qualification of respondents

<table>
<thead>
<tr>
<th>Respondents' qualification</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhD degree</td>
<td>2</td>
<td>1.2</td>
</tr>
<tr>
<td>Master degree</td>
<td>28</td>
<td>16.7</td>
</tr>
<tr>
<td>Bachelor degree</td>
<td>126</td>
<td>75.0</td>
</tr>
<tr>
<td>Diploma</td>
<td>11</td>
<td>6.5</td>
</tr>
<tr>
<td>Other including Higher Diploma</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Total</td>
<td>168</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 7.9: Study field of respondents

<table>
<thead>
<tr>
<th>Respondents' study field</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting</td>
<td>110</td>
<td>65.5</td>
</tr>
<tr>
<td>Business administration</td>
<td>24</td>
<td>14.3</td>
</tr>
<tr>
<td>Economics</td>
<td>20</td>
<td>11.9</td>
</tr>
<tr>
<td>Finance</td>
<td>10</td>
<td>5.9</td>
</tr>
<tr>
<td>Others</td>
<td>4</td>
<td>2.4</td>
</tr>
<tr>
<td>Total</td>
<td>168</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 7.10: Gender of respondents

<table>
<thead>
<tr>
<th>Respondents' gender</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>145</td>
<td>86.3</td>
</tr>
<tr>
<td>Female</td>
<td>21</td>
<td>12.5</td>
</tr>
<tr>
<td>No response</td>
<td>2</td>
<td>1.2</td>
</tr>
<tr>
<td>Total</td>
<td>168</td>
<td>100</td>
</tr>
</tbody>
</table>

7.3 Validity and reliability analysis results

Two of the necessary procedures in management accounting studies to assess construct validity and reliability are factor analysis and the Cronbach alpha test. A detailed discussion of the results of the factor analysis and the reliability of the variables used in this research is presented in the next sub-sections.

7.3.1 Factor analysis and validity of measures results

Validity ensures the ability of a scale to measure the intended concept (Sekaran, 2003). Factor analysis was conducted to justify the scales of the different variables used in this study. Factor analysis was also used to summarize most of the original information into a smaller set of factors or components (Hair et al., 2006). Factor analysis with Varimax rotation was used in this research (see, for example, Gosselin, 2005; Heo & Han, 2003; Hoque & James, 2000; Hyvönen, 2007; Iselin et al., 2008; Jusoh et al., 2008). The factors were identified by using the principle component analysis (PCA) extraction method. PCA is the default method of extraction in many popular statistical software packages such as SPSS (Costello & Osborne, 2005). A correlation matrix was prepared for each factor before conducting factor analysis to investigate whether the items of each factor are significantly related to each other (Hair et al., 2006).
The factorability of the items was evaluated by using Bartlett’s test of sphericity and Kaiser-Meyer-Olkin (KMO) measure whose values ought to be significant at the level of 0.05 and greater than 0.50 respectively (Hair et al., 2006). Factor loadings were investigated. Following previous studies in the field (e.g. Hoque & James, 2000; Iselin et al., 2008; Ittner et al., 2003; Van der Stede, 2001), an item was deleted from the group if it did not have a loading greater than 0.40 on any factor or if it reflected cross-loading (0.40 or greater) on more than one factor (Hair et al., 2006). Factor analysis technique was used to justify the scales for the independent variables (i.e. performance measurement diversity and other variables) that were used in the second set of hypotheses. The technique was also used to justify scales for the various contingent factors used in the first set hypotheses. The results of factor analysis are presented in the next sub-sections.

7.3.1.1 Performance measurement diversity usage

Thirty measures (C1-C30) were selected to measure performance measurement diversity (see Chapter 6, sub-section 6.5.1.1). The correlation between the related measures is significant, which suggests that the 30 measures constitute many factors. Factor analysis resulted in deleting three measures. These measures include C7, C11 and C23 (EVA, labour efficiency variance and public image). EVA was deleted due to an insignificant factor loading (Jusoh et al., 2008; Lau & Sholihin, 2005). Labour efficiency variance and public image were deleted due to cross loadings. Seven component factors were extracted with eigenvalues exceeding 1, explaining a total of 69.32% of the variance.

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32 The validity of the dependent variable (i.e. organisational performance) was assessed. Organisational performance was measured using seven items including ROI, margin on sales, capacity utilisation, customer satisfaction, product quality, personnel development and market development (see Chapter 6, sub-section 6.5.2 for more details).
All the Cronbach alpha values are above 0.60 and ranged from 0.698 to 0.890. This result indicated that all the measures were reliable. These results were expected, as all the measures used in the research were based on a well-developed instrument with high reliability scores from previous studies (e.g. Hoque & James, 2000; Jusoh et al., 2008; Maiga & Jacobs, 2003). The Bartlett’s test of sphericity was significant ($p = 0.000$) and the value for KMO measure of sampling adequacy was 0.799 as shown in Table 7.11. Consistent with the previous research in the field (e.g. Hoque & James, 2000, Hoque et al., 2001; Iselin et al., 2008; Lau & Sholihin, 2005; Maiga & Jacobs, 2003), the first component factor was named financial, the second component factor was named community, the third component factor was named customer, the fourth component factor was named employee, the fifth component factor was named environment, the sixth component factor was designated as innovation and the seventh component factor was named internal business process.

Factor 4 includes four measures related to employees and factor 6 includes three measures related to innovation. These two component factors (4 and 6) represent together the innovation and learning perspective (Hoque et al., 2001; Leung et al., 2006). This result was expected as previous studies focus mainly on the innovation measures (e.g. Hoque & James, 2000; Jusoh et al., 2008) and few of them included employee measures under innovation and learning perspective (e.g. Henri, 2006; Hoque et al., 2001). Thus, all the original perspectives were covered in factor analysis which resulted in twenty seven measures across seven perspectives. The test was performed using an average of the seven perspectives means to represent the extent of performance measurement diversity usage (Hoque, 2005; Hoque & James, 2000; Hoque et al., 2001; Jusoh et al., 2008; Maiga & Jacobs, 2003; Van der Stede et al., 2006).

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33 For more details about the two components of innovation and learning perspective see for example, Leung et al. (2006) and Stivers et al. (1998).
Table 7.11: Results of factor analysis for the multiple performance measures

<table>
<thead>
<tr>
<th>Component</th>
<th>items</th>
<th>Factor loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Operating income 0.888</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ROI 0.850</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sales growth 0.834</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ROE 0.801</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Budget variances 0.717</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cost per unit produced 0.648</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Eigenvalue</strong> 4.11</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Percentage of variance explained</strong> 15.22</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Cronbach's Alpha</strong> 0.890</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Support of social activities 0.833</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Participation in training and education 0.800</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Support of charity projects 0.788</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Community involvement 0.743</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Eigenvalue</strong> 2.91</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Percentage of variance explained</strong> 10.76</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Cronbach's Alpha</strong> 0.858</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Customer retention 0.844</td>
<td></td>
</tr>
<tr>
<td></td>
<td>On-time delivery 0.826</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Survey of customer satisfaction 0.816</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Customer response time 0.718</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Eigenvalue</strong> 2.87</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Percentage of variance explained</strong> 10.61</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Cronbach's Alpha</strong> 0.850</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Employee skill development 0.842</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Employee training 0.769</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Employee safety 0.761</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Employee authorization 0.585</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Eigenvalue</strong> 2.57</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Percentage of variance explained</strong> 9.53</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Cronbach's Alpha</strong> 0.807</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Reducing waste and emissions 0.767</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Environmental compliance 0.734</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Environmental certification 0.696</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Eigenvalue</strong> 2.22</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Percentage of variance explained</strong> 8.24</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Cronbach's Alpha</strong> 0.763</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Number of new product launches 0.866</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time-to-market new products 0.838</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of new patents 0.469</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Eigenvalue</strong> 2.05</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Percentage of variance explained</strong> 7.59</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Cronbach's Alpha</strong> 0.698</td>
<td></td>
</tr>
</tbody>
</table>
7 Rate of material scrap loss 0.749
Manufacturing lead time 0.726
Defect rates 0.668
**Eigenvalue** 1.99
**Percentage of variance explained** 7.37
Cronbach’s Alpha 0.737

Kaiser Meyer Olkin = 0.799, \( p = 0.000 \)


The other performance measurement practices\(^3^4\) (financial measures usage, overall non-financial measures usage and BSC) which were used as independent variables in the second set of hypotheses were derived from the performance measurement diversity scale (see Van der Stede et al., 2006).

### 7.3.1.2 Advanced manufacturing technology

Six items (F1-F6) were selected to measure AMT (see Chapter 6, sub-section 6.5.3.1).

The correlation matrix supports the use of factor analysis for the factor. In particular, all correlations between items are positive and significant \( P < 0.01 \) but not high enough, for example over 0.90, to result in multicollinearity between items (Hair et al., 2006). Table 7.12 shows that only one factor had an eigenvalue greater than one. This result supports the discriminant validity of AMT. The total variance explained by the factor was 65.30%. The Cronbach alpha was 0.891 which indicates satisfactory internal reliability of the scale. The Bartlett’s test of sphericity was significant \( \left(p = 0.000 \right) \) and...
the value for KMO was 0.870. All loadings were greater than 0.40, ranging from 0.666 to 0.893. For the purpose of analysis, a single scale was constructed for the AMT factor by taking the average of respondents’ scores for the six items (F1, F2, F3, F4, F5 and F6) (Hoque, 2005). Next, the procedures follow the same steps applied above to measure the other contingent factors.

Table 7.12: Results of factor analysis for advanced manufacturing technology

<table>
<thead>
<tr>
<th>Items</th>
<th>Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1. Computer-aided design (CAD)</td>
<td>0.757</td>
</tr>
<tr>
<td>F2. Computer-aided manufacturing (CAM)</td>
<td>0.860</td>
</tr>
<tr>
<td>F3. Computer numerical control (CNC)</td>
<td>0.893</td>
</tr>
<tr>
<td>F4. Computer-aided engineering (CAE)</td>
<td>0.841</td>
</tr>
<tr>
<td>F5. Computer integrated manufacturing (CIM)</td>
<td>0.811</td>
</tr>
<tr>
<td>F6. Flexible manufacturing systems (FMS)</td>
<td>0.666</td>
</tr>
</tbody>
</table>

Kaiser Meyer Olkin = 0.870, \( p = 0.000 \)
Cronbach's Alpha = 0.891

Note: Extraction Method: Principal Component Analysis.

7.3.1.3 Business strategy

Consistent with expectations, the factor analysis results confirmed the prior classification (see Chapter 6, sub-section 6.5.3.2). All correlations between items are significant (\( P < 0.01 \)). From the factor analysis, two component factors were extracted with eigenvalues exceeding 1, explaining a total of 60.11% of the variance. The Bartlett’s test of sphericity was significant (\( p = 0.000 \)) and the value for KMO was 0.685. However, the first component includes the first five items (G1, G2, G3, G4, and G5), which were related to product differentiation strategy, while the second one includes the last two items (G6, and G7), which were related to low-cost strategy. This result confirmed the correlation analysis result which indicates a strong correlation between these two items, but not with the first five items. The Cronbach alpha was 0.744 for the first component and 0.674 for the second component indicates satisfactory
internal reliability of the scale. All loadings were greater than 0.40, ranging from 0.556 to 0.864 (see Table 7.13). A single scale was constructed for each factor by taking the average of respondents’ scores for the items of each factor.

**Table 7.13: Results of factor analysis for business strategy**

<table>
<thead>
<tr>
<th>Component</th>
<th>items</th>
<th>Factor loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>G1. Provide high quality products</td>
<td>0.791</td>
</tr>
<tr>
<td></td>
<td>G2. Provide fast deliveries</td>
<td>0.587</td>
</tr>
<tr>
<td></td>
<td>G3. Make changes in design and introduce new products quickly</td>
<td>0.790</td>
</tr>
<tr>
<td></td>
<td>G4. Provide unique product features</td>
<td>0.841</td>
</tr>
<tr>
<td></td>
<td>G5. Provide effective after-sale service and support</td>
<td>0.556</td>
</tr>
<tr>
<td><strong>Eigenvalue</strong></td>
<td></td>
<td><strong>2.63</strong></td>
</tr>
<tr>
<td><strong>Percentage of variance explained</strong></td>
<td></td>
<td><strong>37.53</strong></td>
</tr>
<tr>
<td><strong>Cronbach's Alpha</strong></td>
<td></td>
<td><strong>0.744</strong></td>
</tr>
<tr>
<td>2</td>
<td>G6. Pricing below competitors</td>
<td>0.845</td>
</tr>
<tr>
<td></td>
<td>G7. Continuing overriding</td>
<td>0.864</td>
</tr>
<tr>
<td><strong>Eigenvalue</strong></td>
<td></td>
<td><strong>1.58</strong></td>
</tr>
<tr>
<td><strong>Percentage of variance explained</strong></td>
<td></td>
<td><strong>22.58</strong></td>
</tr>
<tr>
<td><strong>Cronbach's Alpha</strong></td>
<td></td>
<td><strong>0.674</strong></td>
</tr>
</tbody>
</table>

Kaiser Meyer Olkin = 0.685, \( p = 0.000 \)


### 7.3.1.4 Intensity of market competition

Six items (H1-H6) were selected to measure the intensity of market competition (see Chapter 6, sub-section 6.5.3.3). All correlations between items are positive and significant \( (P < 0.01) \). Factor analysis was conducted. Table 7.14 shows that only one factor had an eigenvalue greater than one. The total variance explained by the factor was 53.91%. The Cronbach alpha was 0.825, which indicates a satisfactory internal reliability of the scale. The Bartlett’s test of sphericity was significant \( (p = 0.000) \) and the value for KMO was 0.847. All loadings were greater than 0.40, ranging from 0.635 to 0.775. A single scale was constructed by taking the average of respondents’ scores for the six items (H1, H2, H3, H4, H5 and H6).
Table 7.14: Results of factor analysis for intensity of market competition

<table>
<thead>
<tr>
<th>Items</th>
<th>Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1. Price competition</td>
<td>0.635</td>
</tr>
<tr>
<td>H2. Competition for new product development</td>
<td>0.728</td>
</tr>
<tr>
<td>H3. Marketing (or distribution channels) competition</td>
<td>0.775</td>
</tr>
<tr>
<td>H4. Competition for market share</td>
<td>0.773</td>
</tr>
<tr>
<td>H5. Competitors’ actions</td>
<td>0.755</td>
</tr>
<tr>
<td>H6. Number of competitors in your market segment</td>
<td>0.731</td>
</tr>
</tbody>
</table>

Kaiser Meyer Olkin = 0.847, $p = 0.000$
Cronbach’s Alpha = 0.825

Note: Extraction Method: Principal Component Analysis.

7.3.1.5 Perceived environmental uncertainty

Eight items (I1-I8) were selected to measure perceived environmental uncertainty (see Chapter 6, sub-section 6.5.3.4). All correlations between items are positive and significant ($P < 0.01$). Factor analysis was conducted. Table 7.15 shows that only one factor had an eigenvalue greater than one. The total variance explained by the factor was 50.15%. The Cronbach alpha was 0.853 which indicates satisfactory internal reliability of the scale. The Bartlett’s test of sphericity was significant ($p = 0.000$) and the value for KMO was 0.869. All loadings were greater than 0.40, ranging from 0.599 to 0.807. A single scale was constructed by taking the average of respondents’ scores for the eight items (I1, I2, I3, I4, I5, I6, I7 and I8).

Table 7.15: Results of factor analysis for perceived environmental uncertainty

<table>
<thead>
<tr>
<th>Items</th>
<th>Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1. Suppliers’ actions</td>
<td>0.605</td>
</tr>
<tr>
<td>I2. Customer demands, tastes and preferences</td>
<td>0.662</td>
</tr>
<tr>
<td>I3. Deregulation and globalisation</td>
<td>0.599</td>
</tr>
<tr>
<td>I4. Market activities of competitors</td>
<td>0.807</td>
</tr>
<tr>
<td>I5. Production and information technologies</td>
<td>0.763</td>
</tr>
<tr>
<td>I6. Government regulation and polices</td>
<td>0.802</td>
</tr>
<tr>
<td>I7. Economic environment</td>
<td>0.779</td>
</tr>
<tr>
<td>I8. Industrial relations</td>
<td>0.604</td>
</tr>
</tbody>
</table>

Kaiser Meyer Olkin = 0.869, $p = 0.000$
Cronbach's Alpha = 0.853

Note: Extraction Method: Principal Component Analysis.
### 7.3.1.6 Organisational culture

Five items (J1-J5) was used to measure organisational culture (see Chapter 6, subsection 6.5.3.5). All correlations between items are positive and significant ($P < 0.01$). Factor analysis was conducted. Table 7.16 shows that only one factor had an eigenvalue greater than one. The total variance explained by the factor was 72.87%. The Cronbach alpha was 0.905 which indicates satisfactory internal reliability of the scale. The Bartlett’s test of sphericity was significant ($p = 0.000$) and the value for KMO was 0.821. All loadings were greater than 0.40, ranging from 0.822 to 0.876. A single scale was constructed by taking the average of respondents’ scores for the five items (J1, J2, J3, J4 and J5).

**Table 7.16: Results of factor analysis for organizational culture**

<table>
<thead>
<tr>
<th>Items</th>
<th>Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1. My company is human-oriented; people seem to share a lot of themselves</td>
<td>0.862</td>
</tr>
<tr>
<td>J2. The glue that holds my company together is loyalty and tradition</td>
<td>0.822</td>
</tr>
<tr>
<td>J3. The head of my company is generally considered to be a mentor</td>
<td>0.835</td>
</tr>
<tr>
<td>J4. My company emphasises human development high level of trust and participation</td>
<td>0.876</td>
</tr>
<tr>
<td>J5. Management style in my company is characterised by teamwork</td>
<td>0.871</td>
</tr>
</tbody>
</table>

Kaiser Meyer Olkin = 0.821, $p = 0.000$
Cronbach’s Alpha = 0.905

*Note: Extraction Method: Principal Component Analysis.*

### 7.3.1.7 Workforce diversity

Five items (K1-K5) were used to measure workforce diversity (see Chapter 6, subsection 6.5.3.6). All correlations between items are positive and significant ($P < 0.01$). Factor analysis was conducted. Table 7.17 shows that only one factor had an eigenvalue greater than one. The total variance explained by the factor was 51.76%. The Cronbach
alpha was 0.764 which indicates satisfactory internal reliability of the scale. The Bartlett’s test of sphericity was significant \( p = 0.000 \) and the value for KMO was 0.630. All loadings were greater than 0.40, ranging from 0.600 to 0.794. A single scale was constructed by taking the average of respondents’ scores for the five items (K1, K2, K3, K4 and K5).

Table 7.17: Results of factor analysis for workforce diversity

<table>
<thead>
<tr>
<th>Items</th>
<th>Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>K1. My company employs both males and females (Gender diversity)</td>
<td>0.777</td>
</tr>
<tr>
<td>K2. My company employs Jordanians and non-Jordanians (Nationality diversity)</td>
<td>0.600</td>
</tr>
<tr>
<td>K3. My company employs females in different managerial positions</td>
<td>0.794</td>
</tr>
<tr>
<td>K4. My company employs qualified non-Jordanians in different managerial position</td>
<td>0.726</td>
</tr>
<tr>
<td>K5. My company employs qualified disabled people</td>
<td>0.683</td>
</tr>
</tbody>
</table>

Kaiser Meyer Olkin = 0.630, \( p = 0.000 \)
Cronbach's Alpha = 0.764

Note: Extraction Method: Principal Component Analysis.

7.3.1.8 Organisational performance

The fourth objective is fulfilled by identifying the effect of four performance measurement practices (i.e. financial measures usage, non-financial measures usage, measurement diversity usage and BSC approach usage) on organisational performance.

As indicated in Chapter 6 (section 6.5.2), different criteria were used by researchers to measure organisational performance. Consistent with the previous studies in the field (Hoque, 2005; Hoque & James, 2000; Zarzecki; 2005), organisational performance in this research was measured by using seven dimensions of performance. These include: ROI, margin on sales, capacity utilisation, customer satisfaction, product quality,
personnel development and market development. Table 7.18 the descriptive statistics of organisational performance.

The scale represents a multiple perspectives approach in assessing performance (Jusoh et al., 2008). As a dependent variable for the first three hypotheses of the second set of hypotheses, the reliability and validity of the organisational performance were assessed (Hoque, 2004, 2005; Jusoh et al., 2008). The seven items were significantly correlated ($P < 0.01$) with a Cronbach alpha of 0.848 which indicates a satisfactory internal reliability of the scale. For the purpose of analysis, a single global performance score for each firm was calculated by taking the average for all items (Hoque, 2005; Jusoh et al., 2008).

The results of the study identified 59 companies as BSC users. Thus, the measure of organisational performance of BSC users depends on data collected from these companies only (see Chapter 6, sub-section 6.5.1.4 and section 7.5 of this chapter). However, organisational performance is the dependent variable and BSC usage is the independent variable of hypothesis four of the second set of hypotheses. The descriptive statistics for the BSC (independent variable) and organisational performance (dependent variable) is displayed in Table 8.1 of Chapter 8.

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1. Return on Investment (ROI)</td>
<td>3.58</td>
<td>0.89</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>L2. Margin on sales</td>
<td>3.54</td>
<td>0.91</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>L3. Capacity utilisation</td>
<td>3.62</td>
<td>0.88</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>L4. Customer satisfaction</td>
<td>3.89</td>
<td>0.77</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>L5. Product quality</td>
<td>4.13</td>
<td>0.71</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>L6. Personnel development</td>
<td>3.84</td>
<td>0.81</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>L7. Market development</td>
<td>3.71</td>
<td>0.83</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>
7.3.2 Cronbach alpha test results

Cronbach alpha was used to assess the reliability of the measurement scale in this study (see Chapter 6, sub-section 6.7.2). Different levels of internal consistency have been recommended ranging from 0.50 to 0.80. Carmines and Zeller (1979) recommended 0.80 as an acceptable level of reliability for Cronbach alpha. According to Hair et al. (2006) the minimum acceptable level of reliability for Cronbach alpha is 0.60, while the minimum level for Cronbach alpha is above 0.50 according to Nunnally (1978). The higher the coefficients, the better the measuring instrument (Sekaran, 2003, p. 205). However, the value of Cronbach’s alpha is affected by the number of items in the scale. Researchers must place more stringent requirements for scales with large numbers of items (Hair et al., 2006, p. 137). Based on the results of factor analysis, Cronbach's alphas were calculated to assess the internal consistency of each scale in this study. Table 7.19 shows that all the variables in this study were reliable. The alpha coefficients ranged from 0.674 to 0.905 which are considerably above the minimum acceptable level of 0.60 (Hair et al., 2006). These results were as expected.
Table 7.19: Reliability coefficients (Cronbach Alpha) for factors used in this research

<table>
<thead>
<tr>
<th>Variable</th>
<th>Cronbach alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance measurement diversity usage (PMDSUSE)</td>
<td>0.883</td>
</tr>
<tr>
<td>Financial measures usage (FMUSE)</td>
<td>0.890</td>
</tr>
<tr>
<td>Overall non-financial measures usage (NFMUSE)</td>
<td>0.872</td>
</tr>
<tr>
<td>BSC usage (BSC)</td>
<td>N/A*</td>
</tr>
<tr>
<td>Organisational performance (OP)</td>
<td>0.848</td>
</tr>
<tr>
<td>Advanced manufacturing technology (AMT)</td>
<td>0.891</td>
</tr>
<tr>
<td>Differentiation strategy (DIFF)</td>
<td>0.744</td>
</tr>
<tr>
<td>Low-cost strategy (LCOS)</td>
<td>0.674</td>
</tr>
<tr>
<td>Intensity of market competition (MCOMP)</td>
<td>0.825</td>
</tr>
<tr>
<td>Perceived environmental uncertainty (PEU)</td>
<td>0.853</td>
</tr>
<tr>
<td>Organisational culture (CULF)</td>
<td>0.905</td>
</tr>
<tr>
<td>Workforce diversity (WORDI)</td>
<td>0.764</td>
</tr>
<tr>
<td>Organisation size (SIZE)</td>
<td>N/A*</td>
</tr>
</tbody>
</table>

* Not available due to the nature of these variables.

7.4 Performance measures in Jordanian industrial companies

This section focuses mainly on the results of descriptive statistics which are used primarily to achieve the first research objective. In particular, this section has two main sub-sections. Sub-section 7.4.1 attempts to determine the extent of usage of a range of performance measures currently used among Jordanian industrial companies. Sub-section 7.4.2 focuses on the main aims for using such measures.

7.4.1 Performance measures extent of usage

The first part of the first objective of this research attempts to determine the extent of usage of a diverse set of performance measures among Jordanian industrial companies. Descriptive statistics for all 30 performance measures were performed. Table 7.20
shows the usage frequency in terms of the relative weight placed on each of the performance measures as well as the mean and standard deviation.

When all 30 performance measures were ranked in terms of their frequency and mean usage, Table 7.20 shows that Jordanian industrial companies are using both financial and non-financial measures. This result is consistent with the findings of previous studies conducted in Jordanian industrial and manufacturing companies (Hawamdah, 2006; Hutaibat, 2005; Zuriekat, 2007) which indicated that Jordanian companies use multiple performance measures (financial and non-financial). The result is also consistent with the finding of Zwelef and Nour (2005) which was conducted in the Jordanian bank sector. Further, the result is consistent with the findings of previous studies (Gosselin, 2005; Gomes et al., 2007; Ismail, 2007; Jusoh et al., 2008). The results presented in the table show that four out of seven financial measures were ranked as “used to a great extent” or “used to a very great extent” by more than 70% of the respondent companies with means ranging from 3.98 to 4.19. These measures include cost per unit produced (79.7%) sales growth (76.2%) operating income (77.4%) and return on investment (70.2%). These results are also consistent with that of Joshi (2001) who surveyed large and medium-sized Indian manufacturing companies and found a high rate usage for financial measures. In addition, ROE and budget variances were ranked as “used to a great extent” or “used to a very great extent” by more than 60% of the respondent companies with means of 3.79 and 3.76 respectively. Consistent with the findings of Jusoh et al. (2008), EVA is the only financial measure that seems to be used to a moderate extent among Jordanian industrial companies as it ranked as “used to a great extent” or “used to a very great extent” by only 26.8% with a mean of 2.69.

35 The measures are divided into three groups to help discussions: relatively high use (a mean equal or above 3.5), relatively moderate use (a mean equal or above 2.5) and relatively low use (a mean below 2.5) (Al-khatatneh & Al-Sa'aydeh, 2009; Jänkälä, 2007; Stivers et al., 1998).
However, previous research has criticised EVA in that it is complex and difficult to use (Ittner & Larcker, 1998; Jusoh et al., 2008), costly (Lovata & Costigan, 2002) and not superior to traditional accounting measures (Jusoh et al., 2008; Yeniyurt, 2003). These reasons may also justify the low usage of this measure among Jordanian industrial companies.

Contrary to the findings of Joshi (2001), the results show that Jordanian industrial companies put more emphasis currently on non-financial measures. This result is consistent with that of previous studies (e.g. Abdel-Maksoud et al., 2005; Bhimani, 1994; Chenhall & Langfield-Smith, 1998b; Drury et al., 1993; Gomes et al., 2007; Hyvönen, 2005; Jusoh et al., 2008; Widener, 2006; Verbeeten & Boons, 2009). The use of customer measures is high among Jordanian industrial companies. Table 7.20 shows that customer response time, on-time delivery, customer retention and survey of customer satisfaction are ranked at the top of the list since they were ranked as “used to a great extent” or “used to a very great extent” by 81.5%, 79.7%, 79.2% and 76.8% respectively with means ranging from 4.06 to 4.10. This result is consistent with Jusoh et al. (2008) who found that the use of customer measures such as on-time delivery, customer response time, number of customer complaints and survey of customer satisfaction was high among Malaysian manufacturing companies. Similar results were found in studies by Stivers et al. (1998) and Hoque et al. (2001).

Most of the innovation and learning measures are also common among Jordanian industrial companies especially those measures that focus on employees. Three of the four employee measures were ranked as “used to a great extent” or “used to a very great extent” by more than 60% of the respondent companies with a mean ranging from 3.73 and 3.89. In particular, the findings indicated that 69.1% of the respondent companies
use the employee training measure, 61.3% use the employee safety measure and 60.7% use the employee skill development measure. On the other hand, the employee authorisation measure tends to be used to a moderate extent with a mean of 3.01. The number of new product launches is also a common innovation measure among Jordanian industrial companies. It was ranked as “used to a great extent” or “used to a very great extent” by 55.3% of the respondent companies with a mean of 3.54. Time-to-market new products tends to be used to a moderate extent. It was ranked as “used to a great extent” or “used to a very great extent” by 46.4% of the respondent companies with a mean of 3.29. Consistent with the findings of previous studies (Jusoh et al., 2008; Hoque & James, 2000; Hoque et al., 2001), the number of new patents was ranked as “used to a great extent” or “used to a very great extent” at the bottom of the list being nominated by only 24.4% of the respondents.

The results showed that two of the internal business process measures are commonly used among Jordanian industrial companies. These measures were ranked as “used to a great extent” or “used to a very great extent” by more than 65% of the respondent companies. These measures include the labour efficiency variance (70.3%) and defect rates (67.9%). Rate of material scrap loss and manufacturing lead time seems to be used to a moderate extent as they ranked as “used to a great extent” or “used to a very great extent” by 51.8% and 44% of the respondent companies respectively.

Jordanian industrial companies place greater emphasis on the use of environment measures. The environmental compliance measure seems to be significantly used by Jordanian industrial companies. This measure was ranked as “used to a great extent” or “used to a very great extent” by 78.5% of the respondent companies with a mean of
4.05. Reducing wastes and emissions and environmental certification were also ranked by 57.2% and 53% of the respondents respectively.

Finally, the results indicate that community measures are the lesser used measures among Jordanian industrial companies. Public image was ranked first among the community measures being reported by 57.1% of respondents as “used to a great extent” or “used to a very great extent” with a mean of 3.54. Community involvement, support of charity projects, support of social activities and participation in training and education tend to be ranked at the bottom of the list in comparison with other measures as they were ranked as “used to a great extent” or “used to a very great extent” by only 37.5%, 27.3%, 26.2% and 23.2% respectively.
Table 7.20: Performance measures usage among Jordanian industrial companies

<table>
<thead>
<tr>
<th>Code</th>
<th>Performance measures</th>
<th>% rating 1</th>
<th>% rating 2</th>
<th>% rating 3</th>
<th>% rating 4 or 5</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>C5</td>
<td>Costs per unit produced</td>
<td>3.0</td>
<td>0.6</td>
<td>16.7</td>
<td>79.7</td>
<td>4.19</td>
<td>0.94</td>
</tr>
<tr>
<td>C2</td>
<td>Sales growth</td>
<td>1.2</td>
<td>4.8</td>
<td>17.9</td>
<td>76.2</td>
<td>4.15</td>
<td>0.96</td>
</tr>
<tr>
<td>C1</td>
<td>Operating income</td>
<td>1.8</td>
<td>2.4</td>
<td>18.5</td>
<td>77.4</td>
<td>4.13</td>
<td>0.92</td>
</tr>
<tr>
<td>C19</td>
<td>Customer response time</td>
<td>1.2</td>
<td>1.8</td>
<td>15.5</td>
<td>81.5</td>
<td>4.10</td>
<td>0.81</td>
</tr>
<tr>
<td>C22</td>
<td>Customer retention</td>
<td>1.2</td>
<td>5.4</td>
<td>14.3</td>
<td>79.2</td>
<td>4.10</td>
<td>0.92</td>
</tr>
<tr>
<td>C21</td>
<td>Survey of customer satisfaction</td>
<td>0.6</td>
<td>4.2</td>
<td>18.5</td>
<td>76.8</td>
<td>4.07</td>
<td>0.87</td>
</tr>
<tr>
<td>C20</td>
<td>On-time delivery</td>
<td>1.2</td>
<td>6.5</td>
<td>12.5</td>
<td>79.7</td>
<td>4.06</td>
<td>0.92</td>
</tr>
<tr>
<td>C28</td>
<td>Environmental compliance</td>
<td>3.0</td>
<td>2.4</td>
<td>16.1</td>
<td>78.5</td>
<td>4.05</td>
<td>0.93</td>
</tr>
<tr>
<td>C3</td>
<td>Return on investment (ROI)</td>
<td>2.4</td>
<td>4.8</td>
<td>22.6</td>
<td>70.2</td>
<td>3.98</td>
<td>1.00</td>
</tr>
<tr>
<td>C15</td>
<td>Employee training</td>
<td>1.2</td>
<td>6.0</td>
<td>23.8</td>
<td>69.1</td>
<td>3.89</td>
<td>0.93</td>
</tr>
<tr>
<td>C4</td>
<td>Return on Equity (ROE)</td>
<td>2.4</td>
<td>8.3</td>
<td>27.4</td>
<td>61.9</td>
<td>3.79</td>
<td>1.04</td>
</tr>
<tr>
<td>C8</td>
<td>Defect rates</td>
<td>6.5</td>
<td>6.0</td>
<td>19.6</td>
<td>67.9</td>
<td>3.78</td>
<td>1.13</td>
</tr>
<tr>
<td>C6</td>
<td>Budget variances</td>
<td>3.6</td>
<td>7.1</td>
<td>25.0</td>
<td>64.3</td>
<td>3.76</td>
<td>1.03</td>
</tr>
<tr>
<td>C17</td>
<td>Employee Safety</td>
<td>1.8</td>
<td>5.4</td>
<td>31.5</td>
<td>61.3</td>
<td>3.73</td>
<td>0.91</td>
</tr>
<tr>
<td>C16</td>
<td>Employee skill development</td>
<td>1.2</td>
<td>6.5</td>
<td>31.5</td>
<td>60.7</td>
<td>3.73</td>
<td>0.91</td>
</tr>
<tr>
<td>C11</td>
<td>Labour efficiency variance</td>
<td>4.2</td>
<td>8.3</td>
<td>17.3</td>
<td>70.3</td>
<td>3.72</td>
<td>1.00</td>
</tr>
<tr>
<td>C30</td>
<td>Reducing wastes and emissions</td>
<td>9.5</td>
<td>7.7</td>
<td>25.6</td>
<td>57.2</td>
<td>3.57</td>
<td>1.23</td>
</tr>
<tr>
<td>C23</td>
<td>Public image</td>
<td>4.2</td>
<td>5.4</td>
<td>33.3</td>
<td>57.1</td>
<td>3.54</td>
<td>0.91</td>
</tr>
<tr>
<td>C13</td>
<td>Number of new product launches</td>
<td>8.3</td>
<td>5.4</td>
<td>31.0</td>
<td>55.3</td>
<td>3.54</td>
<td>1.13</td>
</tr>
<tr>
<td>C29</td>
<td>Environmental certification</td>
<td>8.3</td>
<td>8.3</td>
<td>30.4</td>
<td>53.0</td>
<td>3.53</td>
<td>1.19</td>
</tr>
<tr>
<td>C10</td>
<td>Rate of material scrap loss</td>
<td>8.9</td>
<td>13.1</td>
<td>26.2</td>
<td>51.8</td>
<td>3.36</td>
<td>1.15</td>
</tr>
<tr>
<td>C14</td>
<td>Time-to-market new products</td>
<td>10.7</td>
<td>10.1</td>
<td>32.7</td>
<td>46.4</td>
<td>3.29</td>
<td>1.15</td>
</tr>
</tbody>
</table>
Continued Table 7.20 Performance measures usage among Jordanian industrial companies

<table>
<thead>
<tr>
<th>Code</th>
<th>Performance measures</th>
<th>% rating 1</th>
<th>% rating 2</th>
<th>% rating 3</th>
<th>% rating 4 or 5</th>
<th>Mean</th>
<th>S.D</th>
</tr>
</thead>
<tbody>
<tr>
<td>C24</td>
<td>Community involvement</td>
<td>7.7</td>
<td>11.9</td>
<td>42.9</td>
<td>37.5</td>
<td>3.15</td>
<td>0.96</td>
</tr>
<tr>
<td>C9</td>
<td>Manufacturing lead time</td>
<td>14.9</td>
<td>13.1</td>
<td>28.0</td>
<td>44.0</td>
<td>3.12</td>
<td>1.22</td>
</tr>
<tr>
<td>C18</td>
<td>Employee authorization</td>
<td>6.5</td>
<td>22.6</td>
<td>37.5</td>
<td>33.4</td>
<td>3.01</td>
<td>0.97</td>
</tr>
<tr>
<td>C26</td>
<td>Support of social activities</td>
<td>8.3</td>
<td>26.8</td>
<td>38.7</td>
<td>26.2</td>
<td>2.88</td>
<td>1.01</td>
</tr>
<tr>
<td>C27</td>
<td>Support of charity projects</td>
<td>11.3</td>
<td>25.6</td>
<td>35.7</td>
<td>27.3</td>
<td>2.86</td>
<td>1.08</td>
</tr>
<tr>
<td>C25</td>
<td>Participation in training and education</td>
<td>9.5</td>
<td>26.8</td>
<td>40.5</td>
<td>23.2</td>
<td>2.81</td>
<td>0.98</td>
</tr>
<tr>
<td>C7</td>
<td>Economic value added (EVA)</td>
<td>17.3</td>
<td>23.8</td>
<td>32.1</td>
<td>26.8</td>
<td>2.69</td>
<td>1.06</td>
</tr>
<tr>
<td>C12</td>
<td>Number of new patents</td>
<td>36.3</td>
<td>17.3</td>
<td>22.0</td>
<td>24.4</td>
<td>2.38</td>
<td>1.27</td>
</tr>
</tbody>
</table>

Legend: Not at all= 1; To a little extent= 2; To a moderate extent= 3; To a great extent= 4; To a very great extent= 5.

Table 7.21 classifies the 30 measures that were used in this research in accordance with three levels of usage, along with the usage rank and related perspective for each measure. This identifies the key performance measures currently used by Jordanian industrial companies.
Table 7.21: levels of performance measures usage among Jordanian industrial companies

<table>
<thead>
<tr>
<th>Levels of use</th>
<th>High use</th>
<th>Moderate use</th>
<th>Low use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measure</strong> (Rank)</td>
<td><strong>Related perspective</strong></td>
<td><strong>Measure</strong> (Rank)</td>
<td><strong>Related perspective</strong></td>
</tr>
<tr>
<td>Cost per unit produced (1)</td>
<td>Financial</td>
<td>Rate of material scrap loss (21)</td>
<td>Internal business process</td>
</tr>
<tr>
<td>Sales growth (2)</td>
<td>Financial</td>
<td>Time-to- market new products (22)</td>
<td>Innovation and learning</td>
</tr>
<tr>
<td>Operating income (3)</td>
<td>Financial</td>
<td>Community involvement (23)</td>
<td>Community</td>
</tr>
<tr>
<td>Customer response time (4)</td>
<td>Customer</td>
<td>Manufacturing lead time (24)</td>
<td>Internal business process</td>
</tr>
<tr>
<td>Customer retention (5)</td>
<td>Customer</td>
<td>Employee authorisation (25)</td>
<td>Innovation and learning</td>
</tr>
<tr>
<td>Survey of customer satisfaction (6)</td>
<td>Customer</td>
<td>Support of social activities (26)</td>
<td>Community</td>
</tr>
<tr>
<td>On-time delivery (7)</td>
<td>Customer</td>
<td>Support of charity projects (27)</td>
<td>Community</td>
</tr>
<tr>
<td>Environmental compliance (8)</td>
<td>Environment</td>
<td>Participation in training and education (28)</td>
<td>Community</td>
</tr>
<tr>
<td>Return on investment (9)</td>
<td>Financial</td>
<td>Economic value added (29)</td>
<td>Financial</td>
</tr>
<tr>
<td>Employee training (10)</td>
<td>Innovation and learning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Return on equity (11)</td>
<td>Financial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Defect rates (12)</td>
<td>Internal business process</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Budget variances (13)</td>
<td>Financial</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Continued Table 7.21 levels of performance measures usage among Jordanian industrial companies

<table>
<thead>
<tr>
<th>Measure (Rank)</th>
<th>High use</th>
<th>Moderate use</th>
<th>Low use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Related perspective</strong></td>
<td><strong>Related perspective</strong></td>
<td><strong>Related perspective</strong></td>
<td></td>
</tr>
<tr>
<td>Employee safety (14)</td>
<td>Innovation and learning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employee skill development (15)</td>
<td>Innovation and learning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labour efficiency variance (16)</td>
<td>Internal business process</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reducing wastes and emissions (17)</td>
<td>Environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public image (18)</td>
<td>Community</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of new product launches (19)</td>
<td>Innovation and learning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental certification (20)</td>
<td>Environment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Factor analysis with Varimax rotation was used to identify the perspectives of performance measures. As indicated in sub-section 7.3.1.1, three items (EVA, Labour efficiency variance and public image) were deleted from the analysis. Seven component factors were extracted with eigenvalues exceeding 1, explaining a total of 69.32% of the variance. These results were as expected. The first component factor was titled financial, the second component factor was titled community, the third component factor was titled customer, the fourth component factor was titled employee, the fifth component factor was titled environment, the sixth component factor was titled innovation and the seventh component factor was titled internal business process (see Sub-section 7.3.1.1).
Descriptive statistics on the seven perspectives are displayed in Table 7.2. The table shows that responding companies place major weight on the use of customer measures with a mean of 4.08 followed by financial perspective (4.00), environment perspective (3.71), employee perspective (3.59), internal business process perspective (3.42), innovation perspective (3.07) and community perspective (2.92).

Table 7.22: Descriptive statistics for the usage of different performance perspectives

<table>
<thead>
<tr>
<th>Performance perspectives</th>
<th>Mean</th>
<th>S.D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer</td>
<td>4.08</td>
<td>0.73</td>
</tr>
<tr>
<td>Financial</td>
<td>4.00</td>
<td>0.79</td>
</tr>
<tr>
<td>Environment</td>
<td>3.71</td>
<td>0.93</td>
</tr>
<tr>
<td>Employee</td>
<td>3.59</td>
<td>0.74</td>
</tr>
<tr>
<td>Internal business process</td>
<td>3.42</td>
<td>0.94</td>
</tr>
<tr>
<td>Innovation</td>
<td>3.07</td>
<td>0.94</td>
</tr>
<tr>
<td>Community</td>
<td>2.92</td>
<td>0.84</td>
</tr>
</tbody>
</table>

Table 7.23 shows that, in general, Jordanian companies put more emphasis on the use of financial measures with a mean of 4.00. The table also shows that Jordanian companies use non-financial measures to a considerable extent with a mean of 3.47. Finally, the table shows that Jordanian companies use multiple performance measures (financial and non financial) with a mean of (3.54). As indicated previously in this section, this result is consistent with the findings of previous studies (Gomes et al., 2007; Gosselin, 2005; Ismail, 2007; Jusoh et al., 2008).

Table 7.23: Descriptive statistics for the usage of financial measures, non-financial measures and all measures

<table>
<thead>
<tr>
<th>Performance measures type</th>
<th>Mean</th>
<th>S.D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial measures</td>
<td>4.00</td>
<td>0.79</td>
</tr>
<tr>
<td>Non-financial measures</td>
<td>3.47</td>
<td>0.56</td>
</tr>
<tr>
<td>Performance measurement diversity</td>
<td>3.54</td>
<td>0.52</td>
</tr>
</tbody>
</table>
7.4.2 Purposes for performance measures usage

It is important at this stage to identify the main purposes for using performance measures among Jordanian industrial companies. Recently, Veen-Dirks (2010) argued that performance measurement literature pays little attention to the purposes for using performance measures. Thus, Franco-Santos et al. (2007) emphasised the importance of researchers clarifying the different roles that performance measures play in the firms they are investigating. Therefore, the second part of the first research objective attempts to determine the main purposes for using the different types of performance measures among Jordanian companies. However, previous research determined many uses for performance measures. In this context, Ittner et al. (2003) examined the role of performance measures in several issues. These include: goal setting, capital investment decisions, problem identification, performance evaluation and external disclosure. Moers (2006) measured the importance of performance measures for evaluation purpose, monetary compensation and non-monetary rewards. Henri and Journeault (2008) examined the importance of using environmental performance indicators (EPIs) within Canadian manufacturing firms. In particular, the study examined four purposes for using the EPIs, namely, to monitor compliance with environmental policies and regulation, to motivate continuous improvement, to provide data for internal decision making and to provide data for external reporting.

Table 7.24 shows the results of the descriptive statistics. The findings indicate that Jordanian industrial companies use performance measures for different purposes. This result is consistent with the argument of Ittner et al. (2003) who suggested that performance measures usage differs from one managerial purpose to another.
As shown in Table 7.24, most of the listed purposes were ranked as “to a great extent” or “to a very great extent” by more than 50% of the respondent companies with a mean ranging from 3.49 to 4.29. These aims include: comply with legal requirements (85.7%), evaluate organisational performance (88.7%), supervise managers’ productivity (78.6%), evaluate managerial performance (75%), encourage improvement of business processes (69.6%), reward employees (61.3%), manage operations processes (60.7%) and provide better understanding of the cause-effect relationship (51.2%). Informed decision-making and communicate strategy were ranked at the bottom of the list by 50% or less of respondents.

Although Jordanian companies place more emphasis on the use of performance measures to evaluate organisational and managerial performance, they also use them for other reasons. This finding is consistent with the argument of Verbeeten and Boons (2009) in that the PMS is used for many purposes other than solely evaluating and rewarding managers. The findings indicate that about 85.7% of Jordanian industrial companies use performance measures mainly to comply with legal requirements. This result indicates that Jordanian industrial companies still operate under significant institutional and government controls (Hussain & Gunasekaran, 2002; Hussain & Hoque, 2002). There is an opportunity, as a result, to investigate the effect of some institutional factors on the extent of use of performance measures in Jordan in future research.

The findings also indicate that Jordanian industrial companies put less emphasis on the role of performance measures in providing a better understanding of the cause-effect relationship, informing decision-making and communicating strategy as these aims were
ranked at the bottom of the list as shown in Table 7.2. This result indicates that some Jordanian companies use multiple measures as an improved PMS and not as a strategic PMS (Malmi, 2001). This is because these three aims were identified as important attributes of performance measures in previous studies (Franco-Santos et al., 2007; Hwang et al., 2009; Kim et al., 1997; Malina & Selto, 2004). Thus, Jordanian companies should direct their attention to these three aims in future. Also, Ittner et al. (2003) findings indicated that companies put less emphasis on the causal relationship in particular.

In summary, the study findings indicate that Jordanian industrial companies use performance measures primarily to evaluate managerial and organisational performance. They also use performance measures to a significant extent to comply with legal requirements. The results also indicate that Jordanian companies pay less attention to communicating strategic decisions and cause-effect relationships in using these measures.

36 In comparison with the BSC users, the results indicated that BSC users put more emphasis on the role of BSC in providing a better understanding of the cause-effect relationship, informing decision making and communicating strategy. In particular, these three purposes were ranked as "used to a great extent" or "used to a very great extent" by 86.4%, 69.5% and 86.2% respectively.
Table 7.24: Specific purposes of performance measures usage

<table>
<thead>
<tr>
<th>Code</th>
<th>Purpose of usage</th>
<th>% rating 1</th>
<th>% rating 2</th>
<th>% rating 3</th>
<th>% rating 4 or 5</th>
<th>Mean</th>
<th>S.D</th>
</tr>
</thead>
<tbody>
<tr>
<td>D9</td>
<td>Comply with legal requirements</td>
<td>0.0</td>
<td>2.4</td>
<td>11.9</td>
<td>85.7</td>
<td>4.29</td>
<td>0.77</td>
</tr>
<tr>
<td>D1</td>
<td>Evaluate organisational performance</td>
<td>0.0</td>
<td>1.8</td>
<td>9.5</td>
<td>88.7</td>
<td>4.27</td>
<td>0.71</td>
</tr>
<tr>
<td>D10</td>
<td>Supervise managers’ productivity</td>
<td>0.6</td>
<td>3.0</td>
<td>17.9</td>
<td>78.6</td>
<td>4.04</td>
<td>0.80</td>
</tr>
<tr>
<td>D2</td>
<td>Evaluate managerial performance</td>
<td>1.2</td>
<td>2.4</td>
<td>21.4</td>
<td>75.0</td>
<td>4.01</td>
<td>0.85</td>
</tr>
<tr>
<td>D6</td>
<td>Encourage improvement of business processes</td>
<td>0.0</td>
<td>5.4</td>
<td>25.0</td>
<td>69.6</td>
<td>3.89</td>
<td>0.84</td>
</tr>
<tr>
<td>D3</td>
<td>Reward employees</td>
<td>1.2</td>
<td>5.4</td>
<td>32.1</td>
<td>61.3</td>
<td>3.80</td>
<td>0.94</td>
</tr>
<tr>
<td>D4</td>
<td>Manage operations processes</td>
<td>1.2</td>
<td>6.5</td>
<td>31.5</td>
<td>60.7</td>
<td>3.67</td>
<td>0.86</td>
</tr>
<tr>
<td>D7</td>
<td>Provide better understanding of the cause-effect relationship</td>
<td>1.2</td>
<td>16.7</td>
<td>31.0</td>
<td>51.2</td>
<td>3.49</td>
<td>1.00</td>
</tr>
<tr>
<td>D5</td>
<td>Inform decision making</td>
<td>0.6</td>
<td>15.5</td>
<td>33.9</td>
<td>50.0</td>
<td>3.46</td>
<td>0.93</td>
</tr>
<tr>
<td>D8</td>
<td>Communicate strategy</td>
<td>2.4</td>
<td>19.6</td>
<td>28.6</td>
<td>49.4</td>
<td>3.39</td>
<td>1.03</td>
</tr>
</tbody>
</table>

7.5 Diffusion of BSC among Jordanian industrial companies

There is an extensive literature on the use of the BSC approach (e.g. Anand, Sahay & Saha, 2005; Franco-Santos, Bourne & Huntington, 2004; Ismail, 2007; Ittner et al., 2003; Joshi, 2001; Jusoh et al., 2008; Kald & Nilsson, 2000; Othman, 2006; Rigby, 2001; Speckbacher et al., 2003). The findings of these studies differ from one country to another. Only a few studies have been conducted in Jordan recently (e.g. Ababneh, 2008; Al-Khatatneh & Al-Sa'aydeh, 2009). The main limitation of these studies is that they ignored the BSC application. In this context, Speckbacher et al. (2003) argued that most of the BSC studies suffer from methodological shortcomings such as a bias with respect to selected companies, low response rates or unreliable estimates. There is a
need for further research on the BSC to analyse more carefully its spread, content and implementation (Speckbacher et al., 2003).

As indicated in Chapter 6 (sub-section 6.5.1.4), different procedures were undertaken to identify BSC users among Jordanian industrial companies. The procedures are a new contribution to the methodology of BSC literature given the many criticisms (see Speckbacher et al., 2003). Two questions (E1 and E2) used to identify the diffusion of BSC approach among Jordanian industrial companies.

Table 7.25 shows that 59 Jordanian industrial companies use the BSC with a usage rate of 35.1% of the surveyed companies. The current study considered the users of the BSC approach as those companies who chose “used” or “used extensively” (see Ittner et al., 2003). The rationale for using only “used” and “used extensively” in the current research is because a previous study (McCunn, 1998) claimed that 70% of BSC implementations fail. A comparison with surveys in other developing and developed countries revealed different implementation rates across these countries. In the context of Jordan, Zuriekat and Al-Sharari (2008) found that the usage of BSC is slightly popular (40.5%) in the banks and insurance companies in Jordan. Studies in India by Anand et al. (2005) and Joshi (2001) have reported an adoption rate of 45.3% and 40% respectively. In Malaysia, Othman (2006) found that 44.7% of a sample of public listed companies started to adopt the BSC model from 2000 onwards. Another study conducted in Malaysia by Jusoh et al. (2008) found that about 30% of Malaysian manufacturing companies have adopted the BSC as a PMS either wholly or partially. Based on a sampling of Egyptian private sector companies engaged in varied sectors of the economy, Ismail (2007) found that 60.5% of them adopted a BSC approach.
However, the adoption rate of the BSC was found to be 88% in Australia as reported by Chenhall and Langfield-Smith (1998b). Kald and Nilsson (2000) surveyed 236 Nordic multi-business companies and found that 27% of the surveyed companies use a BSC model and another 61% planned to adopt it within two years. Rigby (2001) conducted a survey during the period 1993 to 1999 in 15 countries in North America, Europe, and South America and found that 43.9% of the respondent companies reported that they were using the BSC approach. Ittner et al. (2003) found that 20% of the respondents in a variety of USA financial service sectors use the BSC approach. Speckbacher et al. (2003) surveyed 174 senior management executives from the publicly traded firms in German-speaking countries (Austria, Switzerland, and Germany) and found that 26% of the surveyed firms use the BSC approach. Franco-Santos et al. (2004) conducted a survey on different UK sectors and found that only 19% of the surveyed companies used the BSC to a great extent. Another study conducted in UK (Zuriekat, 2005) found an implementation rate of 30.1% among manufacturing companies. Thus, the above mentioned results indicated that the diffusion of BSC approach among Jordanian companies is acceptable as it is located within a comparable range compared to other countries.

Analysing the implementation stages of the BSC among Jordanian industrial companies also revealed that 33.3% of Jordanian industrial companies had not considered the BSC approach in their PMS comparing with 12.5% also had considered it. Only 1.8% of the responding companies had first implemented and then abandoned the BSC approach. One interesting finding indicates that 17.3% of the responding companies are currently implementing the BSC approach. This result is a positive indicator about the trend for
the future diffusion of the BSC approach among Jordanian industrial companies. This result also supports the finding that was reported in section 7.4.1 above, which revealed that Jordanian industrial companies use both financial and non-financial performances measures.

Table 7.25: Balanced Scorecard implementation stages

<table>
<thead>
<tr>
<th>Implementation stages</th>
<th>Frequency</th>
<th>percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not considered</td>
<td>56</td>
<td>33.3</td>
</tr>
<tr>
<td>Implemented and abandoned</td>
<td>3</td>
<td>1.8</td>
</tr>
<tr>
<td>Considering</td>
<td>21</td>
<td>12.5</td>
</tr>
<tr>
<td>Implementing now</td>
<td>29</td>
<td>17.3</td>
</tr>
<tr>
<td>Used</td>
<td>47</td>
<td>28.0</td>
</tr>
<tr>
<td>Used extensively</td>
<td>12</td>
<td>7.1</td>
</tr>
<tr>
<td>Total</td>
<td>168</td>
<td>100</td>
</tr>
</tbody>
</table>

The results of this thesis also showed that the BSC companies use different perspectives in their BSC with more focus on the original four perspectives. In particular, Table 7.26 shows that all the BSC users use the financial perspective. This result is expected as previous researchers (Chenhall & Langfield-Smith, 1998b; Hyvönen, 2005; Kald & Nilsson, 2000) found that the financial perspective is the most common perspective in the BSC model. The results did show that the original four BSC perspectives as suggested by Kaplan and Norton (financial, internal business process, innovation and learning and customer) were the main component of the BSC model among Jordanian industrial companies. In particular, the study findings indicate that 100% of the users use the financial perspective, 98.3% use the customer perspective, 95% use the innovation and learning perspective and 88.1% use the internal business process perspective. This result is partially consistent with Speckbacher et al. (2003) and Zuriekat (2005) who found that the BSC users focused highly on three perspectives.

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37 This result provides an opportunity for researchers to investigate the diffusion of the BSC and other contemporary techniques in the near future among Jordanian industrial companies.
including financial, customer and internal business process in UK and German speaking
countries respectively.

Table 7.26 also shows that the environment perspective is used by 42.4% of the users. Consistent with the result reported in section 7.4.1, the community perspective was ranked at the bottom of the list as it is used by only 33.9% of the users. This diversity in the perspectives is normal because a company may employ only two perspectives or even more than the original four perspectives (Ittner et al., 2003; Speckbacher et al., 2003). However, Lipe and Salterio (2000) suggest that each unit in the organization should build and use its own form of BSC.

Table 7.26: Type of perspectives included in the balanced scorecard

<table>
<thead>
<tr>
<th>Type of perspectives</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial</td>
<td>59</td>
<td>100</td>
</tr>
<tr>
<td>Internal business process</td>
<td>52</td>
<td>88.1</td>
</tr>
<tr>
<td>Innovation and learning</td>
<td>56</td>
<td>95.0</td>
</tr>
<tr>
<td>Customer</td>
<td>58</td>
<td>98.3</td>
</tr>
<tr>
<td>Community</td>
<td>20</td>
<td>33.9</td>
</tr>
<tr>
<td>Environment</td>
<td>25</td>
<td>42.4</td>
</tr>
</tbody>
</table>

The number of perspectives in the BSC depends on the strategy and competitive market position of each company (DeBusk et al., 2003). Thus, companies might use more perspectives in their BSC (DeBusk et al., 2003; Lipe & Salterio, 2000; Schiemann & Lingle, 1999). For example, Speckbacher et al. (2003) found that 17% of the BSC users use additional perspectives such as supplier and environment perspectives. Therefore, the number of perspectives used also differs from one company to another. Table 7.27 shows the number of perspectives used by BSC users. The table shows that only one company uses two perspectives, four companies use three perspectives, twenty seven companies use four perspectives, eleven companies use five perspectives, and sixteen
companies use six perspectives. An interesting finding is that 45.8% of the BSC users use four perspectives. This result is consistent with the above reported result (see Table 7.26) which indicated that most of the BSC users utilise the original four BSC perspectives.

Table 7.27: Number of perspectives included in the balanced scorecard

<table>
<thead>
<tr>
<th>Number of perspectives</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two perspectives</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Three perspectives</td>
<td>4</td>
<td>6.8</td>
</tr>
<tr>
<td>Four perspectives</td>
<td>27</td>
<td>45.8</td>
</tr>
<tr>
<td>Five perspectives</td>
<td>11</td>
<td>18.6</td>
</tr>
<tr>
<td>Six perspectives</td>
<td>16</td>
<td>27.1</td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>100</td>
</tr>
</tbody>
</table>

The results of the thesis indicate that the use of the BSC is spread across both the medium and the large companies in Jordan. As shown in Table 7.28, 50.8% of the user companies are medium sized (50-249 employees) companies and 49.2% are large sized companies. Implementation of the BSC approach increases as the company size (employees' number) grows. It is 24.3%\textsuperscript{38} for companies with less than 150 employees, 37.1% for companies with 150 to 249 employees, 43.9% for companies with 250 to 499 employees and 50% for companies with 500 employees and above. This finding is also consistent with that of previous studies (Hoque & James, 2000; Speckbacher et al., 2003).

\textsuperscript{38} 17/70= 24.3%
Table 7.2: Employee numbers of BSC users in comparison with total respondents

<table>
<thead>
<tr>
<th>Employee number</th>
<th>Frequency of BSC users</th>
<th>Total responses</th>
<th>Percent from total responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-149 employees</td>
<td>17</td>
<td>70</td>
<td>24.3</td>
</tr>
<tr>
<td>150-249 employees</td>
<td>13</td>
<td>35</td>
<td>37.1</td>
</tr>
<tr>
<td>250-499 employees</td>
<td>18</td>
<td>41</td>
<td>43.9</td>
</tr>
<tr>
<td>500-999 employees</td>
<td>8</td>
<td>15</td>
<td>53.3</td>
</tr>
<tr>
<td>1000 or greater</td>
<td>3</td>
<td>7</td>
<td>42.9</td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>168</td>
<td></td>
</tr>
</tbody>
</table>

Table 7.29 analyses the results of BSC diffusion across industries and shows that the usage of BSC is spread across all industrial companies in Jordan except for two small industries, namely, oil and gas industry and tobacco and cigarettes industry. For example, 72.7% (8) of the typing, paper and packaging companies use the BSC and about 52% (14) of food companies use the BSC.

Table 7.29: Industry classification of BSC users in comparison with total respondents

<table>
<thead>
<tr>
<th>Industry type</th>
<th>Frequency of BSC users</th>
<th>Total responses</th>
<th>Percent from total responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textile, clothing and footwear</td>
<td>4</td>
<td>12</td>
<td>33.3</td>
</tr>
<tr>
<td>Electrical appliances</td>
<td>3</td>
<td>7</td>
<td>42.9</td>
</tr>
<tr>
<td>Plastic and rubber products</td>
<td>2</td>
<td>18</td>
<td>11.1</td>
</tr>
<tr>
<td>Food products</td>
<td>14</td>
<td>27</td>
<td>51.9</td>
</tr>
<tr>
<td>Typing, paper and packing</td>
<td>8</td>
<td>11</td>
<td>72.7</td>
</tr>
<tr>
<td>Furniture and wooden products</td>
<td>3</td>
<td>13</td>
<td>23.0</td>
</tr>
<tr>
<td>Oil and gas industry</td>
<td>0</td>
<td>1</td>
<td>0.0</td>
</tr>
<tr>
<td>Chemical/pharmaceutical industry</td>
<td>12</td>
<td>24</td>
<td>50.0</td>
</tr>
<tr>
<td>Mining and quarrying</td>
<td>2</td>
<td>4</td>
<td>50.0</td>
</tr>
<tr>
<td>Tobacco and cigarettes</td>
<td>0</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>Iron, steel and aluminium industry</td>
<td>6</td>
<td>20</td>
<td>30.0</td>
</tr>
<tr>
<td>Building materials and construction</td>
<td>4</td>
<td>16</td>
<td>25.0</td>
</tr>
<tr>
<td>Others such as IT products, automotive..</td>
<td>1</td>
<td>12</td>
<td>8.3</td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>168</td>
<td></td>
</tr>
</tbody>
</table>

In summary the results indicate that 35.1% (59) of the study sample use the BSC approach. This rate is in line with that of other countries. The study findings also revealed that about 30% (50) are considering or currently implementing the approach.
The results indicate little inconsistency in term of types and number of perspectives used. Jordanian industrial companies seem to use the different perspectives of BSC with greater emphasis on the four original perspectives as initially suggested by Kaplan and Norton. Interestingly, the results indicate that 91.5% of the BSC companies use more than three perspectives with 45.8% using four perspectives. The use of the BSC approach is spread across different industries in medium and large size companies and increases as the size of the company increases.

### 7.6 Summary

This chapter reviewed the sample characteristics and descriptive analysis of the survey data. The analysis of demographic characteristics of the respondents indicated that the sample of the study was relevant to achieve the objectives of this study. Tests of validity and reliability were applied to the variables of the study. Factor analysis was conducted to validate the scales of the different variables used in this study. Strong evidence was found for considering the variables of this thesis in the next stage to test the hypotheses. Reliability was evaluated using a reliability coefficient of Cronbach’s alpha. The internal reliability test indicated that all the variables were in the acceptable range.

The descriptive statistic results revealed that Jordanian industrial companies use multiple measures (financial and non-financial) of performance. The responding companies place a major weight on the use of customer measures followed by financial measures, environment measures, employee measures, internal business process measures, innovation measures and community measures respectively. The findings also indicated that Jordanian industrial companies use performance measures for different purposes. The results indicated that Jordanian industrial companies still
operate under institutional and government controls as they put more emphasis on the usage of performance measures to comply with legal requirements.

The study results indicated that 35.1% (59) of the study sample use the BSC approach and about 30% (50) are considering or currently implementing the approach. The results showed that the BSC companies use different perspectives in their BSC with more focus on the original four perspectives. The number of perspectives in the BSC model also differs from one company to another. Finally, the use of the BSC approach is spread across different industries in both medium and large sized companies and increases as the size of the company increases.

The next chapter introduces and discusses the results of the analyses conducted in order to test the hypotheses derived from the proposed conceptual framework and the previous literature.
8.1 Introduction

The main objective of this chapter is to introduce and discuss the results of the analyses conducted in order to test the hypotheses formulated in Chapter 5, section 5.5. In particular, this chapter answers the following two research questions:

1. What is the effect of the various contextual factors on the extent of performance measurement diversity usage in Jordanian industrial companies?
2. What is the effect of the usage of financial measures, non-financial measures, measurement diversity approach and BSC approach on organisational performance in Jordanian industrial companies?

In particular, this chapter has 5 sections. Section 8.2 assesses the underlying assumptions of multiple regression analysis. Section 8.3 presents the results of testing the hypotheses relating to contingent variables and the extent of performance measurement diversity usage. Section 8.4 presents the results of testing the hypotheses relating to the performance consequences of using the different performance measurement practices. Finally, section 8.5 is the chapter summary.

8.2 The analysis approach: correlation and regression analysis

Pearson’s correlation analysis is fundamental to regression analysis. Correlation coefficient (r) indicates the strength of the association between any two metric variables. The sign (+ or -) indicates the direction of the relationship. The value of the coefficient can range from +1 to -1, with +1 indicating a perfect positive relationship, 0 indicating no relationship and -1 indicating a perfect negative relationship (Hair et al.,
In this study, correlation analysis was performed to assess the strength and direction of the relationship as fundamental to regression analysis.

Two set of hypotheses were developed for this thesis. The first set includes eight hypotheses that test the effect of the contingent factors (i.e. independent variables) on the extent of performance measurement diversity usage (i.e. the dependent variable). Thus, multiple regression analysis is the most relevant analytical approach to test this relationship because it explains how the predictor variables combine to affect the dependent variable. The second set of hypotheses tests the effect of using the different performance measurement practices on organisational performance. Multiple and simple regression methods were used to assess this effect. SPSS version 17 was used to test the hypotheses.

Multiple regression analysis is a well known statistical technique used to test the relationship between a single dependent variable and several independent variables (Hair et al., 2006). The coefficient of determination (R²) represents the amount of variance in the dependent variable that is accounted for by the regression model (Field, 2000). However, R² is influenced by the number of independent variables relative to sample size. Thus, a number of measurement guidelines have been promulgated, ranging from 10 to 15 observations per independent variable to a minimum of 5 observations per independent variable (Hair et al., 2006). Taking into account the sample size and the number of predictors used, adjusted R² is the adjusted coefficient of determination which represents the amount of variation in the independent variable that can be explained in the regression model if the model was derived from the population from which the sample was taken (Field, 2000). Thus, adjusted R² reflects the goodness of fit of the model. Adjusted R² is more common than R², especially with multiple
predictors in the equation, because $R^2$ is systematically increased when adding independent variables (Hair et al., 2006). Thus it is appropriate to use adjusted $R^2$ with multiple linear regressions and $R^2$ with simple linear regression.

The analysis of variance (ANOVA) shows F-value and its significance. The F statistic tests whether the regression model predicts the dependent variable significantly or not. There are several decision rules for accepting or rejecting research hypotheses. The most important basis for accepting or rejecting the hypotheses is the significance of the standardized coefficient (beta). This measure shows the relationship between the dependent variable and each of the independent variables (Field, 2000). Furthermore, the t-value and its significance (0.05 in this research) indicate whether each independent variable contributes significantly to the prediction of the dependent variable. Finally, since the direction of effect for all hypotheses are identified, a one-tailed test of significance was used and reported in this thesis (Al-Omiri, 2003). The next section presents the underlying assumptions of multiple regression analysis.

8.2.1 Testing the underlying assumptions of multiple regression analysis

Many assumptions in multiple regression analysis must be tested to draw an effective conclusion about a population based on a regression analysis conducted on sample data (Hair et al., 2006). These include linearity, homoscedasticity, normality, multicollinearity and residual independence and outliers.

8.2.1.1 Linearity and homoscedasticity

The relationship between dependent and independent variables must be linear (Pedhazur, 1997). Homoscedasticity means that the residual at each level of the
independent variables should have the same variance. It is worth plotting ZRESID (Y-axis in SPSS dialog box) against ZPRED (X-axis in SPSS dialog box) to check for the presence of homoscedasticity and to determine whether the assumptions of random errors have been met (Field, 2000; De Vaus, 2002). In this study, the scatterplot result (see Appendix G) shows that the assumptions of linearity and homoscedasticity have been met (Hair et al., 2006).

8.2.1.2 Assessment of normality

One method to check for any deviation from normality is to use tests for skewness and kurtosis. Unfortunately, there is no consensus on the acceptable degree of non-normality (Hancock & Mueller, 2006). However, according to Hair et al. (2003) skewness values within the range of -1 to +1 and kurtosis values within -3 to +3 indicate an acceptable range of normality. According to Kline (2005) skewness and kurtosis values should be less than three and ten respectively to indicate normality. Thus, an absolute value of kurtosis index greater than 10.0 may suggest a problem and values greater than 20.0 may indicate a more serious one. However, Table 8.1 shows that all the study variables\(^{39}\), based on the values of skewness and kurtosis, are within the acceptable range.

\(^{39}\) Mean, standard deviation, skewness and kurtosis are also computed for the other six categories of performance measures. They are 2.92, 0.84, -0.08 and -0.20 for community measures usage, 4.08, 0.73, -1.00 and 1.30 for customer measures usage, 3.59, 0.74, -0.53 and 0.49 for employees measures usage, 3.71, 0.93, -0.80 and 0.47 for environment measures usage, 3.07, 0.94, -0.49 and -0.28 for innovation measures usage and 3.42, 0.94, -0.74 and 0.30 for internal business process measures usage respectively.
Table 8.1: Descriptive statistics of the research variables

<table>
<thead>
<tr>
<th>Research variable</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced manufacturing technology (AMT)</td>
<td>3.56</td>
<td>0.99</td>
<td>1</td>
<td>5</td>
<td>-0.79</td>
<td>0.30</td>
</tr>
<tr>
<td>Differentiation strategy (DIFF)</td>
<td>3.82</td>
<td>0.72</td>
<td>1</td>
<td>5</td>
<td>-0.78</td>
<td>1.03</td>
</tr>
<tr>
<td>Low-cost strategy (LCOS)</td>
<td>3.17</td>
<td>0.98</td>
<td>1</td>
<td>5</td>
<td>-0.14</td>
<td>-0.36</td>
</tr>
<tr>
<td>Intensity of market competition (MCOMP)</td>
<td>3.48</td>
<td>0.71</td>
<td>1.17</td>
<td>5</td>
<td>-0.51</td>
<td>0.84</td>
</tr>
<tr>
<td>Perceived environmental uncertainty (PEU)</td>
<td>3.72</td>
<td>0.64</td>
<td>1.50</td>
<td>4.88</td>
<td>-0.73</td>
<td>0.45</td>
</tr>
<tr>
<td>Organisational culture (CULF)</td>
<td>3.65</td>
<td>0.77</td>
<td>1</td>
<td>5</td>
<td>-0.82</td>
<td>0.87</td>
</tr>
<tr>
<td>Workforce diversity (WORDI)</td>
<td>3.37</td>
<td>0.86</td>
<td>1</td>
<td>5</td>
<td>-0.41</td>
<td>-0.51</td>
</tr>
<tr>
<td>Organisation size (SIZE)</td>
<td>2.26</td>
<td>0.36</td>
<td>1.70</td>
<td>3.43</td>
<td>0.55</td>
<td>-0.17</td>
</tr>
<tr>
<td>Performance measurement diversity usage (PMDSUSE)</td>
<td>3.54</td>
<td>0.52</td>
<td>1.14</td>
<td>4.57</td>
<td>-0.88</td>
<td>1.69</td>
</tr>
<tr>
<td>Financial measures usage (FMUSE)</td>
<td>4.00</td>
<td>0.79</td>
<td>1</td>
<td>5</td>
<td>-0.96</td>
<td>1.24</td>
</tr>
<tr>
<td>Overall non-financial measures (NFMUSE)</td>
<td>3.47</td>
<td>0.56</td>
<td>1.17</td>
<td>4.50</td>
<td>-0.77</td>
<td>0.84</td>
</tr>
<tr>
<td>Organisational performance (OP)</td>
<td>3.76</td>
<td>0.60</td>
<td>2</td>
<td>5</td>
<td>-0.36</td>
<td>-0.22</td>
</tr>
<tr>
<td>Balanced scorecard (BSC)*</td>
<td>3.95</td>
<td>0.45</td>
<td>2.83</td>
<td>4.67</td>
<td>-0.54</td>
<td>-0.06</td>
</tr>
<tr>
<td>Organisational performance (OP)*</td>
<td>4.03</td>
<td>0.47</td>
<td>3.14</td>
<td>5</td>
<td>-0.006</td>
<td>-0.80</td>
</tr>
</tbody>
</table>

* N= 59

Legend: Not at all= 1; To a little extent= 2; To a moderate extent= 3; To a great extent= 4; To a very great extent= 5.

8.2.1.3 Multicollinearity

Multicollinearity is defined as the degree to which any variable's effect can be predicted or accounted for by the other variables in the analysis (Hair et al., 2006, p. 24). Multicollinearity threatens the internal validity of multiple regression analysis (Field, 2000). Three methods were used in this study to test for multicollinearity (Hair et al., 2006). The first measure of multicollinearity is an examination of the correlation matrix for the independent variables. The presence of high correlation, for example over 0.90,
is an indicator of a multicollinearity problem (Hair et al., 2006). As shown in Table 8.2 (Sub-section 8.3.1) and Table 8.4 (Sub-section 8.4.1), the correlation coefficients are in the acceptable range. Tolerance is the second used measure of multicollinearity in this study. Tolerance is the direct measure of multicollinearity and is defined as the amount of variability of the selected independent variable not explained by the other independent variables (Hair et al., 2006, p. 227). The acceptable value of tolerance must be over 0.10. The last measure is tolerance's inverse, the variance inflation factor (VIF), which is considered acceptable below 10. The tolerance and VIF values shown in Table 8.3 (Sub-section 8.3.2) and Table 8.5 (Sub-section 8.4.2) are in the acceptable range.

8.2.1.4 Outlier analysis and independent of residuals

The presence of outliers means that some observations have unique characteristics different from the characteristics of the overall observations (Hair et al., 2006, p. 73). These outliers in the data show exceptionally large or small scores (extremes) which affect the normality of the data (Tabachnick & Fidell, 2001).

Both Centered Leverage and Cook's Distance were used to check for outliers. The acceptable value for Centered Leverage is when it closer to 0 (Field, 2000), whereas the acceptable Cook's Distance value is when it is less than 1 (Hair et al., 2006). The Durbin-Watson test was undertaken to test if the residuals were correlated. The value of Durbin-Watson depends upon the number of predictors in the model and the number of observation. The acceptable value of Durbin-Watson is between 1 and 3 and the preferable value is closer to 2 (Field, 2000).

The analysis results of Centered leverage, Cook's Distance and Durbin-Watson shown in sub-section 8.3.2 and sub-section 8.4.2 are all in the preferable range.
8.3 Testing the first set of hypotheses

The hypotheses in this section are aimed at investigating the effect of the independent variables (AMT, DIFF, LCOS, MCOMP, PEU, CULF, WORDI and SIZE) on the dependent variable (PMDSUSE). Pearson's correlation analysis is fundamental to regression analysis. Correlation analysis was performed to assess the nature of the relationship between the dependent variable and independent variables.

8.3.1 Correlation matrix results

Table 8.2 reports Pearson correlation matrix for both the dependent variable and the independent variables.

Table 8.2: Correlation Matrix (Pearson's)

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>measurement diversity</td>
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<td></td>
<td>1</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>usage (PMDSUSE)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Advanced manufacturing</td>
<td>.514**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>technology AMT)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Differentiation</td>
<td>.423**</td>
<td>.412**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>strategy (DIFF)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Low-cost strategy</td>
<td>-.161*</td>
<td>-.200**</td>
<td>-.115</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(LCOS)</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Intensity of market</td>
<td>.366**</td>
<td>.216**</td>
<td>.197*</td>
<td>.077</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>competition (MCOMP)</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Perceived</td>
<td>.433**</td>
<td>.290**</td>
<td>.274**</td>
<td>-.122</td>
<td>.320**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>environmental</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>uncertainty (PEU)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7. Organisational</td>
<td>.303**</td>
<td>.260**</td>
<td>.339**</td>
<td>-.004</td>
<td>.265**</td>
<td>.316**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Culture (CULF)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Workforce</td>
<td>.389**</td>
<td>.379**</td>
<td>.193*</td>
<td>-.299**</td>
<td>.120</td>
<td>.364**</td>
<td>.226**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>diversity (WORDI)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Organisation size</td>
<td>.230**</td>
<td>.234**</td>
<td>.017</td>
<td>-.034</td>
<td>.156*</td>
<td>.220**</td>
<td>.122</td>
<td>.243**</td>
<td>1</td>
</tr>
<tr>
<td>(SIZE)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

The above table shows that advanced manufacturing technology (AMT), differentiation strategy (DIFF), intensity of market competition (MCOMP), perceived environmental uncertainty (PEU), organisational culture (CULF), workforce diversity (WORDI) and organisation size (SIZE) are significantly correlated (p<0.01) with the extent of
performance measurement diversity usage (PMDSUSE). The table also shows that low-
cost strategy (LCOS) is also negatively and significantly correlated (p< 0.05) with the
extent of performance measurement diversity usage (PMDSUSE). Table 8.2 reveals that
advanced manufacturing technology had a strong positive and significant relationship
with the extent of performance measurement diversity usage (r = 0.514, p<0.01),
suggesting that the higher usage of advanced manufacturing technology is associated
with a higher usage of performance measurement diversity (i.e. financial and non-
financial performance measures). In respect to the two types of business strategy, a
strong positive and significant relationship was also revealed between product
differentiation strategy and the extent of performance measurement diversity usage (r =
0.423, p<0.01). As expected, a negative relationship between low-cost strategy and the
extent of performance measurement diversity usage was found. This relationship is
marginally significant (r = -0.161, p<0.05). These results are, however, in line with
previous research results which indicate that companies that follow a differentiation
strategy are focusing more on employing a broad set of financial and non financial
measures, while companies that follow a low cost strategy are focusing more on
traditional financial measures of performance (e.g. Chenhall & Langfield-Smith, 1998a;

The table also shows a positive and significant relationship between intensity of market
competition and performance measurement diversity usage (r = 0.366, p<0.01). This
result is also consistent with the finding of previous studies (e.g. Hoque et al., 2001;
Mia & Clarke, 1999). Similarly, the results indicate a strong positive and significant
relationship between perceived environmental uncertainty and performance
measurement diversity usage (r = 0.433, p<0.01). The results also show a strong
positive and significant relationship between workforce diversity and performance
measurement diversity usage ($r = 0.389, p<0.01$). This result indicates that the greater the workforce diversity, the higher the usage of multiple performance measures in terms of financial and non-financial. Therefore, workforce diversity is an important contingent variable that is likely to affect performance measures usage. Finally, a weak positive and significant relationship ($r = 0.303, p<0.01, r = 0.230, p<0.01$) was found between organizational culture, organization size and the extent of performance measurement diversity usage respectively. The aforementioned relationships confirmed the direction and strength of relationships that resulted from the multiple regression analysis as indicated in Table 8.3 below. One should note that correlation coefficients are subject to a number of limitations (Pallant, 2001). Multiple regression analysis was used to overcome these limitations by exploring the relationship between the dependent and independent variables.

8.3.2 Results of hypotheses testing using multiple regression analysis

Multiple regression analysis was used to predict the direct effect of the dependent variables (i.e. AMT, DIFF, LCOS, MCOMP, PEU, CULF, WORDI and SIZE) on the independent variable (i.e. PMDSUSE). The 8 independent variables were entered into a regression model with the extent of performance measurement diversity usage as the dependent variable (see, for example, Hoque et al., 2001). Table 8.3 reports the output from the regression model.
Table 8.3: Result of regression analysis: contingent factors and the extent of performance measurement diversity usage (N=168)

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Unstandardized coefficients</th>
<th>Standardized coefficients</th>
<th>t-value</th>
<th>Sig.</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>.979</td>
<td>.321</td>
<td>3.049</td>
<td>.002</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced manufacturing technology (AMT)</td>
<td>.143</td>
<td>.038</td>
<td>.270</td>
<td>3.794</td>
<td>.000</td>
<td>.695</td>
</tr>
<tr>
<td>Differentiation strategy (DIFF)</td>
<td>.139</td>
<td>.050</td>
<td>.191</td>
<td>2.772</td>
<td>.003</td>
<td>.746</td>
</tr>
<tr>
<td>Low-cost strategy (LCOS)</td>
<td>-.003</td>
<td>.034</td>
<td>-.006</td>
<td>-.088</td>
<td>.465</td>
<td>.888</td>
</tr>
<tr>
<td>Intensity of market competition (MCOMP)</td>
<td>.134</td>
<td>.047</td>
<td>.182</td>
<td>2.816</td>
<td>.003</td>
<td>.847</td>
</tr>
<tr>
<td>Perceived environmental uncertainty (PEU)</td>
<td>.138</td>
<td>.056</td>
<td>.170</td>
<td>2.449</td>
<td>.008</td>
<td>.734</td>
</tr>
<tr>
<td>Organisational culture (CULF)</td>
<td>.018</td>
<td>.046</td>
<td>.027</td>
<td>.397</td>
<td>.346</td>
<td>.790</td>
</tr>
<tr>
<td>Workforce diversity (WORDI)</td>
<td>.088</td>
<td>.043</td>
<td>.144</td>
<td>2.049</td>
<td>.021</td>
<td>.717</td>
</tr>
<tr>
<td>Organisation size (SIZE)</td>
<td>.085</td>
<td>.090</td>
<td>.059</td>
<td>.938</td>
<td>.175</td>
<td>.880</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>R²</th>
<th>Adjusted R²</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.439</td>
<td>.410</td>
<td>15.527</td>
<td>.000</td>
</tr>
</tbody>
</table>

Table 8.2 shows that the matrix does not have high correlation values, generally 0.90 and higher, and therefore avoids the problem of multicollinearity (Hair et al., 2006). Furthermore, Table 8.2 shows that no value of the VIF values exceed the generally accepted maximum level of 10. Additionally, the table shows that all the tolerance values are greater than 0.10. Thus, there was no problem with multicollinearity. In addition, Centered Leverage and Cook's Distance were used to check for the outliers to determine if the regression model was biased. The tests indicated that the value for Centered Leverage is closer to 0 and Cook's Distance values are less than 1. Therefore, the outliers do not have any influence on the regression model. Finally, the Durbin-
Watson test was undertaken to test if the residuals were correlated. The test indicated a value of 1.775, which is considered an acceptable level.

However, the overall $F$ statistic shown in Table 8.3 is significant at the 0.000 level and the adjusted $R^2$ indicates that the regression model explains 41% of the variance in PMDSUSE.

The hypotheses within this section focus on examining the relationships between the contingent factors (i.e. advanced manufacturing technology, differentiation strategy, intensity of market competition, perceived environmental uncertainty, organisational culture, workforce diversity and organisation size) and the extent of performance measurement diversity usage. Thus, the results of multiple regression analysis are now presented.

**H1: A greater use of advanced manufacturing technology has a positive impact on the extent of performance measurement diversity usage.**

The statistics relating to hypothesis H1 revealed (see Table 8.3) that a greater application of advanced manufacturing technology (AMT) has a positive and significant impact on the extent of performance measurements diversity usage (PMDSUSE) with a standardized coefficient (beta) of 0.270 ($t$-value = 3.794). Thus, the findings of the regression model indicated that hypothesis H1 which predicts a direct relationship between advanced manufacturing technology and the extent of performance measurement diversity usage was supported at the 0.05 significance level. The study found strong empirical support for hypothesis H1. Therefore, hypothesis H1 is accepted.

The above result indicates that the use of AMT has a positive impact on the extent of performance measurement diversity usage. The AMT is argued to be one of the most
notable innovations in manufacturing during the last few decades. Manufacturing companies have increasingly invested in AMT to compete in today’s business environment, and they in turn need to ensure that their PMS was designed to capture relevant information (Widener, 2006). Thus, AMT supports the use of information related to non-financial perspectives of performance such as customer satisfaction, employee productivity, efficiency and innovation. For each company to effectively control these perspectives, a multidimensional PMS must be used. In this context, Abdel-Kader and Luther (2008) argued that in the current competitive business environment, many companies found that their traditional cost accounting measures were inhibiting the introduction of innovative processes and technologies.

Previous researchers (e.g. Abdel-Maksoud et al., 2005; Chenhall, 2007; Covaleski et al., 1996; Hoque et al., 2001; Hussain & Gunasekaran 2002) indicated that technology affects the design and use of PMS in that it encourages firms to use multidimensional performance measurement. In line with the hypothesis result, Banker et al. (1993) found that the implementation of AMT is positively associated with non-financial, quality and productivity measures to shop-floor employees. Hoque et al. (2001) found that greater emphasis on multiple measures for performance evaluation is associated with more frequent use of computer-aided manufacturing process. Similarly, Baines and Langfield-Smith (2003) found that the increased use of AMT will result in greater reliance on non-financial management accounting information.

Recently, Aydogan (2011) argued that performance measurement comes more to the foreground with the advancement in the high technology. The stronger impact of AMT on the usage of performance measurement diversity explains the current attitude of the private sector in Jordan to invest in high-technology industry which started in 1996.
when Jordan began a privatisation program aiming at developing enterprise efficiency through the sale of state ownership shares to technically advanced strategic investors (Awamleh, 2002). There is a clear trend in the economic plan of successive Jordanian governments due to the lack of natural resources to support employing advanced technology in the industrial sector (Al-Khawaldeh, 2001). In this context, Tubaishat et al. (2006) argued that using technology in Jordan is easier due to the fact that the country is relatively liberal. In addition, Jordan's trade relations with various international markets have enhanced the local technological capacity (Navarra, 2006). Thus, it can be concluded that advanced manufacturing technology plays a major role in encouraging the use of a broad set of financial and non-financial measures in Jordanian industrial companies.

**H2a: Differentiation strategy has a positive impact on the extent of performance measurement diversity usage.**

The statistics relating to hypothesis H2a revealed (see Table 8.3) that pursuing a product differentiation strategy (DIFF) has a positive and significant impact on the extent of performance measurement diversity usage (PMDSUSE) with a standardized coefficient (beta) of 0.191 (t-value = 2.772). The findings of the regression model indicated that hypothesis H2a which predicts a direct relationship between differentiation strategy and the extent of performance measurement diversity usage was supported at the 0.05 significance level. Therefore, hypothesis H2a is accepted.

The above result indicates that product differentiation strategy has a positive impact on the extent of performance measurement diversity usage. The differentiation strategy requires the provision of unique products and services (Amoako-Gyampah & Acquaah, 2008). Thus, a product differentiation strategy facilitates product flexibility in terms of quality, design, new features and delivery, which in turn supports customer satisfaction.
and retention. Furthermore, a product differentiation strategy gives companies the ability to maintain and increase market share in the future. Therefore, these companies will place more emphasis on non-financial measures such as a survey of customer satisfaction, on-time delivery, number of new products launches and number of new patents.

It has been argued that organisations adopting generic strategies like product differentiation are using more non-financial measures in their PMS (Brignall, 1997; Chenhall, 2003, 2007; Chong & Chong, 1997; Fisher, 1995; Govindarajan & Gupta, 1985; Langfield-Smith, 1997). This argument is consistent with the current study findings. Empirically, Gupta (1987) found that non-financial subjective evaluation was positively associated with a differentiation strategy. Chenhall and Langfield-Smith (1998a) found that a differentiation strategy is positively associated with the usage of multiple performance measures. Hyvönen (2008) findings also revealed that firms that follow a differentiation strategy also emphasis a multiple performance measures. Recently, Spencer, Joiner and Salmon (2009) findings indicated that pursing a differentiation strategy utilised a performance measurement diversity approach. More recently, Amir, Ahmad and Mohammad (2010) Findings indicated that differentiation strategy is the most prominent factor that influence the choice of PMS attributes.

It is clear from the descriptive statistics results that Jordanian industrial companies put more emphasis on a product differentiation strategy currently in order to maintain their market share especially in the current competitive market. Another important reason is that Jordanian companies have been influenced by the foreign investors’ behaviour, which focuses more attention on a product differentiation strategy, since Jordan has close business ties with these countries. The conclusion is that a differentiation strategy
plays a major role in encouraging the use of both financial and non-financial performance measures in Jordanian industrial companies.

**H2b: Low-cost strategy has a negative impact on the extent of performance measurement diversity usage.**

The statistics relating to hypothesis H2b revealed (see Table 8.3) that pursuing a low-cost strategy (LCOS) has a negative but non-significant impact on the extent of performance measurement diversity usage (PMDSUSE) with a beta of -0.006 (t-value $= -0.088$). The findings of the regression model indicated that hypothesis H2b which predicts a direct relationship between low-cost strategy and the extent of performance measurement diversity usage was not supported at the 0.05 significance level. Therefore, hypothesis H2b is rejected.

The above result indicates that a low-cost strategy has a negative but non-significant impact on performance measurement diversity usage. This means that pursuing a low-cost strategy is not related to the extent of performance measurement diversity within the sample of Jordanian industrial companies. Companies pursuing a low-cost strategy aim to provide products with the lowest possible cost relative to their competitors (Abdel-Kader & Luther, 2008). This means that traditional financial measures are more important in firms following a low-cost strategy (Hyvönén, 2007). Thus, one can argue that the use of multiple performance measures which include financial and non-financial measures is negatively associated with adopting a low-cost strategy. However, the finding of this study contradicts this argument. An empirical study by Gupta (1987) found that non-financial subjective evaluation was positively associated with differentiation as a competitive strategy but not with low cost as a competitive strategy. Study findings by Zuriekat (2005) revealed that a low-cost strategy has a positive effect on the extent of performance measurement diversity usage.
Consistent with the argument of Baines and Langfield-Smith (2003), this result may be justified based on the idea that Jordanian industrial companies have turned towards adopting a product differentiation strategy and have abandoned the traditional strategy which focused previously on cost. This in turn leads them to use a broader set of financial and non-financial measures. This justification is based on two important points. The first point is that the results of descriptive statistics and interviews in this study revealed that Jordanian industrial companies put more emphasis on a differentiation strategy which is more relevant in the current business environment. This is consistent with the argument of previous studies (Chenhall & Langfield-Smith 1998a; Porter, 1980, 1985) which revealed that a firm should choose between competing on either a product differentiation strategy or low-cost strategy. The second point is that the change in the preferences and tastes of customers who no longer focus just on cost, but also are beginning to pay more attention to the quality and features of the products. The conclusion is that a low-cost strategy is not related to the extent of usage of performance measurement diversity approach in the Jordanian industrial companies.

**H3: Intensity of market competition has a positive impact on the extent of performance measurement diversity usage.**

The statistics relating to hypothesis H3 revealed (see Table 8.3) that intensity of market competition (MCOMP) has a positive and significant impact on the extent of performance measurement diversity usage (PMDSUSE) with a standardized coefficient (beta) of 0.182 (t-value = 2.816). The findings of the regression model indicated that hypothesis H3 which predicts a direct relationship between intensity of market competition and the extent of performance measurement diversity usage was supported at the 0.05 significance level. Therefore, hypothesis H3 is accepted.
The result indicates that the intensity of market competition has a positive impact on the extent of performance measurement diversity usage. An organization needs to monitor a diverse range of market factors when the aim is to attain competitive advantage. Such an organisation needs a system that includes a broad set of financial and non-financial performance measures (Hoque et al., 2001). The arguments of the literature on control and PMS (e.g. Al-Omri & Drury, 2007; Bhimani, 1994; Hussain & Gunasekaran, 2002; Mia & Clarke, 1999) supported the finding of this thesis in that the extent of usage of multiple measures of performance (i.e. financial and non-financial measures) is necessary to cope with the intensity of market competition. In line with this hypothesis result, Hoque et al. (2001) found a positive relationship between intensity of market competition and the extent of usage of financial and non-financial measures. Similarly, Zuriekat (2005) found that intensity of market competition has a positive impact on the usage of financial and non-financial performance measures. Furthermore, Abdel-Maksoud et al. (2005) found that those companies that perceive themselves to be in very competitive markets want a better PMS. Recently, Amir et al. (2010) found that intensity of market competition requires greater reliance on a broad set of performance measures.

However, Waweru et al. (2004) argued that companies operating in developing countries now require quality and timely information to replace their current management accounting systems in order to cope with the intensity of competition. In the same context, Hutaibat (2005) argued that for Jordanian companies to stay in the market, they must develop their accounting system in general. Starting in 1999, Jordan signed numerous trade agreements aiming to liberalise the national economy and integrate it with the global market. Therefore, Jordanian companies faced a high level of internal and external competition. To survive and to cope with this increased
competition, Jordanian companies paid more attention to other performance perspectives such as customer, employee and environment which in turn forced these companies to use more non-financial measures. The conclusion is that intensity of market competition plays a major role in encouraging the use of a diverse set of financial and non-financial performance measures among Jordanian industrial companies.

**H4: Perceived environmental uncertainty has a positive impact on the extent of performance measurement diversity usage.**

The statistics relating to hypothesis H4 revealed (see Table 3.8) that perceived environmental uncertainty (PEU) has a positive and significant impact on the extent of performance measurement diversity usage (PMDSUSE) with a standardized coefficient (beta) of 0.170 (t-value = 2.449). Thus, the findings of the regression model indicated that hypothesis H4 which predicts a direct relationship between perceived environmental uncertainty and the extent of performance measurement diversity usage was supported at the 0.05 significance level. Therefore, hypothesis H4 is accepted.

The above result indicates that perceived environmental uncertainty has a positive impact on the extent of performance measurement diversity usage. Firms operating in an uncertain environment tend to use a broad set of financial and non-financial measures in their PMS to enable them to assess a wide range of future events effectively and to decrease the uncertainty that they face (e.g. Chehhall & Morris, 1986; Hoque, 2004; Jänkälä, 2007). Previous literature findings confirmed the positive relationship between PEU and the use of a diverse set of performance measures. For example, Chenhall and Morris (1986) found that using a broad scope of non-financial information is positively associated with PEU. Gosselin (2005) found that financial and non-
financial measures usage is significantly associated with environmental uncertainty. The same result was found recently by Schulz et al. (2010).

The trade business environment has currently become more complex in Jordan as a result of the liberalisation program. Hutaibat (2005) argued that Jordanian companies must recognise the impact of the new environment and improve their management accounting practices. Thus, it seems that most Jordanian industrial companies focus on a group of non-financial measures to effectively predict and control external factors such as suppliers’ action, customer demands, tastes and preferences, deregulation and globalisation and government regulation and policies. The conclusion is that environmental uncertainty plays a major role in using a broad set of financial and non-financial measures among Jordanian industrial companies.

**H5: Pursuing a group culture type that is associated with flexibility values has a positive impact on the extent of performance measurement diversity usage.**

The statistics relating to hypothesis H5 revealed (see Table 3.8) that pursuing group culture type (CULF) has no significant impact on the extent of performance measurement diversity usage (PMDSUSE) with a standardized coefficient (beta) of 0.027 (t-value = 0.397). The findings of the regression model indicated that hypothesis H5 which predicts a direct relationship between group culture type that emphasises flexibility values and the extent of performance measurement diversity usage was not supported at the 0.05 significance level. Therefore, hypothesis H5 is rejected.

The above result does not support a direct relationship between organisational culture that emphasises flexibility values and the extent of performance measurement diversity usage. Each organisation has its own culture based on a combination of values (Quinn and Kimberly, 1984). Cultural types that can be argued to be associated with flexibility
values are most likely to use information related to a broad set of financial and non-financial measures (Henri, 2006; Franco-Santos, 2007). The result of this hypothesis may contradict some of the previous research, which confirmed the positive effect of cultural types associated with flexibility types on the design and use of PMS (e.g. Bhimani, 2003; Franco-Santos, 2007; Henri, 2006). One possible explanation for the non-significant relationship is that the experience of Jordanian industrial in making use of flexible values is limited as they have not gained enough experience in using and benefiting from these values in different aspects of their work such as performance evaluation systems. This explanation has been supported by some of the personal interviewees who could not explicitly address the relationship between their cultural values and performance measures usage. On the other hand, it can be argued that Jordanian industrial companies easily influenced by Western business culture in using a broad set of financial and non-financial measures as indicated by the interviewees. Thus, unlike other contingent factors that this thesis confirmed in respect to their effect on the extent of performance measurement diversity usage, organisational culture has no impact on the extent of usage of performance measurement diversity in Jordanian industrial companies. However, there will be a fruitful opportunity in future for researchers to investigate the effect of organisational culture on the extent of performance measures usage in Jordan using the whole competing value model as discussed in Chapter 4, sub-section 4.3.5.

**H6: Workforce diversity has a positive impact on the extent of performance measurement diversity usage.**

The statistics relating to hypothesis H6 revealed (see Table 8.3) that workforce diversity (WORDI) has a positive and significant impact on the extent of performance measurement diversity usage (PMDSUSE) with a standardized coefficient (beta) of 0.144 (t-value = 2.049). The findings of the regression model indicated that hypothesis
H6 which predicts a direct relationship between workforce diversity and the extent of performance measurement diversity usage was supported at the 0.05 significance level. Therefore, hypothesis H6 is accepted.

The above result indicates that workforce diversity has a positive impact on the extent of performance measurement diversity usage. Diversity includes those human differences that exert a powerful, sustained effect on people behaviour such as gender, nationality and physical abilities (Kinicki & Williams, 2006). Chapter 4, sub-section 4.3.6 argued that workforce diversity is a reality in today’s market as it offers new knowledge, education and ideas. Workforce diversity needs to be managed successfully to maximise firm value. Thus, it needs long-term organisational commitments and must be reflected in staffing procedures, performance appraisals and training (Foldy, 2004; Kochan et al., 2003). Current management accounting practices need to be used and implemented by well educated and trained employees.

Companies with workforce diversity are expected to put more emphasis on non-financial measures that relate to employees, who are closest to the internal processes and customers, such as employee training, employee skill development, and employee authorisation for decision-making. This will lead companies to place more emphasis on other measures such as customer measures and internal business process measures.

Jordan has a well qualified and trained workforce across both sexes. For example, the descriptive statistics in this study found that 93% of the respondents had a Bachelor degree qualification or higher. This makes the construction and use of a broad set of performance measures among Jordanian industrial companies an easier matter. This research is the first to explore this factor as an internal contingent factor that is likely to
affect performance measurement practices. The hypothesis result is consistent with the above arguments in that workforce diversity is an important factor that is likely to affect management accounting practices. Apart from this factor, Abdel-Maksoud et al. (2005) investigated the effect of workforce characteristics on the importance of non-financial performance measures but other previous research had ignored workforce diversity. This study establishes the importance contingent of this factor that is likely to affect the extent of performance measurement diversity usage. Thus, this study confirmed that workforce diversity should be considered as an additional internal variable in the contingency theory paradigm.

**H7: Organisation size has a positive impact on the extent of performance measurement diversity usage.**

The statistics relating to hypothesis H5 revealed (see Table 8.3) that organization size (SIZE) has no significant impact on the extent of performance measurement diversity usage (PMDSUSE) with a standardized coefficient (beta) of 0.059 (t-value = 0.938). The findings of the regression model indicated that hypothesis H7 which predicts a direct relationship between organization size and the extent of performance measurement diversity usage was not supported at the 0.05 significance level. Therefore, hypothesis H5 is rejected.

This result does not support the existence of a direct relationship between organisation size and the extent of performance measurement diversity usage. This result may contradict some of the previous research, which did confirm a positive relationship between organisation size and the extent of performance measures usage (Laityinen, 2001; Zuriekat, 2005). However, some of the previous research in management accounting (Hutaibat, 2005; Maiga & Jacobs, 2003) did argue that there is no consensus in the literature on the effect of organisation size on management accounting practices.
Hoque et al. (2001) found no relationship between organisation size and multiple performance measures usage. Additionally, Abdel-Maksoud et al. (2005) found that employee measures are significantly more important in companies with fewer employees. Recently, Mohamed and Hussain (2010) found that the size does not have impact on performance measurement practices in the banking sector. Thus, one could argue that organisation size makes no difference to the extent of performance measurement diversity usage among Jordanian industrial companies. This indicates that in the current competitive environment companies put more emphasis on non-financial measures such as employee measures. This is because the risk of employees leaving would have a greater relative impact on companies with a smaller number of employees than those with larger number of employees (Maksoud et al., 2005). This may also indicate that all Jordanian industrial companies regardless of their size have responded to the new challenges such as increased competition and globalization and have carried out major changes in their management accounting systems especially their PMS. Therefore, it can be concluded in this thesis that organisation size has no impact on the extent of performance measurement diversity usage.

8.4 Testing the second set of hypotheses

The hypotheses of this section are aimed at investigating the effect of the independent variables (FMUSE, NFMUSE, PMDSUSE and BSC) on the dependent variable (OP). The results of the analysis are presented below.

8.4.1 Correlation matrix results

Table 8.4 reports Pearson correlation matrix for all the seven performance measurement perspectives that resulted from factor analysis. The table also shows the correlation for overall non-financial measures and organisational performance.
The above table shows that the financial measures usage, non-financial perspectives usage (community measures, customer measures, employee measures, environment measures, innovation and internal business process measures) and overall non-financial measures usage are significantly correlated ($P < 0.01$) with organizational performance.

In respect to the main variables of the second set hypotheses, the results indicate a strong positive and significant relationship between overall non-financial measures usage and organisational performance ($r = 0.544$, $p<0.01$). On the other hand, the results indicate a positive and significant- but not strong- relationship ($r = 0.219$, $p<0.01$) between financial measures usage and organizational performance.

It has been argued that supplementing traditional financial measures with a diverse mix of non-financial measures is believed to capture key strategic performance areas (Ittner
et al., 2003). However, Kaplan and Norton (1996b) argued that a business strategy can be shown as a set of hypotheses about cause-and-effect relationships. Thus, the strength of the linkages among the different perspectives is an indicator of the hypothesized cause-and-effect relationships and is evidence confirming the organization’s business strategy. Table 8.4 shows that several performance measurement perspectives are significantly correlated with each other, which confirms Kaplan and Norton’s (1996b) argument and supports the cause-and-effect relationships between non-financial areas and financial performance (see Ittner & Larcker, 2003). This result is also consistent with that of Jusoh et al. (2008).

8.4.2 Results of hypotheses testing using regression analysis

Multiple regression analysis was used to examine the relationship between financial measures usage and organizational performance, whereas simple regressions were used to explore the relationship between organizational performance and overall non-financial measures usage, measurement diversity usage and the BSC approach usage.

To check for multicollinearity, Table 8.4 shows that the matrix does not have high correlation values, for example over 0.90, which would identify a problem with multicollinearity (Hair et al., 2006). Additionally, Table 8.6 shows that the VIF has no values that exceed the generally accepted maximum level of 10. Additionally, the table shows that the tolerance test showed no values less than the maximum level of 0.10. Thus, there was no evidence of multicollinearity. In addition, Centered Leverage and Cook’s Distance were used to check for the outliers to determine if the regression model

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40 In addition, the results indicated that the usage of performance measures for providing better understanding of the cause-and-effect relationship and communicating strategy were ranked as “used to a great extent” or “used to a very great extent” by 51.2% and 49.4% of the respondent companies respectively (see Chapter 7, sub-section 7.4.2).
was biased. The tests indicated that the value of Centered Leverage is closer to 0 and Cook's Distance values are less than 1. Therefore, outliers do not have any influence on the regression model. Finally, the Durbin-Watson test was undertaken to test if the residuals were correlated. The test indicated a value of 1.815, which is considered to be in an acceptable range of values.

Multiple regression equation was run using all the seven perspectives which resulted from the factor analysis to explore the effect of financial measures usage on organizational performance (Jusoh et al., 2008; Van der Stede et al., 2006). The overall $F$ statistic shown in Table 8.6 is statistically significant at the 0.000 level. The adjusted $R^2$ indicates that the regression model explains 29.9% of the variance in organizational performance. This result is almost similar to that of Jusoh et al. (2008). Finally, simple regressions were used to explore the relationship between organizational performance and overall non-financial measures usage, measurement diversity usage and BSC approach usage (see Table 8.5).

### Table 8.5: Types of analysis used to test the hypotheses relating to organisational performance consequences of performance measures usage

<table>
<thead>
<tr>
<th>Analysis type</th>
<th>Hypotheses</th>
<th>Independent Variable</th>
<th>Dependent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple linear regression</td>
<td>H1</td>
<td>Financial measures usage as a main variable and the other 6 perspectives resulted from factor analysis.</td>
<td>Organizational performance</td>
</tr>
<tr>
<td>Simple linear regression</td>
<td>H2</td>
<td>Overall non-financial measures usage.</td>
<td>Organizational performance</td>
</tr>
<tr>
<td></td>
<td>H3</td>
<td>Performance measurement diversity usage.</td>
<td>Organizational performance</td>
</tr>
<tr>
<td></td>
<td>H4</td>
<td>BSC approach usage.</td>
<td>Organizational performance</td>
</tr>
</tbody>
</table>
The results of the regression analysis used to test the second set hypotheses are discussed in turn.

**H1: The extent to which the firm uses financial measures is negatively associated with organisational performance.**

Multiple regression analysis was used to effectively explore the effect of financial measures usage on organisational performance. The statistics relating to hypothesis H1 revealed (see Table 8.6) that financial measures usage has no significant effect on organizational performance with a beta of 0.049 (t-value = 0.712). The findings of the regression model indicated that hypothesis H1 which predicts a direct relationship between financial measures and the organizational performance was not supported at the 0.05 significance level. Therefore, hypothesis H1 is rejected. Based on this result, it can be concluded that financial measures use has no impact on organizational performance.

The result of the regression model revealed that the use of financial measures has no significant impact on organisational performance. It has been argued that financial performance measures became inadequate for the new reality of organisations (Henri, 2004) and are backward-looking since they focus mainly on past results and cannot reflect future results of managerial action (Hemmer, 1996). Thus, it was expected that using traditional financial measures alone in today’s business environments affected organisational performance negatively. However, many researchers have suggested that for businesses to survive in a competitive market place, a new set of operational performance measures should be used (Burgess et al., 2007). These measures should be flexible, primarily non-financial, and able to be changed as needed (Ghalayini & Noble, 1996; Kaplan & Norton, 1992).
The result of the study revealed that the usage of financial performance measures has no significant impact on performance of Jordanian industrial companies. In particular, the finding of the current study revealed a positive but non-significant relationship between the use of traditional financial measures and organisational performance. The non-significant result is consistent with most of the previous research findings (see, for example, Ittner et al., 2003; Jusoh et al., 2008; Maiga & Jacobs, 2003; Van der Stede et al., 2006). The non-significant result as argued by Jusoh et al. (2008, p.132) is due to the shortcoming of traditional financial measures in measuring performance effectively. However, this result does not mean that financial performance measures are not important in companies. Instead, the result means that financial measures must be combined with non-financial measures to be more effective. This is because using financial measures alone is not sufficient (Jusoh et al., 2008). This, however, is very clear in the result of H3, where the effect of performance measurement diversity approach usage is positive and significant. In this context, several researchers (e.g. Henri, 2004; Medori & Steeple, 2000; Otley, 2007) have argued that using non-financial performance measures does not mean that non-financial performance measures should replace financial performance measures. Instead, non-financial measures have evidenced predictive ability and complement financial measures. In the same vein, Kaplan (2001) argued that traditional financial measures are inadequate for measuring and managing organisational performance because these measures communicate little about future and long-term performance (Kaplan, 2001).

Based on the above findings and argument, it can be concluded that using financial performance measures alone has no impact on organisational performance.
Table 8.6: Result of regression analysis for organisational performance (dependent variable) and financial measures usage (independent variable) (N=168)

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Unstandardized coefficients</th>
<th>Standarized coefficients</th>
<th>t-value</th>
<th>Sig.</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>1.658</td>
<td>.300</td>
<td>5.531</td>
<td>.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial measures usage (FMUSE)</td>
<td>.037</td>
<td>.053</td>
<td>.049</td>
<td>.712</td>
<td>.761</td>
<td>.883</td>
</tr>
<tr>
<td>Community measures usage (COMMUSE)</td>
<td>.048</td>
<td>.056</td>
<td>.067</td>
<td>.861</td>
<td>.195</td>
<td>.684</td>
</tr>
<tr>
<td>Customer measures usage (CUMUSE)</td>
<td>.032</td>
<td>.060</td>
<td>.039</td>
<td>.536</td>
<td>.297</td>
<td>.785</td>
</tr>
<tr>
<td>Employee measures usage (EMPUSE)</td>
<td>.236</td>
<td>.063</td>
<td>.289</td>
<td>3.714</td>
<td>.000</td>
<td>.692</td>
</tr>
<tr>
<td>Environment measures usage (ENMUSE)</td>
<td>.038</td>
<td>.053</td>
<td>.058</td>
<td>.716</td>
<td>.238</td>
<td>.643</td>
</tr>
<tr>
<td>Innovation measures usage (INNMUSE)</td>
<td>.122</td>
<td>.048</td>
<td>.189</td>
<td>2.514</td>
<td>.007</td>
<td>.744</td>
</tr>
<tr>
<td>Internal process measures usage (IPMUSE)</td>
<td>.093</td>
<td>.049</td>
<td>.146</td>
<td>1.898</td>
<td>.030</td>
<td>.709</td>
</tr>
<tr>
<td>R²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.299</td>
</tr>
<tr>
<td>F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11.185</td>
</tr>
<tr>
<td>Sig.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.000</td>
</tr>
</tbody>
</table>

*Supplementary Analysis: the relationship between other individual performance measurement perspectives and organizational performance*

Multiple regression analysis was also conducted using the six non-financial performance perspectives individually. The results revealed (see Table 8.6) that the usage of three non-financial perspectives (employee, innovation and internal business process) have a significant impact on the organizational performance with a beta of (0.289, 0.189 and 0.146) and a t-value of (3.714, 2.514 and 1.898) respectively. On the other hand, the results also indicated that other non-financial perspectives (community, customer and environment) do not contribute significantly toward organizational performance with a beta of (0.067, 0.039, and 0.058) and a t-value of (0.861, 0.536 and 0.716) respectively. These results indicate that the effect on performance is mixed when
taking the various perspectives of performance measurements individually. Thus, it is more beneficial for companies to use the performance measurement diversity approach which focuses on using a broad set of financial and non-financial measures concurrently (see Table 8.8).

**H2: The extent to which the firm uses overall non-financial measures is positively associated with organisational performance.**

Simple linear regression was conducted to test the effect of overall non-financial measures usage on organisational performance. As shown in Table 8.7, the entire model is significant ($F = 69.664; \ P = 0.000$), and is able to explain 29.6% of the variance on organizational performance$^{41}$. These results show that overall non-financial measures usage has strong positive and significance effect (beta = 0.544; t-value = 8.347) on organizational performance. Thus, the findings of the regression model indicated that hypothesis H2 which predicts a direct relationship between overall non-financial measures and the organizational performance is supported at the 0.05 significance level.

$^{41}$ See section 8.2 for the rationale for using R² instead of adjusted R² to explain the variance in simple linear regression.
Table 8.7: Result of regression analysis for organisational performance (dependent variable) and overall non-financial measures usage (independent variable) (N=168)

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Unstandardized coefficients</th>
<th>Standardized coefficients</th>
<th>t-value</th>
<th>Sig.</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.732</td>
<td>.246</td>
<td>7.041</td>
<td>.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall non-financial measures usage (NFMUSE)</td>
<td>.585</td>
<td>.070</td>
<td>.544</td>
<td>8.347</td>
<td>.000</td>
<td>1.000</td>
</tr>
<tr>
<td>R²</td>
<td>.296</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>.291</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>69.664</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig.</td>
<td>.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The result of the regression model revealed that the use of non-financial measures contributes significantly towards organisational performance. One can be argued that non-financial performance measures are future-oriented measures. Thus, managers rely heavily on these measures in making decisions that will benefit their organisations in the long run (Chenhall & Langfiels-Smith, 2007; Ghalayini & Noble, 1996; Hwang et al., 2009; Maines et al., 2002; Malina & Selto, 2004; Medori & Steeple, 2000; Shield & White, 2004). Furthermore, non-financial measures use increases customer loyalty, which positively affects organisational performance (Nagar & Rajan, 2001).

The result of this hypothesis is in line with the argument of Ittner and Larcker (1998) in that multiple measures of performance are important not only to support the financial performance, but are necessary to support non-financial performance in several areas such as customer satisfaction and innovation. The significant result is consistent with the findings from studies by Sim and Killough (1998), Ittner and Larcker (2003) and Hoque (2004) which found that the use of non-financial measures is positively
associated with organisational performance. In addition, the result is also consistent with that of Said et al. (2003) who found that the use of non-financial performance measures is associated with future accounting returns. The results of surveys of both IMA and AICPA also revealed that the more extensive the use of non-financial performance measures, the greater the positive impact on organisational performance in many areas such as customer performance, product innovation and employee capabilities (Shields & White, 2004).

Recently, increased importance has been attached to the use of non-financial performance measures as a result of the effects of global competition (Medori & Steeple, 2000), the effects of developed countries business culture (Chenhall & Langfield-Smith, 1998b) and the effect of transnational institutions (Hussain & Gunasekaran, 2002; Hussain & Hoque, 2002). The adoption of these practices by Jordanian companies is influenced by many similar factors. In addition to Jordanian EAP for the period 1992-1998 which aimed to transfer the Jordan economy to be free and open and the privatisation program which started in 1996, Jordan has close business ties with developed countries. Jordan has signed several free trade agreements with countries such as the WTO in 2000, the FTA with USA in 2001, and EC in 2002. These agreements increased the internal and external competition factors in Jordan and required Jordanian companies to focus more on product quality to meet the local and international standards. Furthermore, some institutions have been established in Jordan to ensure that the Jordanian companies are using adequate measurement techniques. For example, the King Abdullah II Center for Excellence was established to ensure that the PMS of Jordanian companies includes a broad set of non-financial measures as indicated in Chapter 2. However, Hutaibat (2005) found that performance measurement techniques were the most prominent management accounting techniques among...
Jordanian industrial companies. The conclusion is that the use of non-financial performance measures does contribute significantly towards organisational performance.

H3: The extent to which the firm uses performance measurement diversity is positively associated with organisational performance.

A simple linear regression was run to test the effect of measurement diversity approach usage on organisational performance. Table 8.8 shows the result of the regression analysis. As shown in the table, the model is significant ($F = 69.170; P = 0.000$), and is able to explain 29.4% of the variance on organisational performance. These results show that measurement diversity usage has a positive and significance effect ($\beta = 0.542; t$-value = 8.317) on organizational performance. Thus, the findings of the regression model indicated that hypothesis H3 which predicts a direct relationship between performance measurement diversity usage and the organizational performance is supported at the 0.05 significance level.

\[42\] The ability of the current study model to explain the variance on organisational performance exceeded that of Jusoh et al. (2008) which explained only 22% of the variance in organisational performance.
Table 8.8: Result of regression analysis for organisational performance (dependent variable) and measurement diversity usage (independent variable) (N=168)

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Unstandardized coefficients</th>
<th>Standardized coefficients</th>
<th>t-value</th>
<th>Sig.</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>1.562</td>
<td>.267</td>
<td>5.853</td>
<td>.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>measurement</td>
<td>.620</td>
<td>.075</td>
<td>.542</td>
<td>8.317</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>diversity usage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(PMDSUSE)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The result of the regression model revealed that the use of measurement diversity contributes significantly towards organisational performance. Measurement diversity approach emphasises the multiplicity and variety of performance measures that can be grouped into financial performance and non-financial performance to develop more comprehensive PMS (Hall, 2008; Henri, 2006). Financial performance measures tend to focus on short term profitability, whilst non-financial performance measures focus on long term profitability. Thus, multiple performance models which combine financial and non-financial measures help firms to meet the needs of a wide range of organisational stakeholders (Brignall, 2007). This combination is also more effective for performance measurement as argued in previous research in the field (Abernethy & Lillis, 1995; Atkinson et al., 1997; Brignall, 2007; Chenhall & Langfiels-Smith, 2007; Chow & Van der Stede, 2006; Dunk, 2005; Fisher, 1995, 1998; Govindarajan, 1988; Hertenstein & Plat, 1998; Hoque et al., 2001; Hussain & Gunasekaran, 2002; Kaplan & Norton, 1992, 1993, 1996a, 1996b, 1996c; Lau & Sholihin, 2005; Van der Stede et al., 2001; ...
As such, there has been a shift in the methods of performance measurement towards complementing financial measures with a set of new non-financial measures (Chenhall & Langfiels-Smith, 2007). Van der Stede et al. (2006) argued that there is a considerable empirical support for increased measurement diversity because their usage is resulted in increasing performance.

However, the result of the hypothesis is in line with previous research results which revealed a positive and significant relationship between the use of measurement diversity and organizational performance (Evans, 2004; Ittner et al., 2003; Sim & Killough, 1998; Van der Stede et al., 2006). This result, however, supports the notion that organisational performance is positively associated with the overall performance measures usage (Jusoh et al., 2008).

Measurement diversity approach is very common among Jordanian companies. In this context, Hutaibat (2005) found that Jordanian companies do not rely on just one single performance measure; instead, they use a variety of techniques to ensure the accuracy and validity of their evaluation. Furthermore, the analysis of the descriptive statistics of the study indicates that Jordanian industrial companies use a broad set of financial and non-financial measures (see Chapter 7, section 7.4.1).

The current thesis findings have identified many factors that positively affect the use of measurement diversity (see Table 8.3). These factors include advanced manufacturing technology, differentiation strategy, market competition, perceived environmental uncertainty and workforce diversity. In addition to these factors, one of the criteria to evaluate the private companies in Jordan for the purpose of the KAIIA is to ensure that the PMS of each company include a diverse set of financial and non-financial measures.
such as customer measures, employee measures, innovation measures, supplier measures, economy measures, community measures, process measures and financial measures (see Chapter 2 for more details). Furthermore, in the last two decades, Jordan has undertaken major steps on its developmental path into international markets. However, the economic adjustment program, and the signing of agreements with the WTO and EC, increased the pressure facing Jordanian industry to focus on different areas of performance. Similarly, standards setting was identified as one avenue that is used to promote quality, innovation and confidence in Jordanian industrial companies products. Within this context, standards performance needs to be evaluated to ascertain how product standards are perceived which provides useful information for consumers, standards setters, and manufacturers and to identify opportunities for improvement and future development from such feedback. Therefore, the JISM was established in 1999 to meet local and international standards and provides services in standardization, certification, innovation, testing and metrology (Rawabdeh, 2002).

Thus, it is reasonable to argue that using both financial and non-financial measures by Jordanian industrial companies contributes toward their organisational performance in many areas such as customer satisfaction, product quality, personal development and market development. The conclusion is that the use of a measurement diversity approach (financial and non-financial measures) by Jordanian industrial companies contributes significantly towards organisational performance.

**H4: The extent to which the firm uses the BSC approach is positively associated with organisational performance.**

As indicated in Chapter 7 (section 7.5), fifty nine Jordanian industrial companies were identified as BSC users with a usage rate of 35.1%. Furthermore, the number of perspectives that were included in the BSC of each company was identified in question 285
E2 of section E of the questionnaire. The weighted average use of the perspectives determined in E2 was calculated from the responses obtained in section C for the respondent who selected “used” or “used extensively” in E1 (see Chapter 6, sub-section 6.5.1.4). Thus, considerable time and effort were taken to identify the actual users of BSC and to determine the extent of BSC usage for each company. A simple linear regression was conducted as shown in Table 8.9 to test the effect of the use of the BSC approach on the organizational performance of the 59 BSC users. The model is significant ($F = 7.617; P = 0.004$), and is able to explain 11.8% of the variance on organizational performance. The results show that BSC usage has positive and significant effect (beta = 0.343, t-value = 2.760) on organizational performance. The findings of the regression model indicate that hypothesis H4 which predicts a direct relationship between BSC approach usage and the organizational performance is supported at the 0.05 significance level.

**Table 8.9: Result of regression analysis for organisational performance (dependent variable) and BSC usage (independent variable) (N=59)**

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Unstandardized coefficients</th>
<th>Standardized coefficients</th>
<th>t-value</th>
<th>Sig.</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>2.607</td>
<td>.519</td>
<td>5.023</td>
<td>.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSC usage</td>
<td>.361</td>
<td>.131</td>
<td>.343</td>
<td>2.760</td>
<td>.004</td>
<td>1.000</td>
</tr>
<tr>
<td>R²</td>
<td>.118</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>.102</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>7.617</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig.</td>
<td>.004</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The result of the regression model revealed that the use of the BSC approach contributes significantly towards organisational performance. This result is consistent with the argument of previous research on the BSC approach (Atkinson et al., 1997; Lawton, 2002; Michalska, 2005) which indicated that the BSC is an effective management accounting tool when integrated with the system of planning and control of an organisation. Speckbacher et al. (2003) found that the BSC has been viewed as a concept for improved shareholder value management. The significant result is consistent with the findings from studies by Hoque and James (2000), Crabtree and DeBusk (2008) and Jusoh et al. (2008) in which they found that the usage of BSC approach is positively associated with organisational performance. In line with this result in Jordan, Al-Khadash and Feridun (2006) found that the use of management accounting techniques, such as just-in-time (JIT), leads to improvement in financial performance.

Chapter 7 (section 7.5) found that the diffusion of BSC approach among Jordanian companies is located within a comparable range compared to other developed and developing countries. The findings also stated that 17.3% of the responding companies are currently implementing the BSC approach. This result is a positive indicator about the trend for the future diffusion of the BSC approach among Jordanian industrial companies. The descriptive results also indicated that Jordanian industrial companies put more emphasis on the use of non-financial measures. For example, the results indicated that the customer perspective exceeds the financial perspective in term of use among Jordanian industrial companies. These findings indicate that Jordanian companies have responded to economic changes that have taken place in the Jordanian business market, which brought with them the need to change accounting practices to facilitate competing on the world market (Al-Akra et al., 2009). The conclusion is that
the use of the BSC approach by Jordanian industrial companies contributes significantly towards organisational performance.

8.5 Summary

This chapter has presented the procedures, findings and discussion emerging from the data analysis. A set of assumptions for multiple regression analysis were tested. These include tests for linearity, homoscedasticity, normality, multicollinearity, residual independence and outliers. Correlation, multiple and simple regressions analysis were used to test the study hypotheses. Two set of hypotheses were tested. The first set includes eight hypotheses used to investigate the relationship between a number of contingent factors relevant to Jordanian business environment and the extent of using performance measurement diversity approach as shown in the first research theoretical model as discussed in Chapter 5. The result of multiple regression analysis indicated that advanced manufacturing technology, differentiation strategy, market competition, environmental uncertainty and workforce diversity have a positive and significant impact on the extent of performance measurement diversity usage. In particular, the result indicated that companies are more likely to use a broad set of financial and non-financial measures if they are using advanced manufacturing technology, following product differentiation strategy, facing competition and uncertainty and have diversity in their workforce. The second set includes four hypotheses used to investigate the effect of using some of performance measurement practices on organisational performance as shown in the second research theoretical model as discussed in Chapter 5. The result of regression analysis indicates that overall non-financial measures usage, measurement diversity usage and the BSC approach usage contribute significantly towards organisational performance.
A detailed discussion for each finding was presented in this chapter to justify the logic and extant literature behind each result that emerged from the hypothesis testing. The next chapter discusses the research findings that emerged from semi-structured interviews.
Chapter 9
Qualitative Findings and Discussion

9.1 Introduction

The qualitative approach was used partially in this thesis to collect more data and to complement the questionnaire findings. The different sections of this chapter revealed that this approach was a useful process to add new and valuable information to this thesis and to minimize the disadvantages of a single research approach. This chapter reports and discusses the qualitative results and reflects the triangulation method as discussed in Chapter 6 (Bryman, 2004).

Some of the study issues cannot be measured quantitatively at this stage in Jordan. Thus, the qualitative approach was used in this research to achieve the last two objectives of the study (see Chapter 1, section 1.2). In particular, the qualitative approach was used primarily to answer the following two questions:

1. What are the major benefits for using a diverse set of performance measures among Jordanian industrial companies?
2. What are the major difficulties faced by management in its current performance measurement system? Are there any solutions?

A semi-structured approach was adopted in interviewing participants. A checklist of questions (see Appendix C) was used to ensure that topics central to the research question were covered in the interviews (Tillema, 2005). Although the questions were asked according to the questionnaire in a consistent manner, the researcher asked other relevant questions not in the interview protocol. The main interview questions were supplemented by sub-questions to understand deeply each issue that arose during the interview process (Barriball & While, 1994; Deshpande, 1983; Marshall & Rossman,
The use of open-ended questions allowed respondents to express their views on issues not necessarily anticipated by the interviewer and provided the opportunity to cover factors deemed important by the respondents. All the interviews were conducted in Arabic. Each interview was recorded after obtaining permission from the interviewees and notes were taken during the interviews (see Chapter 6, sub-section 6.4.2.3 for more details).

However, only the information that referred to the questions of the study were taken and translated into English. Thematic analysis was used to discuss the two main issues (i.e. benefits and difficulties) effectively (Mundy, 2010). The chapter is divided into eight sections. Section 9.2 describes the characteristics of the responding companies and individuals. Section 9.3 identifies the actual performance measures currently used by Jordanian companies and provides any further measures. The section also reports the different purposes for using such measures. Section 9.4 presents all the possible factors that may affect the extent of using performance measures among Jordanian industrial companies and discusses the effect of the seven contingent factors from the main questionnaire. Section 9.5 focuses on the organisational performance of Jordanian companies in terms of trends and factors with the focus on the effect of using performance measurement diversity. Section 9.6 discusses the perceived benefits of using a diverse set of financial and non-financial measures among Jordanian industrial companies. The difficulties and problems associated with using the different performance measures are analysed in section 9.7. Finally, section 9.8 presents the chapter conclusion.
9.2 Background information

As previously discussed, one participant from each of the five industrial companies was interviewed between January 2010 and February 2010. These five participants who were interviewed were selected to represent the different sizes and sectors of Jordanian industrial companies (see Tables 9.1 and 9.2). In respect of the individual demographic characteristics, all of the respondents were aged above 30 years and had a bachelor degree or higher. The companies’ names were pseudonyms (A, B, C, D and E). In addition, pseudonyms (B106, B107, B108, B109 and B110) were assigned to quotes, which will make it impossible to identify participants (see Table 9.3).

Table 9.1: Industrial classification of interviewed companies

<table>
<thead>
<tr>
<th>Industry type</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textile, clothing and footwear</td>
<td>1</td>
</tr>
<tr>
<td>Furniture and wooden products</td>
<td>1</td>
</tr>
<tr>
<td>Building materials and construction</td>
<td>1</td>
</tr>
<tr>
<td>Chemical/pharmaceutical industry</td>
<td>1</td>
</tr>
<tr>
<td>Iron, steel and aluminium industry</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 9.2: Employee numbers of interviewed companies

<table>
<thead>
<tr>
<th>Employees number</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-100</td>
<td>2</td>
</tr>
<tr>
<td>101-200</td>
<td>1</td>
</tr>
<tr>
<td>201-500</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
</tr>
</tbody>
</table>
Table 9.3: List of interviewees

<table>
<thead>
<tr>
<th>Company</th>
<th>Participant</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B106</td>
</tr>
<tr>
<td>B</td>
<td>B107</td>
</tr>
<tr>
<td>C</td>
<td>B108</td>
</tr>
<tr>
<td>D</td>
<td>B109</td>
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9.3 Usage and aims of performance measures

Interviewees were asked to identify the different types of performance measures that are used currently by their companies and to add any measures that they use but were not listed in the main questionnaire. All interviewees pointed out that most of the listed performance measures in the questionnaire are common across Jordanian industrial companies and are included in their PMS. This set of measures is multi-dimensional as it includes both financial and non-financial performance measures and often includes measures which quantify what has been achieved as well as measures which are used to help predict the future (Bourne et al., 2003). Consistent with the findings of Bourne et al. (2005), respondents were describing common but simple control systems based around their use of the performance measures. This argument is also consistent with that of Franco-Santos et al. (2007) in which the supporting infrastructure of PMS can vary from very simplistic manual methods to sophisticated information systems. Four of the five interviewees mentioned that they use computer application programs in their PMS, but they still face some problems in these applications (see Section 9.7).

In general, most of the measures that are listed in the main questionnaire (see Appendix A) are commonly used by Jordanian industrial companies. Three measures (i.e. economic value added, number of new patents and support of charity projects) are not common among Jordanian industrial companies. These findings were consistent and
confirmed the descriptive findings of the questionnaire survey outlined in Chapter 7 in
that the three measures were ranked at the bottom of the list. In particular, out of 30
measures, support of charity projects ranked number 27, economic value added ranked
number 29 and number of new patients ranked the lowest (30) in the list (see Chapter 7,
sub-section 7.4.1 for more details).

In total, five new measures were added by the interviewees. These measures include:

1. Average sales price per unit.
2. Productivity rate per hour.
3. Receivable turnover.
4. Inventory turnover.
5. Down-time ratio.

The main questionnaire includes ten purposes for using performance measures. The
interviewees were asked to identify the companies’ aims for using financial and non-
financial performance measures and to add any other aims for using these measures.
Interviewees indicated that industrial companies in Jordan use performance measures
for different aims. These results again were consistent with findings derived from the
questionnaire survey in Chapter 7(sub section 7.4.2). In addition to those listed in the
questionnaires, Jordanian industrial companies use performance measures to achieve
other purposes relevant to their business environment. These purposes include:

1. Increasing the bargaining power of the company.
2. Identifying the strategic direction of the company.
3. Decreasing market risk.
4. Taking the right decision in a timely manner.
5. Controlling the different activities in the company.
This supports the argument that performance measures are considered an important management control tool for Jordanian industrial companies in the current competitive environment.

### 9.4 Factors that influence performance measures usage

During the interviews, participants highlighted a series of factors that affect the extent of performance measures usage in their companies. Consistent with the previous literature (see Chapter 4, section 4.3), most of these factors were included in the main questionnaire. The participants also discussed the role of some Jordanian institutions in encouraging them to use some measures. Three participants (B106, B108 and B109) commented on the role of the Jordanian government in prompting the use of official PMS through the economic adjustment program and international trade agreements. Participant B106 said, “After Jordan joined the World Trade Organization (WTO), the competition became very intense because the agreement allowed foreign goods to enter easily into the country.....to face this competition more attention was given to human resources”. They also commented on the role of some external parties such as governmental sectors in encouraging them to use non-financial performance measures. Participant B108 said, “Sometimes external parties such as governmental sectors force us to use non-financial measures in order to achieve some legal requirements”.

In addition to the role of government, some institutions contributed significantly in promoting the use of non-financial measures such as the King Abdullah II Centre for Excellence and the JISM. Thus, I argue that the use of performance measures should take into account local politics and power faced by an organisation as suggested by Chang (2007). Furthermore, the effect of the foreign partners on the behaviour of Jordanian companies was notable.
Finally, the participants commented on the role of the top management in supporting the usage of the different performance measures.

The participants effectively added new factors which they believed affected the use of performance measures positively, which are:

1. The effect of western business culture. This refers to the influence from the foreign partners and companies as a result of international free trade agreements such as WTO in 2000, FTA with USA in 2001, and EC in 2002. This factor is consistent with the argument of previous studies (Chenhall & Langfield-Smith, 1998b; Hyvönen, 2005) and the findings of Hussain and Hoque (2002) and Elsayed and Hoque (2010).

2. The advocating role of Jordanian institutions such as the JISM and King Abdullah II Centre for Excellence (Chang, 2007; Hussain & Hoque, 2002; Hutaibat, 2005; Neely, 1999).

3. The powerful influence from the actions of the government such as Jordanian EAP for the period 1992-1998 which aimed to transfer the Jordan economy to be free and open and the advent of the privatisation program which started in 1996.

4. The role of employees and the top management support.

5. Ownership structure effect.

6. Organisational structure.

The factors mentioned above show that the Jordanian government itself and some institutions play a role in promoting the use of new performance measures. Thus, it would be beneficial to investigate the actual effect of these factors on the extent of performance measures usage in the future using contingency theory in parallel with institutional theory. One of the issues discussed with interviewees was the effect of the seven contingent factors that were included in the main questionnaire on the extent of
performance measurement diversity usage. The next sub-sections reports and discusses the results.

9.4.1 Advanced manufacturing technology

Most of the interviewees indicated that their companies and other Jordanian companies have invested in a range of manufacturing technologies. One participant (B109) mentioned that the use of technology is different from one company to another, “I cannot make a link between the usage of advanced manufacturing technology and the usage of performance measures because the usage of technology differs from one company to another”. Most of the interviewees (B106, B107, B108 and B110) emphasised the positive effect of advanced manufacturing technology on the extent of performance measures usage (Abdel-Maksoud et al., 2005; Banker et al., 1993; Hoque et al., 2001; Perera et al., 1997). This is because the diversity in technology needs to be managed by using a set of financial and non-financial measurers. Participant B110 stated that, “If you have advanced manufacturing technology, you can deliver on time….thus; using technology leads to the use of non-financial measures”. Furthermore, using these technologies, as the respondents claimed, helps the companies to produce a broad set of high quality products and ensure on time delivery. In this context participant B108 said, “Advanced manufacturing technology in any company is considered to be the most important factor in creating efficiency and improving the quality of products”.

The results of the interviews are consistent with questionnaire survey findings presented in Chapter 8 in that AMT has a positive and significant effect on the extent of performance measurement diversity approach usage.
9.4.2 Business strategy

Most of the interviewees (B106, B107, B109 and B110) stated that they focus mainly on a product differentiation strategy. This is because a differentiation strategy increases their ability to market their products and to access new markets. Participant B109 said that, “The product differentiation strategy is more important in our company than the low-cost strategy, because cost reduction depends mainly on the decision of the raw material suppliers. Thus, product differentiation strategy increased our ability to market our products and gave us the opportunity to compare our performance with others in the market”. In respect to the low cost strategy, the participants reported that this strategy had failed among Jordanian companies. In this context participant B110 said, “Our company succeeded in using product differentiation strategy. While, cost reduction strategy failed among Jordanian companies because our market was opened to foreign companies.....Product differentiation strategy positively influenced the level of using a diverse set of performance measures in our company”.

Consistent with previous literature findings (e.g. Chenhall & Langfield-Smith, 1998a; Gupta, 1987; Hyvönen, 2008; Said et al., 2003), the result of the interviews indicated that multiple performance measures in terms of financial and non-financial need to be linked with the product differentiation strategy in order to compete effectively. However, one interviewee (B108) pointed out that the company focuses on both strategies by producing a broad set of high product quality. At the same time, the company still tries to reduce overall cost. This company uses a broad set of performance measures including financial and non-financial measures. Thus, the results of the interviews are consistent with the main questionnaire survey findings presented in Chapter 8. In particular, both reveal and emphasise the positive effect of a product differentiation strategy on the extent of performance measurement diversity usage.
Further, both qualitative and quantitative findings indicate that a low-cost strategy has no effect on the extent of performance measurement diversity usage.

9.4.3 Intensity of market competition

All the interviewees emphasised that Jordanian companies have faced a high level of competition for many reasons. Jordan has signed free trade agreements with a number of countries such as USA, Canada and Europe. Following these agreements, Jordan encourages foreign investment by giving foreign companies many incentives and exemptions. This has increased competition in the Jordanian market which led companies to give more attention to their employees. Participant B106 said, “After Jordan joined the World Trade Organization, the competition became very intense because the agreement allowed foreign goods to enter easily into the country…..to face this competition more attention was given to human resources”. This also has led companies to offer new products and services to their customers, and to give more attention to their customers’ satisfaction and other non-financial performance perspectives. Participant B106 stated, “To continue in this competition, we have paid more attention to improving productivity and developing human resources”. Participant B107 also added, “The intensity of competition led us to give more attention to our current customers and to search for new ones”. Furthermore, participant B109 said, “Competition is very intense in the Jordanian market. Thus, competition is one of the main reasons that forced us to pay more attention to our customer’s satisfaction and to produce high quality products”. This, however, is consistent with the Hoque et al. (2001) argument in that an organization needs to monitor a diverse range of market elements when the aim is to attain competitive advantage. Such an organisation needs a system that includes a broad set of financial and non-financial performance measures.
Consistent with previous literature arguments (Al-Omri & Drury, 2007; Bhimani, 1994; Hoque & James, 2000; Hoque et al., 2001; Mia & Clarke, 1999; Otley, 1999) and findings (e.g. Hoque et al., 2001; Zuriekat, 2005), it is clear that competition among Jordanian industrial companies contributes significantly to the use of a diverse set of performance measures, “Competition has a big influence on the usage of performance measures.....we have intense competition which has led us to increase our focus on promotion, deliver on time, improve the quality and introduce new products. These procedures increased the loyalty of our customers. However, the relationship between competition and the usage of performance measurement diversity is fully positive” (B110).

This result is consistent with that of the questionnaire survey presented in Chapter 8 in that the intensity of market competition has a positive and significant impact on the extent of performance measurement diversity usage.

9.4.4 Perceived environmental uncertainty

Four participants (B107, B108, B109 and B110) reported that the main sources of uncertainty in Jordan are factors such as the government, other competitors, customers, suppliers and the economic environment. The uncertainty in these factors supported the use of a broad set of performance measures, especially the non-financial ones. Interviewees indicated that government regulations and policies are changed from time to time, especially those related to taxes. This, however, is consistent with the findings by Budding (2004) who indicated that the actions of government were the most important source of uncertainty. They also indicated that market activities of competitors are unpredictable in Jordan to a large extent because there is no cooperation among competitors in Jordan, “…furthermore, there is no cooperation among the
competitors in Jordan, thus competition has forced us to use non-financial measures because such measures are the key to face the competitors” (B110). In respect to the customer, they mentioned that one cannot always predict in advance customer demand. This is because the intensity of competition in Jordanian market affects the behaviour of the customers which become unpredictable to a large extent, “The competition among companies doubled opportunistic opportunities among customers. Thus, the customer’s behaviour became unpredictable” (B109). They also mentioned that suppliers’ actions are unpredictable to a large extent. In this context participant B110 stated, “For example, our companies in Jordan do not have a significant weight to the external suppliers. Thus, we cannot predict their behaviour”.

Finally, most of the interviewees argued that the economic environment in Jordan is unpredictable. Consistent with previous research findings (e.g. Chenhall & Morris, 1986; Jänkälä, 2007; Hoque, 2005; Hwang et al., 2009), the interviewees reported that their companies use a broad set of measures to help them assess future events and to adapt to this uncertainty. Participant B108 said, “To get a higher degree of certainty, more performance measures should be used”. Participant B110 added, “To decrease the uncertainty, we have to use non-financial measures”.

Thus, the interview findings confirmed those of the main questionnaire reported in Chapter 8 in that perceived environmental uncertainty has a positive and significant impact on the extent of performance measurement diversity usage.

9.4.5 Organizational culture

In general, most of the interviewees stated that their companies emphasise flexibility values with a clan (group) focus, “Depending on the situation; you have to be flexible in
some issues and tough in others. In general, our company focuses more on flexible values in order not to create an uncomfortable atmosphere among employees” (B108). In respect to the relationship between their cultural values and performance measures usage, three participants (B106, B107 and B108) could not explicitly address the relationship. One participant (B109) mentioned that flexibility values are new in his company because the previous management has focused mainly on control values. Thus, the current management accepted and encouraged the usage of various measures, “...unlike the past, recently our company focuses more on flexible cultural values..... Top management has accepted the existence of various performance measures” (B109). Another participant (B110) mentioned that the policy of separation between the top management and the middle management in his company has influenced the usage of employees' measures negatively, “…there is a large separation between top and middle management... Usually, it is difficult to see the chief executive officer. This separation makes you feel as if you are alone. Thus, the effect was low on the extent of performance measurement diversity usage, especially those related to the employee retention and satisfaction”.

However, only two participants explicitly addressed the relationship between organizational culture and performance measures usage. Therefore, no support has been drawn from the qualitative data about the direct effect of organizational culture on the extent of performance measures usage. The result of interviews is consistent with questionnaire survey finding presented in Chapter 8.

9.4.6 Workforce diversity

Interviewees indicated that Jordanian companies do emphasise workforce diversity. The results indicated that most of the participants emphasise workforce diversity. One
participant (B109) mentioned that they focus primarily on employing Jordanians to contribute to decreasing the unemployment rate in the country. One participant (B110) mentioned that they do not employ a lot of females because the nature of their business requires males. In respect to the effect of this diversity on the extent of using a diverse set of financial and non-financial measures, one participant (B108) mentioned that the relationship is positive, “In the industrial sector, the nature of the workforce is different from the managerial work to the operational work. However, the efficiency is the key condition in our company....the relationship between workforce diversity and the usage of various performance measures is positive”. Two participants (B109 and B110) mentioned that the relationship between the workforce diversity and the usage of a diverse set of performance measures is positive but low at this time. Participant B110 said, “I think that the influence of the workforce diversity on the usage of performance measures diversity is low”. The other participants did not comment on the relationship. Thus, the effect of workforce diversity on the extent of performance measures diversity is positive but not strong. This, however, does provide some support to the main questionnaire survey findings reported in Chapter 8 which found a positive and significant relationship between workforce diversity and performance measurement diversity usage.

9.4.7 Organisation size

Most of the interviewees stated that most industrial Jordanian companies, even small companies, are using a PMS which includes a diverse set of financial and non-financial measures. Participant B110 stated, “From my experience, measures diversity is used by both small and large companies in Jordan”. One participant (B109) argued that the usage of performance measurement diversity is common among larger companies. Another participant (B108) reported that the use of performance measures depends
mainly on the nature of business itself, “The nature of our business forced us to use both financial and non-financial measures. Therefore, I can say that the usage of measures depends mainly on the nature of the business”.

Thus, it is clear that size has no direct effect on the extent of performance measures usage among Jordanian industrial companies and performance measures usage does not depend mainly on the organisation size. The result of the interviews is consistent with the questionnaire survey findings presented in Chapter 8 which found that the organization size has no effect on the extent of performance measures usage.

9.5 Organisational performance

The researcher asked each participant primarily about the general trend of their companies' performance over the last three years relative to that of competitors and the primary reason for that trend. The responses were mixed. Some of the participants reported that their performance was satisfactory and some that it was not in accordance with their expectations. Those who felt that their performance was satisfactory cited reasons including the efforts and the accumulated experiences of the original founders of the companies, customers' commitment, employees’ skills and exported sales. For those who were not satisfied with their performance, reasons placed more emphasis on the negative effect of the global financial crisis.

The researcher also asked the interviewees to describe the effect of using various performance measures on their organizational performance. In particular, the participants were asked to describe the effect of using performance measurement diversity approach on their companies' performance. As indicated in section 9.3 of this chapter, all the participants use a diverse set of financial and non-financial measures in
their PMS. Most of the interviewees highlighted that using measurement diversity approach in their companies had improved their performance. For example, participant B106 mentioned that, “Using these measures improves the company’s financial and operating performance”. Participant B108 also mentioned that using such measures reflected on different perspectives in the company, “In addition to financial measures, we focus on developing our relationship with our customers, suppliers and government departments….Therefore, focusing on such measures improves our performance”.

Furthermore, they indicated that financial measures alone cannot improve performance because of their limitations. Thus, interviewees emphasised the positive relationship between the usage of performance measurement diversity and performance. This is also clear in the comments of participants B107 and B109 respectively, “Using multiple measures has improved our performance or at least maintained it” (B107). “….the relationship is positive. We will give more attention to these measures in the future” (B109). Thus, the results of the interviews are consistent with the main questionnaire survey findings presented in Chapter 8. In particular, both reveal and emphasise the positive effect that measurement diversity usage has on organizational performance.

9.6 Perceived benefits of measurement diversity approach usage

Previous researchers (Chen, 2008; Franco-Santos, 2007; Ismail, 2007; Kald & Nilsson, 2000; Kim et al., 1997; Malina & Selto, 2004; Maltz et al., 2003) identified many uses and benefits for using PMS. Improving the PMS is one of management accounting’s major roles. Valid performance measurement allows a firm to effectively describe and implement strategy, guide employee behaviour, assess managerial effectiveness, and provide the basis for rewards. Thus, performance measurement should improve decision-making, reflect system causality, and facilitate communication, learning and
creation of new knowledge (Malina & Selto, 2004). However, the essential function of a PMS is to assess how well the activities within a process, or the outputs of a process, achieve specified goals. This includes a comparison of actual results with a planned goal and an assessment of the extent of any deviation from the standard goal (Ahmad & Dhafr, 2002; Chen, 2008). However, Muchiri, Pintelon, Martin and Meyer (2010) argued that well-defined performance measures can support identification of performance gaps between current and desired performance and provide indication of progress towards closing the gaps. In the same vein, Franco-Santos et al. (2007, p. 797) summarized the roles of PMS in five categories including measuring performance, strategy management, communication, influence behaviour and learning and improvement. Measurement of performance includes the role of monitoring progress and measuring performance. Strategy management comprises the roles of planning, strategy formulation, strategy implementation and focusing attention. Communication comprises the roles of internal and external communication, benchmarking and compliance with regulation. Influence behaviour includes the roles of rewarding, managing relationships and control. Learning and improvement comprises the roles of feedback, double-loop learning and performance improvement.

Most of the previous research focused mainly on the reasons for using performance measures and ignored the perceived benefits of using such measures (see Bourne et al., 2002). However, Franco-Santos (2007) argued that the importance of the relative benefits that firms obtain through using financial and non-financial performance measures has been of particular interest in management accounting research. This thesis extends previous research in that it uses a qualitative approach to achieve the fifth research objective which seeks to determine the actual benefits from using multiple
measures (i.e. financial and non-financial) of performance among Jordanian industrial companies.

Consequently, participants were asked two main questions. The first one related to the perceived benefits of using a diverse set of financial and non-financial measures. The second question related to the main benefits of using the BSC approach. The qualitative approach is the most suitable method to investigate these issues. The analysis of the qualitative data revealed that participants focused their comments on many perceived benefits for using measurement diversity approach. These benefits were related to efficiency, performance, employees, customers and other external parties, competition and the future. The reported benefits are consistent with the main purposes identified in the results of the main questionnaire.

All the participants emphasised the importance of using a combination of financial and non-financial measures because this was felt to be more useful. In particular, the participants indicated that financial measures alone cannot identify the problems that the companies face, cannot measure the behaviour of employees and cannot identify areas of efficiency. The participants indicated that using both financial and non-financial measures would be more effective, because such measures have many benefits. For example participant B106 stated, “Traditional financial measures cannot identify the problems that the company faces….For our company to survive in this competitive market, a new set of non-financial performance measures was used”. Participant B107 stated, “We do not focus only on financial measures; we give more attention to non-financial measures such as on-time delivery”. Similarly, participant B110 stated, “Using financial measures alone does not enhance performance, because such measures cannot measure the behaviour….thus, focusing on short-term performance
will lead to an agency problem in future”. Participant B106 stressed many perceived benefits for using non-financial measures: including the ability to identify the strengths and weaknesses in the company, the ability to differentiate between alternative investment opportunities and to control overall cost and quality. He said,

“Financial measures cannot identify the deficiency areas in the company. Therefore, you have to use non-financial measures...I spend 60% of my time on non-financial measures...therefore, using such measures has many benefits including identifying the areas of strength and weakness in the company, monitoring costs, improving quality and identifying investment opportunities” (B106).

The use of a diverse set of financial and non-financial measures gives Jordanian industrial companies the opportunity to correct any mistakes or variances and improves their product quality (Ahmad & Dhafr, 2002; Chen, 2008; Hwang et al., 2009; Verbeeten & Boons, 2009). Participant B106 said, “The multiplicity of performance measures gives us the opportunity to correct any deviation or variances...using these measures also increases the diversity of products”. In the same context participant B108 said, “Using performance measurement diversity gives us the ability to build trust in our product away from the price”.

The interviewees also stated that using financial and non-financial measures is reflected in the different perspectives of organisational performance. Participant B109 said, “The broad usage of these measures reflected on the various perspectives of performance such as the satisfaction of employees, management and customers”. Similarly, participant B106 stated, “The multiplicity of performance measures enhances the financial and operating performance”. Furthermore, participant B110 thought that using performance measurement diversity helps to achieve all the company objectives,
“Using performance measurement diversity achieves all the company’s objectives whether financial or others such as employee’s satisfaction”. Participant B107 added, “In the presence of this intense competition, using multiple measures of performance increased our [number of] customers and profits”.

Respondents indicated that using these measures is an important indicator of employees' efficiency. This helps identify employee responsibilities and their training needs. In particular, using these measures motivates employees, highlights their positive and real role in the company and provides the basis for evaluating their performance (Chenhall, 1997; Kald & Nilsson, 2000; Lau & Moser, 2008; Veen-Dirks, 2010; Verbeeten & Boons, 2009; Xiong et al., 2008). In the same vein, Motivation theory indicates that performance measures usage compares actual performance with goals and motivates employees to achieve a higher performance. These measures also act as a control system enabling the enhancement of good performance and the correction of poor performance. Both of these effects lead to higher performance (Iselin et al., 2008). Participant B109 stated, “….using these measures also highlights the real role of the companies' employees”. Participant B106 described the effect of using multiple measures of performance on employees by saying:

“Using these measures is very important to identify that the employees are able to perform their responsibilities effectively….by using these measures, you can also identify the employees training needs…..these measures are also very important in increasing the efficiency and the productivity of the employees”.

Most of the interviewees pointed out that the usage of financial and non-financial measures gave them the ability to retain their customers and to increase their commitment and satisfaction. In this context, study findings by Martinez et al. (2010)
indicated a common agreement among manufacturers and services that PMS improve their customers’ relationships, customers’ satisfaction and customers’ retention. For example participant 108 said, “Internally, using performance measurement diversity improved our financial performance. Externally, we retained our customers and they continued with us”. Using such measures also motivates companies to meet the needs of their customers as revealed by participant B109, “....therefore, we always try to meet the needs of our customers and to compete in the privileges offered to them”. Participant B110 also added, “For example, our focus on the time of delivery and the quality of product increased the loyalty and the commitment of our customers”.

In addition, the interviewees reported that using financial and non-financial measures is reflected in their relationship with other external parties such as government and suppliers. Brignall (2007) argued that multiple performance models which combine financial and non-financial performance measures will allow managers to meet the needs of a wide range of organisational stakeholders. For example, use of these measures enables the building of long-term relationships with suppliers and to fulfil their obligations towards others such as government departments. Thus, participant B108 said, “Using these measures gave us the ability to maintain our relationship with suppliers and to fulfil our obligations towards the governmental and private sectors”.

Furthermore, using a diverse set of performance measures provides them with a competitive advantage and differentiates them from their competitors. In this context participant B106 stated, “Traditional financial measures have many limitations that make them less applicable in today's competitive market”. Participant B108 also stated, “Using a broad set of measures improved our ability to compete in the market”. Participant B110 added, “Using non-financial measures differentiated us from our
competitors”. The use of a diverse set of financial and non-financial measures gives Jordanian industrial companies the basis for comparison with other companies in many important areas as commented on by participant B106, “The multiplicity of performance measures in our company gives us the basis for comparison with other companies”. The above discussion indicates that the extent of usage of performance measures differs from one company to another (see Chapter 7, section 7.4).

Finally, participants mentioned that using performance measurement diversity is an important tool to predict the future because this is linked with the company's strategy. Thus, this helps to achieve strategic long-term goals and gives the ability to identify an overall company trend. Participant B109 commented on the limitations of using only financial measures by saying, “Financial measures only reflect the past”. Participant B110 commented on the importance of using a diverse set of performance measures for the future by saying, “…therefore, their frequency usage identifies the trend of the company. For example, the development of Japan is related primarily to their focus on human resources”. Participant B106 added, “Non-financial performance measures are linked to the company's strategy…..therefore; these measures lead to the change towards the company's benefit”. The result will be a positive future for the business as stated by participant B109, “Using these measures opens the way towards a better future”. This is consistent with evidence from Nagar and Rajan (2001, who found that non-financial quality measures such as defect rates are leading indicators of future sales. This is also consistent with the result of this study which indicated that Jordanian industrial companies use a broad set of financial and non-financial measures which helps them to assess the future of their firms more effectively. For example table 7.20 (see Chapter 7, sub-section 7.4.1) includes a lot of measures that can help predict companies’ future health such as customer response time, on-time delivery, defect rates, ...
rate of material scrap loss, time-to-market new products and number of new product launches.

In summary, the participants identified the following benefits for using a performance measurement diversity approach. These include:

1. Efficiency of these measures in providing feedback about different activities in the company such as costs, products and investment opportunities.
2. Providing a comprehensive picture about company performance.
3. Enhancing financial, operating and strategic performance.
4. Paying more attention to employees' satisfaction and productivity.
5. Increasing management's ability to measure the employees' skills and providing evidence about their real role in the company.
6. Promoting innovation, creativity and efficiency amongst employees.
7. Meeting customers' needs and retaining customers.
8. Improving relationships with external partners such as suppliers and government sectors and fulfilling company obligations toward them.
9. Providing a competitive advantage and differentiates individual companies from their competitors.
10. Predicting the future and helping to achieve long-term and strategic goals.

The two users of BSC indicated that the BSC approach is applied at the company level and has achieved several objectives. The participants selected five benefits for the use of the BSC approach including, firstly, the BSC is an effective tool for communicating strategy. Secondly, the BSC provides a comprehensive picture relating to the company’s performance. Thirdly, using the BSC improves the company’s financial performance.
Fourthly, the BSC provides better understanding of cause-effect relationships. Finally, the BSC facilitates organisational learning.

9.7 Problems and difficulties with PMS usage

The use of PMS as indicated in sections 3.2 and 3.3 of chapter 3 is important for managerial staff and management accounting researchers to enhance organisational performance (Stringer, 2007). Although the results of the study identified many benefits for the use of mixed measures, the result also documented significant challenges and problems (Luft, 2009).

Interviewees were asked to identify and discuss any problems and difficulties they had encountered with their current PMS. These issues have received little attention in previous research. In this context, Holloway (2001) criticised previous research in that most of the focus was on various models of performance measurement but this stream of research ignored problems and difficulties associated with the application of these models. For PMS to work effectively, means that a company must have in place key capabilities including: effective internal business processes, appropriate skills and human resources, appropriate business culture and flexible systems. However, little attention has been given to these capabilities in the literature concerning the design and implementation of measurement systems (Kennerley & Neely, 2002).

Jordan is a developing country and the business environment is complex. Thus, Jordanian companies encounter a number of problems with their PMS. Not all of the problems are unique to Jordanian industrial companies because some of them are common in the other sectors in Jordan such as the financial sector as well as other countries in the region. The analysis of the qualitative data revealed that Jordanian
industrial companies faced some common difficulties in their current PMS. These difficulties include: limitation of employees and top management support and knowledge to use performance measures, the selection process of relevant measures, the implementation process and computer applications and software.

One participant (B107) argued that their PMS is perfect and there was no difficulty in using it. Another participant (B108) reported that their system was efficient and their company had only one difficulty which resulted from the variation in the requirements in other countries since their PMS is generalized to all their branches in other countries, “We face some difficulties on implementing our local performance measurement system on our branches in other countries since the requirements of these countries differ from ours” (B108). This problem, however, is normal as previous studies in the field (Chenhall, 2003; Chenhall & Morris, 1986; Fisher, 1998; Haldma & Lääts, 2002; Henri, 2004; Maltz et al., 2003; Otley, 1980, 1999; Paranjape et al., 2006) indicated that PMS is affected by the circumstances in which an organisation operates.

The first problem that some of the participants identified is the interaction and support for using PMS by the employees and top management in a company. In this context, Kennerley and Neely (2002) indicated that motivation and support are significant factors that influence the evolution of PMS. Participant B106 said that some employees resisted the implementation of official PMS as these systems they felt forced them to produce more effort, “The main problem is the employees….If they do not interact and support the usage of these measures, the company can do nothing.....the employees feel that these measures pressure them”. Participant B110 also added, “Human resources cannot perform their responsibility effectively. This leads to some difficulties in the evaluation process”. This is because; they were not involved in the evaluation process.
In this context, B110 added “...furthermore, all the employees must be involved in the selection of measures that will be used in the evaluation process”. This result is consistent with Sole and Schiuma (2010) who found that the involvement of employees was also limited in relation to the phase of the performance measures development and the subsequent implementation phase. In this context, previous researchers (e.g. Franco-Santos et al., 2007; Hwang et al., 2009; Malina & Selto, 2004; Moers, 2006) argued that a valid PMS allows a firm to effectively guide employee behaviour, assess managerial effectiveness, and provide the basis for rewards. Also, it was revealed from discussions with some participants that some employees had little knowledge about the purpose for using such measures, especially in the operational and lower levels of companies (Thompson & Mathys, 2008). Participant B106 stated, “It is necessary to arrange training courses for the employees and to make them recognize that such a system is established for their benefit”. In addition, it is important to offer training courses to managers who will be implementing and managing the system (Stewart, Gruys & Storm, 2010).

In his study, Kolehmainen (2010) argued that it was necessary to provide managers with sufficient leverage in performance evaluation to account for changes in the internal and external contexts. Thus, the role of top management in supporting the success of PMS is essential (Braam & Nijssen, 2004; Papalexandris et al., 2005). Some companies, however, suffered from a lack of top management support. In this context, participant B106 stated, “The implementation of the system needs the support of top management”. Participant B109 added, “Our previous general manager did not support the implementation of performance measurement system in the company...” Furthermore, a lack of communication between the top management and other employees is another problem that some Jordanian companies face. This separation has a negative impact on
performance measurement diversity usage. Participant B110 said, “…this separation makes you feel as if you are alone. Thus, the effect was low on the extent of using performance measurement diversity, especially those related to the employee retention and satisfaction”. However, it is relevant to argue that the communication process is mainly the responsibility of top management in any organisation.

The choice of appropriate performance measures is a critical issue within an organisation. However, it is known that it is impossible to define generic types of measures that should be included in any definition of a PMS (Franco-Santos et al., 2007). Some of the interviewees reported that they face some problems in selecting the relevant measures. Paranjape et al. (2006) argued that there are many problems associated with the selection process of relevant performance measures. The reason as indicated by some of the interviewees is that not all the management and employees levels are involved in the selection process of relevant measures. Further, it seems that measures not effectively linked with the company objectives. For example participant B110 stated, “All the management levels in the company must be involved in the process of objectives’ setting…..furthermore, all the employees must be involved in the selection of measures that will be used in the evaluation process”. Also, participant B110 added, “Sometimes objectives are not smart enough, to avoid this problem, you have to train managers”. Participant B109 went beyond that and suggested that the measures must be formulated by experts, “I think it is necessary for these measures to be formulated by experts in the company in order to measure the performance effectively”. In this context, Ittner and Larcker (1998) emphasised the importance of the role of consultants in the adoption of new measurement practices and call for additional research to highlight their role. Furthermore, participant B109 stressed the importance of choosing the relevant measures based on scientific research. However, the American
chamber of commerce in Jordan (2008) reported that the private sector in Jordan lacks the appropriate channels to commercialize knowledge from research institutions and universities. Few productive links are known to exist between research institutions and universities and private enterprise. Thus, one important application from the Jusoh et al. (2008) study is for the designers of PMS to emphasise the use of a diverse set of performance measures that are fundamental to the success of organizations. However, Carlucci (2010) identified many criteria for selecting performance measures. These include: relevance, reliability, comparability, consistency and understandability. As one participant argued:

“The suggested measures must be reliable…..the management must encourage the research on these measures and support their usage…..there must be researchers in the company to suggest and test such measures. The company can then fix and use the most suitable of them” (B109).

In addition, some participants stated that there were some problems in the implementation and use of performance measures. For example, participant B109 identified that some measures are not related to the future in a relevant way, “The main problem is that we do not use our own measures that relate to the future properly”. Furthermore, some participants said that their PMS was not linked effectively to the rewards system and the objectives of the company and the performance measures are sometimes linked to unachievable objectives. In this context, participant B110 said, “Sometimes, it is difficult to apply the performance measures, because some of them are not clear. Furthermore, these measures are not linked to the reward system. …..I feel that there is no correct implementation to these measures”.

Franco-Santos et al. (2007) identified two features that are considered necessary to define PMS which are the performance measures themselves and the supporting infrastructure. There is no consensus about the nature and design of those measures. A supporting infrastructure can vary from very simplistic manual methods of recording data to sophisticated information systems. However, only one participant mentioned that the PMS is still manual in the company, “One of the most important problems is that the system is still manual in our company….we have no relevant software” (B109). The other participants, however, reported that they use relevant computer applications and software to control the PMS. This finding is consistent with previous research finding (Ismail, 2007; Leung et al., 2006; Malmi, 2001).

To sum up, the following problems and difficulties have been identified in the current PMS of Jordanian industrial companies:

1. Resistance from employees to implement official PMS particularly at the implementation stage.

2. Difficulty understanding the performance measures purpose and application especially in the operational and lower employee levels.

3. Lack of support and commitment by top management.

4. Lack of effective communication across the different levels of a company.

5. Difficulty in selecting the relevant measures.

6. Lack of effective linkage between the measures and the objectives of the company.

7. Shortage of relevant research dealing with the selection, usage and application of PMS.

8. Complexities surrounding the implementation of PMS.

9. Lack of an effective linkage between the measures and the rewards system.

10. Lack of relevant software applications.
The interviewees identified several solutions to the above problems. These include creating effective commitment among top management to support the implementation process of a PMS, offering adequate training for the employees, choosing reliable and effective measures and having employees share in the selecting process of the companies’ objectives and the performance measures of the company. Furthermore, companies must offer the necessary financial support, use effective software and computer applications, benefit from the experience of others, use skilled experts and consultants and pay more attention to the applied research.

9.8 Summary

This chapter has provided additional details and information about current performance measures practices among Jordanian industrial companies, purposes for their usage and identified possible factors that may influence the level of their usage. The chapter also focuses on the performance of Jordanian companies in terms of trends and the possible factors that might affect it with a major focus on the performance impact of using a performance measures diversity approach. Two new issues related to the perceived benefits and problems of performance measurement among Jordanian industrial companies were discussed in depth. Thus, two of the main research objectives (5 and 6) have been fulfilled in this chapter.

The findings of the interviews confirmed a large part of the descriptive findings of the main questionnaire survey presented in Chapter 7 in that Jordanian industrial companies use and report both financial and non-financial measures. It also identified possible additional measures. The findings reported in this chapter also identified the key purposes for using performance measures.
In addition to those factors that are listed in the main questionnaire, the findings of the interview provided new factors that affect the extent of performance measures usage. These factors include; the effect of a Western business culture, Jordanian institutions, government' actions, employee and top management support, ownership effect and organisational structure. It would be a fruitful opportunity to investigate the effect of these factors in future research. Interviewees did confirm the effect of several factors on the extent of performance measurement diversity usage. The interview findings confirmed most of the main questionnaire survey findings presented in Chapter 8.

The participants identified many factors that affected organizational performance. These include for example increasing exported sales, and focusing on non-financial performances such as employees' satisfaction and development, product quality and customer satisfaction. The interview findings revealed that using financial performance measures alone does not improve performance. In particular, the results of the interviews indicated that using a performance measurement diversity approach has a positive impact on organizational performance. This finding is also consistent with that of the main survey questionnaire findings reported in Chapter 8.

This chapter identified the main benefits from using a diversity of financial and non-financial performance measures. The interview findings revealed a number of perceived benefits from using both financial and non-financial measures and the BSC approach among Jordanian industrial companies such as providing a comprehensive picture of company performance, enhancing the financial, operating and strategic performance in the companies, giving more attention to the employees achievement and rewards, increasing companies’ ability to compete internally and externally, controlling performance in different areas and achieving long-term and strategic objectives.
The findings of the interviews also identified some of the problems that face Jordanian companies in their current PMS such as: resistance by employees, multiplicity of measures and the difficulties of determining the relative weights to place on each measure, complexities surrounding the implementation of PMS and lack of understanding. The possible solutions for these problems were also identified during the interviews. The interviewees identified several solutions such as increasing communication processes between the top management and the operational and lower levels in a company, creating effective commitment among top management to support the implication process of PMS, offering adequate training to the employees, ensuring efficient computer applications and focusing more attention on the applied research in this area.

In general, Jordanian industrial companies are trying to put themselves amongst the ranks of international companies through the adoption of modern technology and by focusing on the use of comprehensive PMS but are still experiencing some difficulties and problems. It would be fruitful opportunity to investigate if these difficulties are eliminated sometime in the near future.

The next chapter presents a summary and a discussion of the research findings and their implications for academics and practitioners. The chapter also presents the limitations of the study and a potential future research agenda.
Chapter 10
Conclusions and Recommendations

10.1 Introduction

The Jordanian business environment has changed fundamentally from a primarily domestic market to an open competitive one during the last two decades (Hutaibat, 2005). This study attempted to highlight the state of performance measurement practices within a sample of 168 large and medium sized industrial companies in Jordan as a developing country and to investigate whether the impact on Jordanian companies in using such measures resulted in improving their performance.

Using a performance measurement diversity approach, the thesis has analysed the extent of usage of a broad set of financial and non-financial measures in the industrial sector in Jordan across six perspectives including financial, internal business process, innovation and learning, customer, community and environmental. The thesis also has identified the main purposes for using such measures. The thesis has assessed the level of usage of the BSC approach. The study utilised the contingency theory approach to investigate the effect of various factors (advanced manufacturing technology, business strategy, intensity of market competition, perceived environmental uncertainty, organisational culture, workforce diversity and organisation size) relevant to the Jordanian business environment on the extent of performance measurement diversity usage. Furthermore, the study investigated the performance impact of using four performance measurement practices (i.e. financial measures, overall non-financial measures, performance measurement diversity approach and BSC approach) of performance measurement. Finally, the perceived benefits and difficulties of performance measurement were identified. This thesis utilised a survey research
approach which involved both a quantitative questionnaire and partially qualitative semi-structured interviews to achieve the research objectives.

This chapter presents a summary of the main findings that emerged from this research. The chapter also reports the major contributions of this research for both academics and practitioners. The limitations of this research are also identified followed by suggestions relating to future research areas.

10.2 Summary of the research findings

The thesis had the goal of filling a number of gaps in the previous performance measurement literature in relation to the Middle East and developing countries, such as Jordan. Thus, this study is an exploratory research in the context of Jordan and aims to achieve the six objectives identified in Chapters 1 and 5. Descriptive statistics analysis was used to achieve the first and second objectives of the research. Multivariate statistical analysis was used to achieve the third and fourth objectives of the study. Finally, the findings relating to the fifth and sixth research objectives that emerged from the semi-structured interviews were reported in chapter nine. The results are presented in the following sub-sections.

10.2.1 The results of the descriptive statistics

Descriptive statistics were used to achieve the first two research objectives. The results are summarised in the following sub-sections.

10.2.1.1 Performance measures extent of usage

The first part of the first objective deals with the extent of usage of thirty measures across six perspectives. The results suggested that Jordanian industrial companies use
both financial and non-financial measures. The results also indicated no significant difference across different industrial companies in the use of performance measures. However, the following outcomes provide an insight into the usage of performance measures by Jordanian industrial companies across the following perspectives:

- **Financial measures:** Six out of seven financial measures were found to be extensively used by Jordanian industrial companies. These include cost per unit produced, sales growth, operating income, return on investment, return on equity and budget variances. The results also show that economic value added is the only financial measure that seems to be used to a moderate extent by Jordanian industrial companies.

- **Customer measures:** The use of all customer measures is high among Jordanian industrial companies. The results show that customer response time, on-time delivery, customer retention and survey of customer satisfaction are extensively used. Interestingly, the usage of customer perspective, on average, exceeds that of the financial perspective and was the highest compared to the other perspectives.

- **Innovation and learning measures:** Four out of seven innovation and learning measures were found to be widely used by Jordanian industrial companies. These include employee training measure, employee safety measure, employee skill development measure and the number of new product launches. Thus, the results indicated that Jordanian companies place more emphasis on employee measures than innovation measures. Employee authorisation and time-to-market new products were found to be used to a moderate extent. The number of new patents is the only measure that seems to be used to a lesser extent among Jordanian companies.

- **Internal business process measures:** Two out of four internal business process measures were found to be widely used. These include labour efficiency variance
and defect rates. Rate of material scrap loss and manufacturing lead time seem to be used to a moderate extent among Jordanian industrial companies.

- Environment measures: Jordanian industrial companies place greater emphasis on the use of environment measures. All three measures (environmental compliance measure, reducing wastes and emissions and environmental certification) were found to be widely used.

- Community measures: The results indicated that community measures are the lesser used measures. Accordingly, community perspective usage was ranked at the bottom of the list in comparison with other perspectives. Out of the five measures investigated, only one measure, namely, public image was found to be widely used. Community involvement, support of charity projects, support of social activities and participation in training and education tend to be used to a moderate extent.

The results of the semi-structured interview supported the above results (see Chapter 9) and indicated that PMS of Jordanian industrial companies contain other measures including average sales price per unit, productivity rate per hour, receivable and inventory turnover and down-time ratio.

10.2.1.2 Purposes for performance measures usage

The second part of the first objective focused on the main purposes for using performance measures. The findings from the main questionnaire indicated that Jordanian industrial companies use PMS for different purposes. The results showed that responding companies place a major weight on the use of performance measures to comply with legal requirements followed by evaluating organisational performance, supervising managers' productivity, evaluating managerial performance, encouraging improvement of business processes, rewarding employees, managing operations
processes, providing better understanding of the cause-effect relationship, informing decision-making and communicating strategy. Consequently, there are three main conclusions:

Firstly, although Jordanian companies place more emphasis on the use of performance measures to evaluate organisational and managerial performance, they also use them for other reasons. This result supports the idea that the PMS is used for many purposes other than solely evaluating and rewarding managers (Verbeeten & Boons, 2009). Secondly, the results indicate that Jordanian industrial companies still operate under significant institutional and government controls since they put more emphasis on using such measures to comply with legal requirements (Hussain & Gunasekaran, 2002; Hussain & Hoque, 2002). Thirdly, the findings indicate that Jordanian industrial companies put less emphasis on the role of performance measures in providing a better understanding of the cause-effect relationship, informing decision-making and communicating strategy in comparison with other purposes. This indicates that some Jordanian companies use measurement diversity approach as an improved PMS and not as a strategic PMS (Malmi, 2001).

The results of the semi-structured interviews were consistent with the above reported findings. However, interviewees indicated that Jordanian industrial companies use performance measures also to achieve other purposes relevant to their business environment such as increasing the bargaining power of the company, identifying the strategic direction of the company, decreasing risk, taking the right decision in a timely manner and controlling different activities.
10.2.1.3 State of the BSC approach

The second objective of the study sought to investigate the extent of the diffusion of the BSC approach. The findings of the questionnaire survey covered many issues related to the state of the BSC and indicated slight variations in term of types and number of perspectives used. The following outcomes highlight the state of BSC implementation among Jordanian industrial companies:

- **Diffusion of the BSC:** The results showed that 59 companies use BSC with a usage rate of 35.1% of the surveyed companies. The results of the study indicate that the use of BSC is spread evenly across both medium and large companies in Jordan. However, implementation of the BSC approach increases as the company size grows.

- **Implementation stages of the BSC:** The results showed that 33.3% of Jordanian industrial companies had not considered using the BSC approach in their PMS. Only 1.8% of the responding companies had first implemented and then abandoned the approach. An interesting finding indicated that about 30% of the responding companies are considering or currently implementing the BSC approach.

- **Contents of the BSC:** The BSC companies use a different range of perspectives in their BSC. The results showed that the original four BSC perspectives as suggested by Kaplan and Norton are the main component of the BSC model utilised by Jordanian industrial companies. In particular, 100% of the BSC users use the financial perspective, 98.3% use the customer perspective, 95% use the innovation and learning perspective and 88.1% use the internal business process perspective. Jordanian companies did use other perspectives in their BSC model such as the environment (42.4%) and community (33.9%). This results support the idea that companies might use more perspectives in their BSC (DeBusk et al., 2003; Lipe & Salterio, 2000; Schiemann & Lingle, 1999).
• Number of perspectives in the BSC: The results showed that only one company used two perspectives, four companies used three perspectives, twenty seven companies used four perspectives, eleven companies used five perspectives, and sixteen companies used six perspectives. Interestingly, the results indicated that 91.5% of the BSC companies used more than three perspectives with 45.8% using four perspectives. These results support the idea that the number of perspectives in the BSC is dependent on the strategic positioning and competitive market for each company (DeBusk et al., 2003).

10.2.2 The results of testing the first set hypotheses

The analysis confirmed the positive significant impact of most of the contingent factors on the extent of performance measurement diversity usage. In particular, the results presented in Chapter 8 (sub-section 8.3.2) revealed that advanced manufacturing technology, differentiation strategy, intensity of market competition, perceived environmental uncertainty and workforce diversity have a positive and significant impact on the extent of performance measurement diversity usage. As shown in Table 10.1, the results supported and accepted hypotheses H1, H2a, H3, H4 and H6, while hypotheses H2b, H5 and H7 have been rejected.
Table 10.1: Summary results for testing the first set of research hypotheses

<table>
<thead>
<tr>
<th>Research hypothesis</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: The usage of advanced manufacturing technology has a positive impact on the extent of performance measurement diversity usage.</td>
<td>Supported</td>
</tr>
<tr>
<td>H2a: Differentiation strategy has a positive impact on the extent of performance measurement diversity usage.</td>
<td>Supported</td>
</tr>
<tr>
<td>H2b: Low-cost strategy has a negative impact on the extent of performance measurement diversity usage.</td>
<td>Rejected</td>
</tr>
<tr>
<td>H3: Intensity of market competition has a positive impact on the extent of performance measurement diversity usage.</td>
<td>Supported</td>
</tr>
<tr>
<td>H4: Perceived environmental uncertainty has a positive impact on the extent of performance measurement diversity usage.</td>
<td>Supported</td>
</tr>
<tr>
<td>H5: Pursuing a group culture type that is associated with flexibility values has a positive impact on the extent of performance measurement diversity usage.</td>
<td>Rejected</td>
</tr>
<tr>
<td>H6: Workforce diversity has a positive impact on the extent of performance measurement diversity usage.</td>
<td>Supported</td>
</tr>
<tr>
<td>H7: Organisation size has a positive impact on the extent of performance measurement diversity usage.</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

These results are consistent with the findings of the semi-structured qualitative interviews presented in Chapter 9. However, the interviewees also added six new factors that contribute significantly toward using a diversity approach. These include western business culture, Jordanian institutions, government actions, employees and top management support, ownership structure and organisational structure.

### 10.2.3 The results of testing the second set hypotheses

The results presented in Chapter 8 (section 8.4.2) revealed that the usage of overall non-financial measures, measurement diversity approach and BSC approach did contribute significantly towards organisational performance. As shown in Table 10.2, the results supported and accepted hypotheses H2, H3 and H4, while the other hypothesis (H1) has been rejected.
Table 10.2: Summary results for testing the second set of research hypotheses

<table>
<thead>
<tr>
<th>Research hypothesis</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: The extent to which the firm uses financial measures is negatively associated with organisational performance.</td>
<td>Rejected</td>
</tr>
<tr>
<td>H2: The extent to which the firm uses overall non-financial measures is positively associated with organisational performance.</td>
<td>Supported</td>
</tr>
<tr>
<td>H3: The extent to which the firm uses performance measurement diversity is positively associated with organisational performance.</td>
<td>Supported</td>
</tr>
<tr>
<td>H4: The extent to which the firm uses the BSC approach is positively associated with organisational performance.</td>
<td>Supported</td>
</tr>
</tbody>
</table>

The results of interviews presented in Chapter 9 supported the main proposition and indicated that the usage of a diversity approach contributes significantly towards organisational performance.

10.2.4 Perceived benefits and difficulties of performance measurement process

A decision was taken that this thesis would identify the main benefits and difficulties associated with the usage of performance measures by Jordanian companies in this stage. The results are presented in the following two sub-sections.

10.2.4.1 Perceived benefits

A qualitative approach was used to achieve the fifth research objective which attempted to identify the major benefits for using a diverse set of performance measures among Jordanian industrial companies. Many perceived benefits were identified and were related to the following seven key issues:

- Efficiency: Interviewees mentioned and emphasised the efficiency of using a diversity of measures in providing feedback on different activities in the company such as costs, products and investment opportunities.
• Performance: Interviewees emphasised the importance of using a diverse set of measures in providing a comprehensive picture of the company’s performance. They also mentioned that using such measures enhanced the financial, operating and strategic performance of their companies.
• Employees: Using a diversity of measures increased management's ability to measure employees' skills, identifying their pivotal role in the company and promoting employee innovation. These contributed significantly toward overall employee satisfaction.
• Customers: Using a diversity of measures gave companies the opportunity to meet customers’ needs and to retain them.
• Other external parties: Using a diversity of measures by Jordanian companies improved their relationship with external partners such as suppliers and the government sector and fulfilled their obligations toward them.
• Competition: The results indicated that using a diversity of measures improved companies’ ability to compete in the market and differentiated them from their competitors.
• Future: Using a diversity approach gave companies the ability to predict the future and to help achieve long-term and strategic goals.

Consequently, two notions can be concluded from these results:
Firstly, the results of the interviews indicated that using a combination of financial and non financial measures is more effective. Secondly, the identified benefits are consistent with the main purposes that were identified by the participants in the main survey questionnaire. This indicated that the usage of performance measures among Jordanian companies did achieve the key aims especially those related to performance, employees and legal requirements.
Interviewees also identified many benefits for using the BSC approach including the effectiveness of the approach in communicating strategy, providing a better understanding of cause-effect relationships, providing a comprehensive picture relating to company performance, improving the company's financial performance and facilitating organisational learning.

10.2.4.2 Difficulties associated with PMS

A qualitative approach was also used to achieve the sixth research objective which attempted to identify the major problems and difficulties associated with PMS. According to the interviews findings, Jordanian industrial companies face a range of difficulties and problems in their current PMS. These problems were categorized into the following four main groups:

- Support and knowledge: Some companies lacked the support of employees and management especially in the beginning stages. There is a limitation in understanding the purposes for using PMS, especially at the operational and lower levels within companies. Furthermore, the lack of effective communication between top management and other employees is another obstacle in the effective use of PMS.
- Selection process: Some companies face difficulties in selecting the relevant measures.
- Implementation process: There was some complexity in the PMS. There was no effective linkage between the measures used and the objectives and reward systems of companies.
- Computer applications: Some companies do not have the relevant software applications to use their performance measures effectively.
Consequently, the interviewees suggested six main solutions for the above mentioned difficulties. Firstly, creating commitment among management and employees to support the implementation process of PMS. Secondly, encouraging the communication process between top management and other employees. Thirdly, offering adequate training courses for the employees in all the issues related to the evaluation process. Fourthly, sharing with all employee levels in the selection process of objectives and their related measures. Fifthly, using qualified experts and consultants to formulate reliable measures and paying more attention to the findings of applied research. Finally, offering the necessary financial support to use effective software and computer applications for the PMS.

10.3 Research implications

Jordanian industrial companies have shifted from a stagnant business environment to a more dynamic business environment, where companies operate in very highly competitive markets (Hutaibat, 2005). Despite that, knowledge of how Jordanian companies design and use PMS has been limited to date. This study provides a step for further investigations of performance measurement practices in Jordan and other Middle East developing countries. Thus, this research has two implications. These implications are discussed in the following sub-sections.

10.3.1 Implications for academics

The research detailed in this thesis makes a valuable addition to management accounting research in general and PMS in particular as it comes from a developing country while most of the previous research in the field comes from Western countries. The study findings have a number of insightful implications for academics.
This research responds to many calls made recently by management accounting researchers (e.g. Ahrens & Chapman, 2006; Davila & Oyon, 2008; Modell, 2005; Van der Stede et al., 2005) to complement the quantitative approach with a qualitative approach to enhance the validity of management accounting research findings. Thus, this research utilised a survey research approach, which involved both a quantitative and a partially qualitative approach. This research therefore, extends the previous management accounting research which was dependent only on quantitative questionnaires to collect data.

In addition to the different stages that were used in developing the main questionnaire, a pre-test and a two-stage pilot study were conducted to develop an effective questionnaire and to validate the main research instrument. These procedures are also an important contribution to management accounting research methodology since one of Van der Stede et al. (2005) key findings was the importance of the use of a pre-testing procedure in management accounting research. Therefore, a pre-test of a survey instrument is one of the important procedures employed to respond to a key criticism of the survey method. Thus, it is reasonable for researchers to claim that data is reliable and valid since the study variables were selected carefully after the conduct of a pilot study.

In an attempt to improve the generalizability of the findings, two different approaches were used in this research to check for questionnaire non-response bias as discussed in Chapter 6 (sub-section 6.4.1.5). This helps to ensure greater confidence in generalising the research findings.
There have been concerns raised in the contingency-based research about validating the contingent variables. Previous researchers in management accounting have argued that researchers employing contingent factors should utilise factor analysis to assess the dimensionality of variables (Zuriekat, 2005). This thesis overcomes the limitation of previous studies which have conducted a reliability test for the different variables without conducting a factor analysis. Apart from business strategy, the results presented in Chapter 7 provide further evidence that the main contingent variables used in this research were unidimensional variables. These results, for example, matched those of Hoque et al. (2001) for market competition and Hoque (2004, 2005) for perceived environmental uncertainty.

This thesis also extends previous research concerning the use and practices of performance measures (Gosselin, 2005; Henri, 2006; Hoque & James, 2000; Hoque 2004, 2005; Hoque et al., 2001; Ismail, 2007; Jusoh et al., 2008; Veen-Dirks, 2010; Verbeeten & Boons, 2009) by investigating the extent of use of thirty financial and non-financial measures across six categories. This has resulted in the construction of a practical checklist of financial and non-financial performance measures and the main purposes for their usage. This checklist can be used as a cornerstone for any future research in the field, especially in Jordan and other Middle East countries.

As argued by Speckbacher et al. (2003), most of the previous studies into the BSC suffer from methodological shortcomings. This thesis followed an effective methodology by identifying the actual users and discussing the state of BSC usage in a sample of Jordanian industrial companies. The thesis, therefore, not only contributes to the BSC literature, but also opens avenues for further research in Jordan and other countries to systematically investigate the BSC approach using an effective
methodology as discussed in Chapter 6 (sub-section 6.5.1.4). The study also provides researchers with a deeper insight into the diffusion, implementation stages and content of the BSC approach.

Contingency theory has been argued to be one of the dominant paradigms for research in management accounting (Chenhall, 2007; Dent, 1990). This study supported one of the main arguments of contingency theory, which indicates that the appropriateness, effectiveness and use of PMS are affected by the circumstances or contexts in which an organisation operates (Chenhall, 2003; Chenhall & Morris, 1986; Fisher, 1998; Haldma & Lääts, 2002; Henri, 2004; Maltz et al., 2003; Otley, 1980, 1999; Paranjape et al., 2006). In particular, this thesis contributes to and extends the contingency theory literature (Hoque et al., 2001) by having investigated the impact of several contingent factors on the extent of performance measurement diversity usage. The study provided new evidence to show that the use of performance measurement diversity is positively and significantly influenced by advanced manufacturing technology, differentiation strategy, intensity of market completion, perceived environmental uncertainty and workforce diversity. The study also provided evidence that low-cost strategy, flexible organisational culture values and organisation size do not influence the extent of performance measurement diversity usage. In addition, the study extended the previous research in the field by having empirically confirmed that workforce diversity should be considered for the first time as an added internal variable in the contingency theory paradigm.

The literature has argued that there is little evidence about the effect of different performance measurement techniques on organisational performance (Dunk, 2005; Hemmer, 1996; Henri, 2004; Ittner & Larcker, 1998, 2001). This thesis is one of the
first studies that have empirically investigated the organisational performance impact of using the different performance measurement practices. The study contributed to the existing performance measurement and BSC literature by providing evidence on this relationship. Furthermore, both the financial and non-financial dimensions were considered in this research to measure organisational performance. This has been an effective response to the Fisher (1995) argument that organisational performance is poorly defined in previous studies since most of them measured performance using only the financial dimension.

Finally, the perceived benefits and difficulties are two important issues for the usage of performance measures. These two issues were ignored in previous research. This study has extended previous research in the field by investigating these two issues qualitatively.

10.3.2 Implications for practitioners

Previous research conducted in Jordan (Hawamdah, 2006; Hutaibat, 2005; Zuriekat, 2007) indicated that Jordanian companies do use multiple measures (i.e. financial and non-financial) of performance. These studies, however, did not identify the relevant performance measurement instrument or measures in the context of Jordan or other developing countries. The study findings have implications and recommendations for practitioners (both managers and accountants) to improve their PMS.

The study findings have identified the key performance measures that are currently used by Jordanian industrial companies. The findings indicate that Jordanian industrial companies use both financial and non-financial performance measures. These findings indicate that Jordanian companies have responded to the economic changes that have
taken place in the Jordanian business market, which brought with them the need to change measurement practices to facilitate effective competition in the world market. However, managers should be encouraged to put more emphasis on other non-financial measures such as rate of material scrap loss and manufacturing lead time from the internal business process category, time-to-market new products, employee authorisation and number of new patients from the innovation perspective. Finally, managers should give more attention to community perspective measures since these techniques are more likely enhance the loyalty of customers and attract new ones.

Jordanian companies should formulate cause-and-effect relationships among their organisational objectives and measures in order to use PMS as a strategic management tool and to achieve the required company objectives. Jordanian companies should also formulate cause-and-effect relationships between performance measures and thereby link performance measures to their business strategies more effectively.

Using financial and non-financial measures does not necessarily imply that the companies are BSC users. Jordanian organisations need to put more emphasis on the BSC approach by extending its usage to other organisations with more focus on the main assumptions that build on the idea of linking performance measures to business strategy and associated cause-and-effect relationships. The users of BSC are also encouraged to use more perspectives in their BSC model other than the original four perspectives taking into account their business strategies and the overall competitive market.

The results identified many factors that contribute significantly towards using a diverse set of performance measures. This approach provides managers with a better
understanding of the factors that affect the design and use of PMS. Thus, managers should pay close attention to these factors (internal and external factors) before embarking on the design of the PMS in order to better influence their business outcomes and decision-making. For example, where advanced manufacturing technologies are used managers should identify and use an appropriate set of performance measures in their PMS.

Jordanian companies must consolidate flexible cultural values such as loyalty, trust, development and participation in their business environment and then reflect these values in using the related non-financial measures. Furthermore, the results of the thesis also indicated that the western business culture has contributed significantly towards the utilisation of several performance measures by Jordanian companies. Jordanian companies have an opportunity to recognise and use more of Western companies’ measures and practices.

Managers should pay more attention to the requirements of Jordanian institutions and government actions which were identified as external factors that may affect the usage of performance measures. In particular, these factors may need companies to place greater emphasis on particular types of non-financial measures.

Jordanian companies should revise their PMS from time to time by reducing or increasing the initial number of measures to adapt to their business environment. They may also need to change the weights assigned to measures.

The results indicated that the effect on organizational performance is mixed when taking the various perspectives of performance measurement individually. Thus, it is better for
companies to use the performance measurement diversity approach which focuses on using a broad set of financial and non-financial measures at the same time. One important practical implication of this result is for the design of the PMS where managers need to emphasise the use of multiple measures of performance (i.e. financial and non-financial) that are fundamental to the success of companies. Another important implication is that managers must put more emphasis on the non-financial dimensions of organisational performance and not focus solely on the financial one. This is because the non-financial performance dimension is more critical and useful for the achievement of long-term organisational objectives.

Although the results identified many perceived benefits for using a diverse set of performance measures, the results also indicated that using such measures effectively is not an easy task for Jordanian companies. There are many difficulties and obstacles that limit the effective usage of the PMS. Thus, Jordanian companies need to overcome these difficulties by focusing on the six solutions identified in sub-section 10.2.4.2.

Finally, the results of the study highlighted the depth of the knowledge and practice gap between academics in universities and practitioners in Jordanian industrial companies. Therefore, it is important for both groups to cooperate to improve management accounting practices in general and performance measurement practices in particular. Applied research should be completed and practitioners should actively participate in conferences, seminars and workshops, and vice versa.

10.4 Research limitations
Like any research study, this thesis had a number of limitations. The results have to be considered in light of the following research limitations:
Firstly, the study focused primarily on medium and large industrial companies in Jordan and therefore may not be valid for small companies or other sectors such as the service sector.

Secondly, the current study adopted a cross-sectional design, which was conducted at one point in time and did not show the use of performance measures over time. Furthermore, the study employed a primarily quantitative approach as the main research methodology. As indicated in Chapter 6, interviews are sensitive issues for Jordanian companies because they are more used to participating in research projects through paper-based questionnaires. Furthermore, time and funding constrains prohibited the researcher from using a larger sample or multiple sectors.

Thirdly, it has been proved that multiple regression analysis can explain how the predictor variables combine to affect the dependent variable. Despite the advantage of this approach, the nature of the study and the small sample size inhibited the use of more powerful statistical methods associated with larger sample sizes such as SEM.

Finally, since this study is one of the first to investigate performance measures and the BSC approach in Jordan, many emerging research issues were postponed to future research projects. With regard to the contingency model utilised that was modified from Fisher (1995, 1998) and discussed in Chapter 4 (section 4.2), this study has not incorporated organisational performance in the first research theoretical model that was developed in Chapter 5 (section 5.3) to investigate if the fit between the selected contingent factors and performance measurement diversity extent of usage had any

43 Since the study is a starting point in respect to Jordan, the quantitative approach was found to be more relevant to cover a broad set of issues. The qualitative component was used mainly to provide detailed information about the perceived benefits and difficulties of performance measurements.
effect on organisational performance. Furthermore, the study neglected the interaction between the selected contingent factors and their simultaneous effect on the extent of performance measurement diversity usage. Finally, the value of the adjusted R² for the model (41%) suggested that additional explanatory variables could be added to the first theoretical model to improve their explanation of the dependent variable. In respect to the BSC approach, the study has not focused in depth on how Jordanian companies are actually using the BSC approach or how the BSC users are dealing with the main assumptions of this approach which are built into the idea of cause-and-effect relationships and linking performance measures to overall strategy.

Despite these limitations, this research provided useful insights on the state of performance measurement in Jordan which has had limited research completed in this field. However, the limitations of this research create many possibilities for future research.

10.5 Areas for future research

This section presents possible areas for future research potentially emerging from the outcomes and additional issues identified in this thesis.

The current study was limited to medium and large industrial companies in Jordan. There are opportunities here to study a wider variety of industries which would improve the generalisability of the findings and validate the research instrument. In addition, further research may investigate the extent of using some relevant multiple measures among the small industrial companies. Similar studies could also be conducted in other countries particularly in developing nations in the Middle East and other regions.
The current study used a cross-sectional design, and it would be valuable to conduct a more extensive longitudinal study using a mixed methodology approach to ascertain whether the variables in this study and the extent of usage of performance measures and BSC approach are consistent over time. A longitudinal study using strategic control systems would be another opportunity to investigate the performance impact of using the different dimensions of PMS (Abas & Yaacob, 2006; Crabtree & DeBusk, 2008).

Future research, using the Speckbacher et al. (2003) framework, is a necessary project to cover the several issues surrounding the implementation of the BSC approach among Jordanian companies. Motivation for implementing the BSC approach and other accounting innovations using a qualitative approach are also fruitful opportunities for future research. In addition, one could investigate how BSC users react to the main assumptions which are built into the idea of cause-and-effect relationships and linking performance measures to overall strategy. Future studies may also investigate the several differences that exist between BSC users and non-users. In addition, future research has an opportunity to examine other potential factors that may affect the use of accounting innovations such as the BSC approach. Furthermore, future research could investigate the relationship between performance measures and the use of innovative managerial practices such as TQM (Abdel-Maksoud, Cerbioni, Ricceri & Velayutham, 2010).

In addition to the selected contingent factors, the semi-structured interview outcomes identified many other contingent and institutional factors that could affect the extent of performance measurement diversity usage in Jordan (see Sub-section 10.2.2). Future studies could then use contingency theory in parallel with institutional theory (Alam, 1997) to gain a deeper understanding of the factors that impact the extent of usage of
performance measurement diversity approach. Thus, adding further relevant explanatory variables could improve their explanation of the dependent variable. These future studies could also examine the interaction effect between these factors on the extent of performance measurement diversity usage. Furthermore, future studies may examine the effect of the fit or match between some relevant factors on organisational performance (Lee & Miller, 1996).

As indicated in Chapter 4 (sub-section 4.3.5), there is an opportunity for future research to consider the whole competing value model to assess the effect of organisational culture on the extent of performance measures usage (Henri, 2006).

The results also identified many difficulties that limit the effective usage of performance measures. It would be fruitful to investigate if these difficulties are removed sometime in the near future. In addition, future studies may use the result of this study to build an effective instrument to measure quantitatively the benefits and difficulties of performance measurement among Jordanian companies.

Finally, with a contingency approach, the assumption is that organisations may have varying degrees of fit (Drazin & Van de Ven, 1985; Englund & Gerdin, 2008; Gerdin, 2005b; Gerdin & Greve, 2004, 2008; Govindarajan, 1988; Hartmann & Moers, 1999; Meilich, 2006; Meyer, Tsui & Hinings, 1993; Van de Ven & Drazin, 1985; Venkatraman, 1989). The critical role of the researcher is to show that a higher degree of fit is associated with higher organisational performance (Gerdin & Greve, 2004). Thus, it is a reasonable for future research to consider the applicability and relevance of the contingency model that was modified from Fisher (1995, 1998). In particular, future projects could use larger samples, more powerful statistical analytical methods such as
SEM and incorporate additional contextual factors such as government actions, ownership structure and organisational structure to investigate whether the fit between the selected factors and performance measurement diversity approach usage has an effect on organisational performance.

10.6 Final conclusion

The study has investigated the use and practice of a broad set of performance measures and the primary purposes for their use. The study also investigated the state of the BSC approach used by Jordanian industrial companies. In addition, the study has identified the main factors that affect the use of performance measures and examined the performance impact of using such measures. The perceived benefits and difficulties of performance measurement were also identified in this study.

The results showed that Jordanian industrial companies use both financial and non-financial measures. Only a minority of companies (35.1%) reported using the BSC approach and about 30% (50) are considering or currently implementing the approach. The BSC companies use different perspectives with more focus on the original four perspectives. The number of perspectives in the BSC model also differs from one company to another. Although Jordanian companies place more emphasis on the use of performance measures to evaluate organisational and managerial performance, they also use them for other reasons. Jordanian companies put less emphasis on the role of performance measures in providing a better understanding of the cause-effect relationship, informing decision-making and communicating strategy in comparison with other purposes. 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 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.

The study has made a solid contribution to the knowledge in this field. Consequently, the researchers and practitioners (especially in Jordan and other developing countries) should respond to, incorporate and build on the findings of this research.
Appendix A: Information letter and the main questionnaire  
(English copy)

Project Title: *The changing role of Management Accounting: Assessment of the impact of financial and non-financial performance measures usage on organisational performance in Jordan*

Dear Sir/Madam,

I am a PhD student at Murdoch University under the supervision of Dr. David Holloway and Prof. Manzurul Alam. I am currently conducting a study investigating the effect of the usage of financial and non-financial performance measures on organisational performance. This research also tries to assess the effect of various contingent factors on the extent of performance measurement diversity usage.

You are invited to help in this study by responding to the questionnaire. The questionnaire is not intended to take more than 40 minutes of your time. You may also be asked to participate in an interview. Semi-structured interview questions will be used and each interview will be recorded using a tape recorder. The interview will last about one hour. The questionnaire will used to collect the main data of this study which relates to performance measures usage, contextual factors and organisational performance. Semi-structured interview questions will be used partially to collect more data and mainly to identify the major benefits and difficulties of using the different types of performance measures. Therefore, if you are willing to participate in the interview, please complete the interview consent form and provide your contact details and return them to me in the pre-paid self addressed envelope enclosed in this letter.

Participation is entirely voluntary and participants can decide to withdraw at any time. All information given during the survey and the interview is confidential and no names or other information that might identify you or your organisation will be used in any publication arising from this research. All information gathered will be stored securely. It is possible that there may be no direct benefit to you from participation in this study. The findings from this study are expected to set out the basis for establishing key performance measures in industrial companies in Jordan and to provide additional evidence for the body of knowledge about the multiple measures-organisational performance relationship.

If you have any question about this project, please feel free to contact either myself at **fawzi2000sawalqa@yahoo.com** or my supervisors Dr. David Holloway at **D.Holloway@murdoch.edu.au** and Prof. Manzurul Alam at **M.Alam@murdoch.edu.au**. The questionnaire can be returned to me in the pre-paid self addressed envelope enclosed in this letter.
My supervisors and I are happy to discuss with you any concerns you may have about this study.

Once we have analysed the information, feedback on a summary of this research will be provided to participants by email if requested.

We would like to thank you in advance for your assistance with this research project. We look forward to hearing from you soon.

This study has been approved by the Murdoch University Human Research Ethics Committee (Approval 2009/160). If you have any reservation or complaint about the ethical conduct of this research, and wish to talk with an independent person, you may contact Murdoch University’s Research Ethics Office (Tel. +61 8 9360 6677) or e-mail ethics@murdoch.edu.au. Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.
Survey questionnaire
The changing role of Management Accounting: Assessment of the impact of financial and non-financial performance measures usage on organisational performance in Jordan

I have read the information above. Any questions I have asked have been answered to my satisfaction. I agree to answer the questionnaire. I am aware that this survey is anonymous and no personal details are being collected or used. I know that I may change my mind, withdraw my consent and stop participating at any time.

I understand that all information provided is treated as confidential by the researchers and will not be released to a third party unless required to do so by law.

I understand that the findings of this study may be published and that no information which can specifically identify me will be published.

Would you like a copy of the summary of result? Yes / No.
If yes, please provide email address: .............................................................

Section A: Organisational Information
A1. Under which main industry sector does your company belong to (please tick √ the appropriate box):

- Textile, clothing and footwear
- Plastic and rubber products
- Typing, paper and packing
- Oil and gas industry
- Mining and quarrying
- Iron, steel and aluminium industry
- Other, please specify………………
- Electrical appliances
- Food Products
- Furniture and wooden products
- Chemical/pharmaceutical industry
- Tobacco and cigarettes
- Building materials and construction

A2. Please specify the number of employees currently employed in your company………………

A3. The last financial year’s sales revenue of your company in Jordanian dinar is (please tick √ the appropriate box):

- Less than 1 million
- 10-less than 20 millions
- 30-less than 40 millions
- 80-less than 160 millions
- 320-less than 640 millions
- 1-less than 10 millions
- 20-less than 30 millions
- 40-less than 80 millions
- 160-less than 320 millions
- More than 640 millions

A4. In which year was your company established? --------------------------
Section B: Background Information (please tick √ the appropriate box):

B1. What is your gender?
- Male
- Female

B2. What is your age group?
- Under 30
- 30-40
- 41-50
- Over 50

B3. Your highest academic qualification is:
- PhD degree
- Master degree
- Bachelor degree
- Diploma
- Other, please specify: ----------------------------------

B4. In which field was your degree?
- Accounting
- Business administration
- Economics
- Finance
- Other, please specify: ----------------------------------

B5. How long have you been with this company?
- Less than 5 years
- 5-10 years
- 11-15 years
- 16-20 years
- Over 20 years

B6. What is your working position in this company?
- Financial manager
- Head of accounting department
- Management accountant
- Assistant financial manager
- Other, please specify: ----------------------------------
Section C: Financial and non-financial performance measures extent of usage

Please rate the extent to which each of the following measures is currently used for performance evaluation in your company. Please circle the appropriate number:

<table>
<thead>
<tr>
<th>Not at all</th>
<th>To a little extent</th>
<th>To a moderate extent</th>
<th>To a great extent</th>
<th>To a very great extent</th>
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<td>1</td>
<td>2</td>
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<table>
<thead>
<tr>
<th><strong>Financial Measures</strong></th>
<th><strong>Frequency of usage</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>C1. Operating income</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C2. Sales growth</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C3. Return on investment (ROI)</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C4. Return on equity (ROE)</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C5. Cost per unit produced</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C6. Budget variances</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C7. Economic value added (EVA)</td>
<td>1 2 3 4 5</td>
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</tbody>
</table>

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<thead>
<tr>
<th><strong>Internal business process measures</strong></th>
<th><strong>Frequency of usage</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>C8. Defect rates</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C9. Manufacturing lead time</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C10. Rate of material scrap loss</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C11. Labour efficiency variance</td>
<td>1 2 3 4 5</td>
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<table>
<thead>
<tr>
<th><strong>Innovation and learning measures</strong></th>
<th><strong>Frequency of usage</strong></th>
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<tbody>
<tr>
<td>C12. Number of new patents</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C13. Number of new product launches</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C14. Time-to-market new products</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C15. Employee training</td>
<td>1 2 3 4 5</td>
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<tr>
<td>C16. Employee skill development</td>
<td>1 2 3 4 5</td>
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<tr>
<td>C17. Employee safety</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C18. Employee authorisation</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Customer measures</td>
<td>Frequency of usage</td>
</tr>
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<td>----------------------------------------------------------------------------------</td>
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<tr>
<td>C19. Customer response time</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C20. On-time delivery</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C21. Survey of customer satisfaction</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C22. Customer retention</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td><strong>Community measures</strong></td>
<td>Frequency of usage</td>
</tr>
<tr>
<td>C23. Public image</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C24. Community involvement</td>
<td>1 2 3 4 5</td>
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<tr>
<td>C25. Participation in training and education</td>
<td>1 2 3 4 5</td>
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<tr>
<td>C26. Support of social activities</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C27. Support of charity projects</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td><strong>Environment measures</strong></td>
<td>Frequency of usage</td>
</tr>
<tr>
<td>C28. Environmental compliance</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C29. Environmental certification</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>C30. Reducing wastes and emissions</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td><strong>Other, please specify:</strong></td>
<td>Frequency of usage</td>
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<td>..................................................</td>
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<td>1 2 3 4 5</td>
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**Section D: The aims of the use of performance measurement systems**

Please rate the extent to which your company uses performance measures to achieve the following aims (1= not at all; 5= to a very great extent) (please circle the appropriate number):

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<tr>
<td>D1. Evaluate organisational performance.</td>
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<td>D2. Evaluate managerial performance.</td>
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<td>D3. Reward employees.</td>
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<td>D4. Manage operations processes.</td>
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<td>D5. Inform decision making.</td>
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<tr>
<td>D7. Provide better understanding of the cause-effect relationship.</td>
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<td>D8. Communicate strategy.</td>
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<td>D9. Comply with legal requirements.</td>
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<td>D10. Supervise managers’ productivity.</td>
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**Section E: Balanced Scorecard (BSC) Usage**

E1: Regarding the use of the Balanced Scorecard (BSC), please tick √ one of the following stages that best describes your company’s current situation:

- ( ) Not considered
- ( ) Implemented and abandoned
- ( ) Considering
- ( ) Implementing now
- ( ) Used
- ( ) Used extensively

E2: BSC has many perspectives, If you choose (used or used extensively) in E1, please tick √ the performance perspectives that are included in your BSC:

- ( ) Financial
- ( ) Internal business process
- ( ) Innovation and learning
- ( ) Customer
- ( ) Community
- ( ) Environment
Section F: Advanced manufacturing technology
Please indicate below, by circling the appropriate number, to what extent does your company use the following manufacturing technologies (1= not used at all; 5= used to a very great extent):

F1. Computer-aided design (CAD). 1 2 3 4 5
F2. Computer-aided manufacturing (CAM). 1 2 3 4 5
F3. Computer numerical control (CNC). 1 2 3 4 5
F5. Computer integrated manufacturing (CIM). 1 2 3 4 5
F6. Flexible manufacturing systems (FMS). 1 2 3 4 5

Section G: Business strategy
Please indicate below, by circling the appropriate number, to what extent does your company focus on the following strategic priorities (1= not at all; 5= to a very great extent):

A. Product differentiation strategy:
   G1. Provide high quality products. 1 2 3 4 5
   G2. Provide fast deliveries. 1 2 3 4 5
   G3. Make changes in design and introduce new products quickly 1 2 3 4 5
   G4. Provide unique product features. 1 2 3 4 5
   G5. Provide effective after-sale service and support. 1 2 3 4 5

B. Low cost strategy:
   G6. Pricing below competitors. 1 2 3 4 5
   G7. Continuing overriding concern for lowest cost per unit. 1 2 3 4 5

Section H: Intensity of Market competition
Please indicate, by circling the appropriate number below, the intensity of your company’s market competition with the following competition factors (1= not intensive at all; 5= intensive to a very great extent):

H1. Price competition. 1 2 3 4 5
H2. Competition for new product development. 1 2 3 4 5
H3. Marketing (or distribution channels) competition. 1 2 3 4 5
H4. Competition for market share. 1 2 3 4 5
H5. Competitors’ actions. 1 2 3 4 5
H6. Number of competitors in your market segment. 1 2 3 4 5
Section I: Perceived Environmental Uncertainty
Please indicate below, by circling the appropriate number, the relative predictability of your company’s external environment in terms of the following eight factors (1= predictable to a very great extent; 2= predictable to a great extent; 3= predictable to some extent; 4= predictable to a little extent; 5= very unpredictable extent):

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<tbody>
<tr>
<td>I1. Suppliers’ actions.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I2. Customer demands, tastes and preferences.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I3. Deregulation and globalisation.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I4. Market activities of competitors.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I5. Production and information technologies.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I6. Government regulation and polices.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I7. Economic environment.</td>
<td>1</td>
<td>2</td>
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<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I8. Industrial relations.</td>
<td>1</td>
<td>2</td>
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</table>

Section J: Organisational Culture
Please indicate below, by circling the appropriate number, to what extent does your company emphasize the following cultural values (1=not at all; 5=to a very great extent):

<p>| | | | | | |</p>
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<tbody>
<tr>
<td>J1. My company is human-oriented; people seem to share a lot of themselves.</td>
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<td>2</td>
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</tr>
<tr>
<td>J2. The glue that holds my company together is loyalty and tradition.</td>
<td>1</td>
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<tr>
<td>J3. The head of my company is generally considered to be a mentor, a sage, or a parent figure.</td>
<td>1</td>
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<tr>
<td>J4. My company emphasises human development; high level of trust and participation persists.</td>
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<td>2</td>
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</tr>
<tr>
<td>J5. Management style in my company is characterised by teamwork, consensus and participation.</td>
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</tr>
</tbody>
</table>
Section K: Workforce diversity
Please indicate below, by circling the appropriate number, to what extent does your company emphasize the following workforce diversity characteristics (1=not at all; 5=to a very great extent):

K1. My company employs both males and females (Gender diversity).  
K3. My company employs females in different managerial positions.  
K4. My company employs qualified non-Jordanians in different managerial positions.  
K5. My company employs qualified disabled people

Section L: Organisational Performance
Please indicate below, by circling the appropriate number your company’s overall performance over the last three years on the following areas relative to that of competitors (1= significantly below average; 2= just below average; 3=average; 4=just above average; 5= significantly above average):

L1. Return on Investment (ROI).  
L2. Margin on sales.  
L3. Capacity utilisation.  
L5. Product quality.  
L7. Market development.

Any additional comments you would like to add………………………………
……………………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………………………………

Thank You for your help.
Appendix B: Information letter and the main questionnaire
(Arabic copy)

التاريخ:
فوزي عطا حمدان
رقم موبايل: 0777517859
ص.ب. 386
الجبيبة 11941
عمان – الأردن

الدور المتغير للمحاسبة الإدارية: تقييم أثر استخدام مقياس الأداء المالية
غير المالية على أداء الشركات في الأردن

عزيزي/ عزيزتي:

أنا طالب الدكتوراه في جامعة موردوك الاسترالية بقرار الدكتور ديفد هولويغ والبروفيسور مانزوريل مل.

دراسي تهدف إلى التحق من أثر استخدام مقياس الأداء المالية وغير المالية على أداء الشركات الصناعية
الأردنية. يحاول هذا البحث أيضا تحديد أثر مختلف المتغيرات على استخدام مقياس الأداء المالية وغير الماليه
المتنوع.

ارجوبتك عمليا الاستبانة المرفقة وان تأخذ أكثر من أربعين دقيقة من وقتكم. من الممكن أيضا ان يتم
دعاكم لإجراء مقابلة سجلة تستغرق لمدة ساعة. تستخدم الاستبانة لجمع البيانات الرئيسية للدراسة والمتعلقة
بمدى استخدام مختلف مقياس الأداء، المتغيرات السياقية وأداء المؤسسة. تستخدم المقاييس الشخصية جزئيا
في هذه الدراسة لجمع بيانات إضافية مع التركيز على تحديد منافع وصعوبات استخدام مختلف مقياس الأداء.
ذا 
إذا رغبت في المشاركة في المقابلة، ارجو التكرم برزنة مواقفك على المقابلة وتزويدي بالبيانات
اللزمة للاتصال بك على النموذج المرفق واعادتمها على الغنوان المحدد على الملف المرفق مع هذه الرسالة.

المشاركة في هذه الدراسة طوعية تماما والمشاركون يمكنهم أن يقرروا الانسحاب في أي وقت. كل المعلومات
المتعلقة أثناء التسجيل والمقابلة سرية ولن يتم استخدام أي أسماء أو معلومات أخرى قد تمتزاج او تميزان
من المتصل.Unless you opt out of these processes, your information will be stored.

من المحتمل ان يكون هناك مفيدة مباشرة لك من الإشراقة في هذه الدراسة. يتوفر إن تفعيل هذه
الدراسة الأساس لاستخدام مقياس الأداء الرئيسية في الشركات الصناعية في الأردن. وان تقدم دليل إضافي
لمعرفة حول العلاقة بين استخدام مقياس الأداء المتنوع واحتمال المؤسسة.

أذا لديك أي استفسار حول هذا المشروع، الرجاء خذ حريتك بالاتصال أما بـ علي ربيدي الإلكتروني
أو مع المشرفين على البحث الدكتور ديفد هولويغ على fawzi2000sawalqa@yahoo.com
والبروفيسور مانزوريل على D.Holloway@murdoch.edu.au
ارجوع التكرم بأعادة الاستبانة على الغنوان المحدد على النموذج المرفق مع M.Alam@murdoch.edu.au

هذه الرسالة

مشروفيون وانا سعيدون للغاية لمناقشة أي قضايتم ديك حول هذه الدراسة.

بعد تحليل بيانات هذه الدراسة سوف يتم تزويدي بمثلتنتها على الايميل إذا طلبت ذلك.

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تقدم لك جزيل الشكر مقدما لمساعدتك بهذا البحث، ونتطلع لسماع أي استفسار منك قريبا.

هذه الدراسة صنعت من قبل لجنة الدراسات الأخلاقية والإنسانية في جامعة موردوك (موافقة 2009/160). إذا كان لديك أي تحفظ أو شكوك حول السلوك الأخلاقي لهذه البحث، وترغب في التحدث مع شخص مستقل، يمكنك الاتصال مع مكتب أخلاقيات البحث في جامعة موردوك ( هاتف: 9360 61 8 61+ أو البريد الإلكتروني ethics@murdoch.edu.au). كل قضايا يمكن أن تثيرها سوف تعالج بسرية تامة ويتم التحقق بها بشكل كامل، وسوف يتم إبلاغك بنتائج التحقق.
الدورة المتغير للمحاسبة الإدارية: تقييم أثر استخدام مقاييس الأداء المالية وغير المالية على إدارة الشركات في الأردن

لقد قرأت المعلومات الواردة أعلاه، أي أسلوب تم إثرائه تمت الأجابة عليها بشكل كاملاً وواضح. وعليه أنا موافق على تعبئة الاستبيان. وأنا أدرك تماماً أن هذا النسخ هو سري. وانه لا يتم جمع أو استخدام أي بيانات شخصية. أعلم أيضاً أنه من الممكن أن ألعب أي وقت أن أسحب موافقتني وأتوقف عن المشاركة في أي وقت. وأنا أفهم أن جميع المعلومات التي تم إعطاؤها تتعامل كمعلومات سرية من قبل الباحثين ولكن يتم إطلاع طرف ثالث عليها ما لم يطلب ذلك بالقانون.

أفهم أن نتائج هذه الدراسة يمكن أن تنشر وأنه لن يتم نشر أي معلومات يمكن أن تحدد هويتي.

هل تريد نسخة من ملخص الدراسة؟ نعم/لا.

إذا نعم، الرجاء تزويدي باربطاقة الالكتروني. ..................

الجزء الأول: معلومات عن الشركة:

A1. تحت أي من القطاعات الرئيسية التالية تندرج طبيعة عمل شركتكم (الراجوة وضع إشارة √ في المربع الماسب):

- المعدات الكهربائية
- النسيج واللبنسة والأحذية
- المنتجات البلاستيكية والمطاطية
- الأثاث والمنتجات الخشبية
- الطابعة والورق والتعبئة
- الصناعات الكيماوية والدوائية
- التبغ والمجاجز
- الصناعات الإنشائية والبناء
- أخرى، الرجاء التحديد

A2. الرجاء تحديد عدد الموظفين الحاليين الذين يعملون لدى الشركة .....

A3. إن حجم المبيعات السنوية لشركتكم بالدينار الأردني لأخر سنة مالية يتراوح بين (الراجوة وضع إشارة √ في المربع الماسب):

- أقل من 1 مليون.
- 1 - 10 مليون.
- 10 - 20 مليون.
- 20 - 30 مليون.
- 30 - 40 مليون.
- 40 - 80 مليون.
- 80 - 160 مليون.
- 160 - 320 مليون.
- أكثر من 320 مليون.

A4. الرجاء تحديد متي تم تأسيس الشركة .....

الجزء الثاني: بيانات ديموغرافية (الراجوة وضع إشارة √ في المربع الماسب):

B1. الجنس: □ ذكر □ أنثى

B2. إلى أي من الفئات العمرية التالية تنتمي؟

- أقل من 30 □ □ □ □ □ □ □ □
- 30 - 40 □ □ □ □ □ □ □ □
- أكثر من 50 □ □ □ □ □ □ □ □
الجزء الثالث: مدى استخدام معايير الأداء المالية وغير المالية:

الرجاء تحديد مدى استخدام كل من المعايير التالية في تقييم الأداء لدى شركتك (الرجاء وضع دائرة حول الرقم المناسب لشركتكم):

لا يستخدم مثلاً يستخدم مدى قليل يستخدم مدى متوسط يستخدم مدى كبير

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<thead>
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<th>المعايير المالية</th>
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<td>5 4 3 2 1</td>
<td>C13 عدد المنتجات الجديدة المطروحة</td>
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<td>C14 وقت تسويق المنتجات الجديدة</td>
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<td>C15 تدريب العاملين</td>
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<td>5 4 3 2 1</td>
<td>C16 تطوير مهارة العاملين</td>
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<td>5 4 3 2 1</td>
<td>C17 امان العاملين</td>
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<td>5 4 3 2 1</td>
<td>C18 تفويض الصلاحية للعاملين</td>
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<td>المعايير المتعلقة بالعمال</td>
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<td>C19 وقت الاستجابة للزبون</td>
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<td>C20 التسليم في الوقت المحدد</td>
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<td>C21 استقصاء رضا العمال</td>
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<td>C22 الاحتفاظ بالعمال</td>
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<td>المعايير المتعلقة بالمجتمع</td>
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<td>C23 الانطباع العام للمجتمع</td>
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<td>C24 مشاركة المجتمع المحلي</td>
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<td>C25 المشاركة في تدريب وتأهيل المجتمع المحلي</td>
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<td>C26 دعم الأنشطة الاجتماعية</td>
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<td>المعايير المتعلقة بالبيئة</td>
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<td>C28 الانتماء البيئي</td>
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<td>C29 الشهادة البيئية</td>
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<td>C30 تقليل النفقات والانبعاثات</td>
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<td>مقياس آخر مستخدم، يرجى التحديد</td>
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<th>مدى الاستخدام</th>
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الجزء الرابع: أهداف استخدام أنظمة مقياس الأداء:

الرجاء تحديد مدى استخدام مقياس الأداء من قبل شركتكم لتحقيق الأهداف التالية:
1. لا يتم استخدام مطلقاً (0)
2. يستخدم لحد القيمة (1)
3. يستخدم بنسبة متوسطة (2)
4. يستخدم بنسبة كبيرة (3)
5. يستخدم بصورة كبيرة جدًا (4)
وضع دائرة **O** حول الرقم المناسب لشركتكم:

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الجزء الخامس: استخدام بطاقة الأداء المتوازن:

فيما يتعلق باستخدام بطاقة الأداء المتوازن يرجى وضع إشارة **√** على واحدة من المراحل الآتية التي تصف الوضع الحالي لشركتكم:

( ) أخذ بعين الاعتبار
( ) طبق وتكرر
( ) مُستخدَم
( ) مُستخدَم على نطاق واسع
( ) طبق الآن

تشمل بطاقة الأداء المتوازن في العادة على عدة أوجه. إذا أخترت (مُستخدَم أو مُستخدَم على نطاق واسع) في **E1** في الرجاء وضع إشارة **√** على أوجه الأداء التي تتضمنها بطاقة الأداء المتوازن لدى شركتكم:

( ) المالي
( ) العمليات الداخلية
( ) التحقيق والتعلم
( ) التحقيق والتعلم
( ) المجتمع
( ) البيئة

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الجزء السادس: تكنولوجيا التصنيع المتقدمة:

إلى أي مدى تستخدم شركتكم تقنيات التصنيع التالية (1=لا تستخدم مطلقاً; 2= يستخدم متوسطاً; 3= يستخدم في الغالب; 4= يستخدم متوسطاً; 5= يستخدم كثيراً) (الرجاء وضع دائرية O حول الرقم المناسب لشركتكم):

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تقنية التصميم مساعدة الحاسوب. F1
تقنية التصميم مساعدة الحاسوب. F2
التحكم الرقمي المحوري. F3
تقنية الهندسة مساعدة الحاسوب. F4
تقنية التصميم المتكامل باستخدام الحاسوب. F5
نظام التصميم المرنة. F6

الجزء السابع: استراتيجية العمل:

إلى أي مدى تركز شركتكم على الأدوات الاستراتيجية التالية في عملها (1=لا تركز عليها مطلقاً; 2= تركز عليها بمتوسط); (الرجاء وضع دائرية O حول الرقم المناسب لشركتكم):

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A. استراتيجية تتويج المنتج:

1. تقديم منتجات ذات جودة عالية. G1
2. تقديم خدمات التوصيل السريع. G2
3. إجراء تغييرات في التصميم وطرح منتجات جديدة بسرعة. G3
4. تقديم منتج ذو خصائص متميزة. G4
5. تقديم خدمات ودعم فعال بما بعد البيع. G5

B. استراتيجية الكلفة المنخفضة:

1. التسعير أقل من المنافسين. G6
2. الاستمرار بالتركيز على تخفيض الكلفة لكل وحدة. G7
الجزء الثامن: شدة المنافسة في السوق:
الرجاء تحديد شدة المنافسة في السوق بالنسبة لشركتكم وفقا لعناصر المنافسة التالية (1= ليست شديدة مطلقاً؛ 2= شديدة لمعظم الوقت؛ 3= شديدة لمعظم الوقت 4= شديدة لمدة كبيرة 5= شديدة لمدة كبيرة جدا) (الرجاء وضع دائرة O حول الرقم المناسب لشركتكم):

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منافسة السعر. H1

المنافسة على تطوير منتجات جديدة. H2

المنافسة في التسويق (أو قواعد التوزيع). H3

المنافسة على الحصة السوقية. H4

أنشطة المنافسين. H5

عدد المنافسين في قطاعك السوق. H6

الجزء التاسع: أدرك حالة عدم التأكد في البيئة الخارجية:
الرجاء تحديد القدرة التنوبية النسبية لشركتكم بالنسبة لبيئة البيئة الخارجية الثمانية التالية (1= يمكن التنبي ببها إلى حد كبير جدا؛ 2= يمكن التنبي بها إلى حد كبير؛ 3= يمكن التنبي بها إلى حد متوسط؛ 4= يمكن التنبي بها إلى حد متوسط؛ 5= لا يمكن التنبي بها مطلقا): 

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أنشطة الموردين. I1

طلبات العملاء، أدواتهم وتفصيلاً تهمهم. I2

التحرر من القيود والعولمة. I3

الnings ذات السوقية للمنافسين. I4

الإنتاج وتكنولوجيا المعلومات. I5

الأنظمة والسياسات الحكومية. I6

البيئة الاقتصادية. I7

العلاقات الصناعية. I8
الجزء العاشر: الثقافة التنظيمية:

إلى أي مدى تؤكد شرككم على القيم الثقافية التالية (1= لا تؤكد عليها مطلقًا; 2= تؤكد عليها لمن قليل; 3= تؤكد عليها لمن متوسط; 4= تؤكد عليها لمن كبير; 5= تؤكد عليها لمن كبير جدا) (الرجاء وضع داررة O حول الرقم المناسب لشرككم):

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J1. شركتي ذات توجه أساسي. علاقة العاملين بها مبنية على المشاركة.
J2. تكرس شركتي قيم الولاء والعادات في كل مناحيها.
J3. أن مدير شركتي يتميز بأنه مراقٌ وناصٌ أبوٌ.
J4. تؤكد شركتي على التنمية البشرية والثقة العالية والثقة على المشاركة.
J5. أسباب الإدارة في شركتي يتميز بفرق العمل، توافق الآراء والمشاركة.

الجزء الحادي عشر: نوع القوى العاملة:

إلى أي مدى تؤكد شركتي على تنوع خصائص القوى العاملة التالية (1= لا تؤكد عليها مطلقًا; 2= تؤكد عليها لمن قليل; 3= تؤكد عليها لمن متوسط; 4= تؤكد عليها لمن كبير; 5= تؤكد عليها لمن كبير جدا) (الرجاء وضع داررة O حول الرقم المناسب لشرككم):

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K1. توظف شركتي ذكورًا وإناثًا (نوع الجنس).
K2. توظف شركتي أردنيين وغير أردنيين (نوع الجنسية).
K3. توظف شركتي الإناث في مختلف المراكز الإدارية.
K4. توظف شركتي الموهوبين غير الأردنيين في مختلف المراكز الإدارية.
K5. توظف شركتي الموهوبين من ذوي الاحتياجات الخاصة.
الجزء الثاني عشر: أداء الشركة:

الرجاء تحديد أداء شركتكم على مدى السنوات الثلاث الماضية بالنسبة لمنافسيكم في المجالات التالية (1=أقل بكثير من المتوسط; 2= أقل من المتوسط; 3= متوسط; 4= أعلى من المتوسط; 5= أعلى بكثير من المتوسط).

(الرجاء وضع دائرة O حول الرقم المناسب لشركتكم)

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العدد على الاستثمار.

1.2. هامش الربح على المبيعات.

1.3. استغلال الطاقة المتاحة.

1.4. رضا العملاء.

1.5. جودة المنتج.

1.6. تطوير العاملين.

1.7. تطوير السوق.

الرجاء ذكر أي ملاحظات أو اقتراحات أخرى على أي جزء من هذه الاستبيان وعلى الموضوع بشكل عام:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

شكرًا لكم على مشاركتكم في هذه الدراسة.

فوزي عطا حمدان
Appendix C: The interview guide (English copy)

Personal Interview

Hello, my name is Fawzi Ata Hamdan and I am a PhD student in Accounting at Murdoch University in Australia. As part of the research for my thesis, I am undertaking a study entitled, “The changing role of Management Accounting: Assessment of the impact of financial and non-financial performance measures usage on organisational performance in Jordan”. Thank you for agreeing to participate in this study.

Date: ----------------------

Start time of interview----------------------------------

Finish time of interview-------------------------------

Section A: performance measures usage, aims and factors that affect their usage

A1. What are the key financial performance measures formally used in your company? [Examples include those in questions C1-C7 of the questionnaire such as operating income, return on investment, etc].
   (A1a). Are there other financial measures that are currently used by your company but not listed in the table?
   (A1b). Are there other types of financial measures that you think might be useful to your company?
   (A1c). What are the aims of their usage (see Section D of the questionnaire), Please explain?

A2. What is the key non-financial performance measures formally used in your company? [Examples include those in questions C8-C30 of the questionnaire such as on-time delivery, customer response time, etc].
   (A2a). Are there other non-financial measures that are currently used by your company but not listed in the table?
   (A2b). Are there other types of non-financial measures that you think might be useful to your company?
   (A2c). What are the aims of their usage, (see Section D of the questionnaire), please explain?

A3. What are the main factors that affect your performance measures usage, please explain?
   (A3a). How do you explain the effect of the following factors on the extent of measurement diversity usage in your company? (see Sections F-K of the questionnaire):
       1. Advanced manufacturing technology.
       2. Business strategy.
       3. Intensity of market competition.
       4. Perceived environmental uncertainty.
       5. Organisation size.
6. Organisational culture.
7. Workforce diversity.

**Section B: Firm Performance:**

**B1.** What would you say has been the general trend of your organisational performance over the last three years relative to that of competitors?

(B1a). What is the primary reason for this trend?

**B2.** What are the major effects of using performance measurements diversity on your company’s performance?

**Section C: Benefits of performance measures usage:**

**C1.** Please explain in depth the benefits of using a diversity of financial and non-financial performance measures in your company?

**C2.** What are the major benefits of using BSC in your company? Please select the appropriate number/numbers?

1. BSC is an effective tool for communicating strategy
2. BSC provides a comprehensive picture relating to company performance.
3. Using BSC improves the company’s financial performance.
4. BSC provides better understanding of the cause-effect relationships.
5. BSC facilitates organisational learning.
6. Other benefits please specify………………

**Section D: Problems of performance measures usage:**

**D1.** Are there any difficulties/problems that your company faces in its current performance measurement systems? If “yes” what are these difficulties/ problems and are there any solutions?

*Thank you.*

*Fawzi Ata Hamdan.*
المقابلة الشخصية:
مرحبًا; أنا فوزي عثمان حمدان طالب دكتوراة في المحاسبة في جامعة موردوتش الاسترالية. كجزء من دراستي اقوم الآن بجمع بيانات راسيات التي تحمل عنوان "الدور المتغير للمحاسبة الأدارية: تقدير أثر استخدام مقياس الإمار المالي على إداء الشركات في الأردن". أشكركم على مساهماتكم في هذه الدراسة.
التاريخ:...

وقت بدء المقابلة:...
وقت إنهاء المقابلة:...

الجزء الأول: مقياس الإداء المستخدمة: أهداف استخدامها والعوامل المؤثرة في مدى استخدامها:
A1. ما هي مقياس الإداء المالي المستخدمة في شركتك؟ (مثل ذلك الذكرى في الاستمارة C1 من الجزء الثالث من الاستمارة المرفقة مثل دخل التشغيل والاعلان على الاستثمار.....الخ)؟
B1. كيف تقيم إداء العام لشركتكم على مدى السنوات الثلاث السابقة بمقارنة مع منافسيكم؟
B1a. ما هو الرأي العام لاستخدام مقياس الإداء المتوقع على إداء شركتك؟

A1a. هل هناك إدماج مقياس مالي آخر يُستخدم حالياً من قبل شركتك لكنها ليست مذكورة في الفائدة؟
A1b. هل هناك مقياس مالي آخر يعتبر أنه منفرد للشركة؟
A1c. ما هي أهداف استخدام مقياس الإداء المالي لدى شركتك؟ (انظر الجزء الرابع من الاستمارة D)

C8-C30 من الجزء الثالث من الاستمارة مثل التسليم في الوقت المحدد وقت الاستجابة للزبون...الخ.
A2. هل هناك إدماج مقياس غير مالي آخر يُستخدم حالياً من قبل شركتك لكنها ليست مذكورة في الفائدة؟
A2a. ما هي أهداف استخدام مقياس غير المالي لدى شركتك؟ (انظر الجزء الرابع من الاستمارة D)
A2b. التوصيحة...

A3. ما هي العوامل والمتغيرات الرئيسية التي تؤثر في استخدام مقياس الإداء لدى شركتك؟
A3a. كيف تفسر أثر العوامل التالية على مدى استخدام مقياس الإداء المتوقع لدى شركتك؟ (انظر الإجزاء K من الاستمارة)
F. K تكنولوجيا التصنيع المتقدمة.
1. شدة المنافسة في السوق.
2. حالة عدم التأكد في البيئة الخارجية.
3. حجم المؤسسة.
4. القوة التنظيمية.
5. قوة الرؤية العامة.

الجزء الثاني: أداء الشركات
B1. كيف تقيم إداء العام لشركتكم على مدى السنوات الثلاث السابقة بمقارنة مع منافسيكم؟
B1a. ما هو الرأي العام لاستخدام مقياس الإداء المتوقع على إداء شركتك؟
B2. ما هو الرأي الرئيسي لاستخدام مقياس الإداء المتوقع على إداء شركتك؟
الجزء الثالث: منافع استخدام مقاييس الاداء

الرجاء الشرح بالتفصيل منافع استخدام مقاييس أداء مالية وغير مالية متنوعة في شرككم?

C1 ما هي أهم منافع استخدام بطاقة الاداء المتوارز في شرككم؟ الرجاء اختيار الرقم/الارقام المناسبة:

1. بطاقة الاداء المتوارز اداة فعالة لأيصال الاستراتيجية.
2. تعطي بطاقة الاداء المتوارز صورة شاملة عن اداء الشركة.
3. استخدام بطاقة الاداء المتوارز يحسن من الاداء المالي للشركة.
4. توفر بطاقة الاداء المتوارز فهم افضل للعلاقة السببية.
5. تسهل بطاقة الاداء المتوارز التعلم التنظيمي.
6. أي منافع أخرى : يرجى التحديد..................................................

الجزء الرابع: مشاكل استخدام انشطة قياس الاداء الحالية

هل هناك اية صعوبات/مشاكل تواجه شرككم في نظام تقييم اداءها الحالي؟ إذا نعم؛ ما هي هذه المصاعب؟

D1 المشاكل وهل هناك اية حلول لهذه المشاكل والصعوبات؟

شكراً
فؤزي عطا حمدان
Appendix E: The interview consent form (English copy)

Consent Letter

Project Title: The changing role of Management Accounting: Assessment of the impact of financial and non-financial performance measures usage on organisational performance in Jordan.

Participant

I have read the participant information sheet. The information has been explained to me and all my questions have been satisfactorily answered. I have been given a copy of the information sheet to keep.

I am happy to be interviewed. I agree for this interview and my consent to be tape-recorded as part of this research (please circle).

I understand that I do not have to answer particular questions if I do not want to and that I can withdraw at any time without consequences to myself.

I agree that research data gathered from the results of the study may be published provided my name or any identifying data is not used. I have also been informed that I may not receive any direct benefits from participating in this study.

I understand that all information provided by me is treated as confidential and will not be released by the researcher to a third party unless required to do so by law.

___________________________________  ____________________
  Signature of Participant            Date

Investigator

I have fully explained to ________________________________ the nature and purpose of the research, the procedures to be employed, and the possible risks involved. I have provided the participant with a copy of the Information Sheet.

___________________________________  ____________________
  Signature of Investigator            Date

___________________________________  ____________________
  Print Name                            Position
نموذج الموافقة على المقابلة

الدور المتغير للمحاسبة الإدارية: تقييم أثر استخدام مقاييس الأداء المالية وغير المالية على أداء المشاركات في الأردن

لقد قررت صفحة معلومات المشاركات المعلومات قد وضعت لي وجميع أسئليتها تمت الأجبة عليها بشكل مرضي.

لقد تم إعطاءي نسخة من صفحة المعلومات للاحتفاظ بها.

أنا سعيد بإجراء هذه المقابلة. أنا موافق أن تكون: المقابلة و الموافقة على إجراء المقابلة مسجلة كجزء من هذا البحث (من فضلك ضع دائرية).

إذا أفهم أنه يستطيع عدة إجابات مميزة إذا لم أرغب بذلك، أعني بأمكانى الانسحاب من المشاركة في أي وقت بدون أي نتائج.

أوافق على أن بيانات البحث التي تم جمعها من نتائج هذه الدراسة يمكن أن تنشر وذلك بدون ذكر أسمي أو استخدام أي بيانات يمكن أن تحدث. لقد تم إبلاغي أيضًا بأنه يمكن أن يكون هناك إضاة مناقش مباشر لي نتيجة للاستماع في هذه الدراسة.

إذا أفهم أن جميع المعلومات التي قمت بإعطاؤها تعالج كمعلومات سرية من قبل الباحثين ونن يتم أطلاع طرف ثالث عليها ما لم يطلب ذلك بالقانون.

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توقيع المشارك

التاريخ


-------------------------------

الباحث

لقد قدمت إيضاح كامل ل .................................. بطبيعة وهدف البحث، الإجراءات التي ستستخدم، والمخاطر المحتملة. لقد تم تزويد المشاركة بنسخة من صفحة المعلومات.

-------------------------------

توقيع الباحث

التاريخ


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الاسم

مركز
Appendix G: Linearity and Homoscedasticity

The points are randomly dispersed throughout the scatterplot. This pattern is indication of a situation in which the assumptions of linearity and homoscedasticity have been met (Hair et al., 2006).
Partial Regression Plot

Dependent Variable: PMDSUSE

Scatterplot

Dependent Variable: OP
References


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