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Performance Measurement: Challenges for Tomorrow

Abstract

This paper demonstrates that the context within which performance measurement is used is changing. The key questions posed are: “Is performance measurement ready for the emerging context? What are the gaps in our knowledge?” and “Which lines of enquiry do we need to pursue?” A literature synthesis conducted by a team of multidisciplinary researchers charts the evolution of the performance measurement literature and identifies that the literature largely follows the emerging business and global trends. The ensuing discussion introduces the currently emerging and predicted future trends and explores how current knowledge on performance measurement may deal with the emerging context. This results in identification of specific challenges for performance measurement within a holistic systems-based framework. The principle limitation of the paper is that it covers a broad literature base without in-depth analysis of a particular aspect of performance measurement. However, this weakness is also the strength of the paper. What is perhaps most significant is that there is a need for rethinking how we research the field of performance measurement by taking a holistic systems-based approach, recognising the integrated and concurrent nature of challenges the practitioners, and consequently the field, faces.

Introduction

Ever since Johnson and Kaplan (1987) published their seminal book entitled *Relevance Lost – The Rise and Fall of Management Accounting*, performance measurement gained increasing popularity both in practice and research. In fact Neely (1999), having identified that between 1994 and 1996 over 3600 articles were published on performance measurement, has coined the phrase *the performance measurement revolution*.

Today, performance measurement and performance management practices are commonplace in all sectors of industry and commerce, including the public sector. However, as we move further into the 21st century, there is an increasing belief that the world as we know it is changing, both in natural and business sense. Issues such as global warming, environmental considerations and sustainability of our planet are becoming key concerns for everyone, from individual citizens, through small and multinational businesses, to public servants and politicians. Fuelled by rapidly developing technologies, increasing globalisation and dismantling of trade barriers, we are also seeing rapid changes to how we are managing organisations.

Richard *et al*. (2009) suggest that past studies reveal a multidimensional conceptualisation of organisational performance with limited effectiveness of commonly accepted measurement practices. They call for more theoretically grounded research and debate for establishing which measures are appropriate to a given research context. Our objective in this paper is to demonstrate that the context within which performance measurement is used is changing. The key questions are: “Is performance measurement ready for the emerging context? What are the gaps in our knowledge?”

and “Which lines of enquiry do we need to pursue to develop a better understanding of performance measurement within the emerging context?”

Through this paper we will demonstrate how the contemporary performance measurement literature and practice developed. We will then go on to provide an insight into the contextual trends and changes that may lie ahead. These include: cultural and multi-cultural aspects of performance measurement; collaborative organisations; autopoietic networks; servitization; sustainability, as well as the open source movement. We then engage with the performance measurement literature, seeking answers to the questions posed above within the context of these trends. Finally, we present a research framework that identifies the gaps in knowledge and the lines of enquiry that need to be pursued.

Methodological considerations

This review has been undertaken by a multidisciplinary academic team to establish a multi-perspective view on performance measurement in the context of global and business trends. In pursuit of the research questions posed above, we attempted to synthesise the performance measurement literature within the context of emerging global and business trends. Consequently, we were interested in interpreting and explaining two particular phenomena. Firstly, we wanted to interpret how the performance measurement literature had evolved and developed chronologically in response to global and business trends. Secondly, we wanted to explain how the performance measurement literature was responding to the global and business trends and the changes that are predicted for the near future. From this synthesis we were able to develop a holistic research framework for performance measurement that identifies

specific research challenges, as well as the need for a systems-based approach recognising the integrated and concurrent nature of these challenges.

During the last 20 years, business performance measurement (BPM) was studied using many different perspectives (Franco-Santos *et al*., 2007). These perspectives could be summarized in three main research streams coming from a number of disciplines: operations perspectives, strategic control perspective and management account perspective. Although our literature review includes performance measurement in general, as well as the above three perspectives, in this paper we have used the term "performance measurement" as an all-inclusive term (Neely, 2005; Taticchi *et al*., 2010).

In investigating the two particular phenomena explained above, we adopted two different approaches to our literature review. Firstly, in the field of performance measurement, we adopted an approach that combined elements of systematic literature review (Rousseau *et al*, 2008; Denyer and Tranfield, 2008) with the authors' previous knowledge of the field developed over the past 15 years. Secondly, in order to surface the global and business trends, we have relied on more traditional approaches to literature reviews, selecting works based on citations, known gurus, as well as the authors' previous knowledge of the field. Figure 1 illustrates the methodological basis of the literature review conducted.

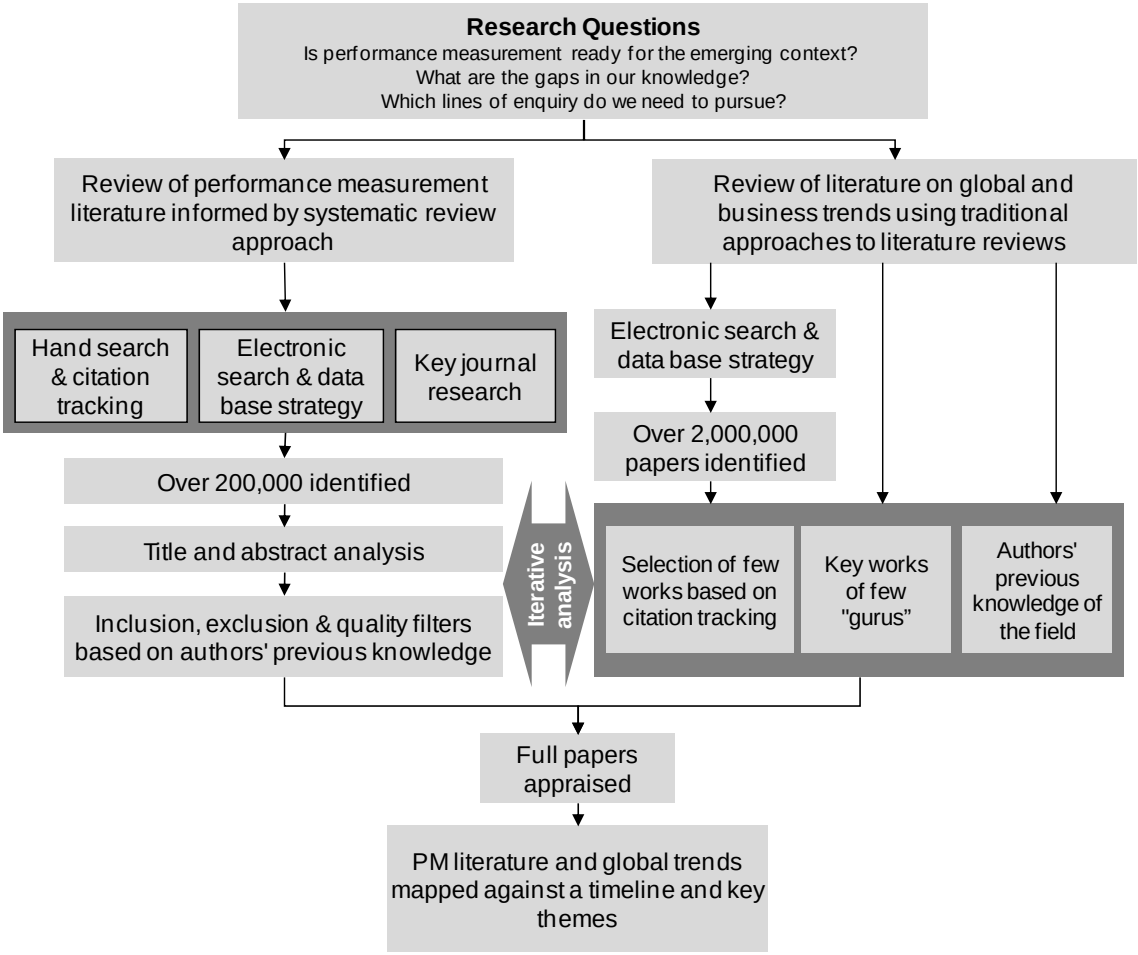


Figure 1. Development of the performance measurement literature and global trends.

Essentially, systematic reviews are formulated around research questions and the criteria for inclusion and exclusion of papers are clearly defined at the outset (Denyer and Tranfield, 2008). Considering the objectives of our work, we found that the inclusion and exclusion criteria were emerging as we developed greater insights into both performance measurement and global trends. We believe this dynamic and iterative nature of the literature review conducted, whilst not strictly following a systematic literature review approach, provided a fit for purpose protocol for our intended purpose (Macpherson and Jones, 2010). In the following paragraphs we have attempted to present this protocol in greater detail.

In reviewing the Performance Measurement field, a scheme informed by the systematic approach was adopted (Rousseau *et al*, 2008; Denyer and Tranfield, 2008). Keyword searches were employed using predefined search strings (such as “performance measurement”, “performance management”, “performance indicators”, “management control” and “strategic control”) to identify articles published between 1980 and 2010 in specific management databases (such as Business Source Premier, Web of Knowledge, Emerald Insight, Scopus and Science Direct). Also, a number of journals were chosen as they attract a large number of papers in the field of performance measurement, very often addressing a broad range of managerial problems from a performance measurement perspective. These include the International Journal of Business Performance Management, International Journal of Operations and Production Management, International Journal of Management Reviews, Sloan Management Review, Harvard Business Review, The Accounting Review, as well as other leading general management journals. The initial search identified over 200,000 articles, which was reduced in two ways based on the insights that were emerging from the parallel literature review on emerging global and business trends, and the authors’ previous knowledge of the field. This ensured that key contributions previously unknown to the authors were not missed. Obviously, it was still impossible to include all the articles that made a contribution. The focus of the review was to identify the extent literature rather than reviewing and discussing all relevant contributions, as many contributions built upon each other. In conducting the review, our objective was to build a picture of how performance measurement literature was developing. Thus, we specifically looked for broad themes and research problems that were being addressed rather than identifying specific solutions, models and frameworks.

In parallel, we explored general literature on Global and Business Trends. Here our objective was to uncover the global and business trends that are predicted for the near future in order to provide a contextual framework against which we could synthesise the performance measurement literature. Our initial search of the popular research databases with key words such as “Global Trends” and “Business Trends” resulted in over two million possible articles. Consequently, rather than conducting an exhaustive review of the literature, which would have been impractical and of little additional value, we relied significantly on: works of a few “gurus” such as Drucker, Mintzberg, Porter and Prahalad; recurring references that we have come across throughout our search; as well as relying on our own knowledge of the field. We started by identifying the most significant commentators, including both academic and non-academic authors, of the global trends of the various eras. To this end, we consulted sources such as the www.thinkers50.com and *Who are the gurus' gurus* (Prusak and Davenport, 2003). We gathered the most important messages from these thinkers and extrapolated these in the context of the performance measurement themes emerging from the literature. This approach provided us with a picture of the global and business trends most relevant from a performance measurement perspective.

As intimated previously, the two streams of literature review were conducted simultaneously and the findings, as well as emerging conclusions from one, served to inform the other stream, resulting in an iterative process throughout the study. The approach facilitated the identification of key themes that emerged from the mapping of the two bodies of literature against a timeline. In the first instance, the authors individually and then collectively, analysed these key themes leading to formulation of our initial conclusions. These initial findings were then presented at a focus group

meeting, which comprised of a multidisciplinary group of academics and practitioners specialising in performance measurement from different perspectives (Morgan, 1997; Franco-Santos *et al*., 2007; Stewart *et al*. 2007), including: Operations Management, Manufacturing Management, Service Management, Strategic Management, Industrial Engineering, Facilities Management, Public Sector Management, Psychology, Human Resources Management and Change Management. The discussion and feedback received from the focus group informed further development of the conclusions and the research framework that is presented in this paper.

Evolution of the Performance Measurement Literature – An Overview

As Bourne (2001) already provides a comprehensive overview of how performance measurement systems evolved, in this section we attempt to summarise the relevant literature and organise it into eras in order to identify the key themes. According to Johnson (1981), the origins of performance measurement lie in the double entry bookkeeping that emerged in the late thirteenth century and remained unchanged until the Industrial Revolution. Starting from the nineteenth century, the performance management field has evolved through a number of phases. Throughout its evolution it has been converging with other related fields of management, as well as spawning sub-fields of interest of its own. The following paragraphs provide a brief overview of the evolution of the field through these phases.

The Industrial Age was typified by the emergence of mass manufacturing models (Ford, 1922) and consequently specialisation of labour (Taylor, 1911). During this period we saw transition from piecework payment to the wage system and it became necessary to monitor employees' productivity (Johnson, 1981). The emergence of multiple plants,

with increasing organisational and managerial complexity, resulted in power and control being delegated. This led to the emergence of divisional and departmental budgets (Chandler, 1977; Bourne, 2001). These developments were paralleled in government institutions (Williams, 2002, 2003, 2004).

The early stages of globalisation during the 1950s led to development of more sophisticated approaches to productivity management, such as quality control, motion-time-study, variety reduction, etc. Here, productivity improvements were often gained at the expense of customer/employee/stakeholder satisfaction (Schonberger, 1982; Suzaki 1987) with much emphasis on financial indicators (Kaplan 1983; Johnson and Kaplan, 1987; Keegan *et al*. 1989; Neely *et al*. 1995). Between the 1960s and 1980s, with the economic engine of supply and demand moving from supply-side to demand-side, the focus of performance measurement shifted towards new dimensions of performance, such as quality, time, flexibility and customer satisfaction (Hayes and Abernathy, 1980; Slack 1983; Kaplan 1984). This led to recognition of performance measurement as a multi-dimensional domain (Skinner 1974; Hayes and Abernathy, 1980; Goldratt and Cox 1986; Keegan *et al*., 1989; Dixon *et al*., 1990; Kaplan *et al*., 1992; Neely *et al*., 1995) and essentially leading to the development of more integrated and balanced approaches to performance measurement (Johnson and Kaplan, 1987).

At this point the performance measurement literature starts to converge with earlier works on strategic control. Here, the key focus was on whether the strategy is being implemented as planned and whether the outcomes are those intended (Steiner, 1969; Schendel and Hofer, 1979; Wheelen and Hunger, 1983; Glueck and Jauch, 1984; Hax and Majluf, 1984; Schreyögg and Steinmann, 1987). In particular, Horovitz (1979),

Goold and Quinn (1990) and Simons (1995) suggest that short-term performance indicators should be developed as strategic controls that are explicitly linked to achievement of long-term strategic goals. In other words "*it became increasingly important to do the right things apart from doing things right*" (Drucker, 1994). As a result, throughout the integrated performance measurement period much emphasis was placed on *what* to measure and *how* these measures achieved strategic alignment (Dixon *et al*., 1990; Bititci and Carrie, 1998). These works resulted in development of various performance measurement models and frameworks that facilitated alignment between performance measures and business strategy (Keegan *et al*., 1989; Dixon *et al*., 1990; Fitzgerald *et al*., 1991; Goold, 1991; Atkinson and Waterhouse, 1997; Bititci and Carrie 1998; Bourne *et al*., 2000; Cross and Lynch, 1988-1989; EFQM, 1999; Kaplan and Norton, 1992, 1996, 2001; Neely and Adams, 2001; McAdam and Bailie, 2002; Neely *et al.*, 1996;). This resulted in a number of authors asking the fundamental question: How should performance measures be used to manage the performance of the organisation? (Meekings, 1995; Neely *et al*., 2000; Bourne *et al*., 2000) This line of thinking led to development of the concept of Performance Management as a process, where performance measures facilitate the management of organisations' performance (Lebas, 1995; Bititci *et al*., 1997; Waggoner *et al*., 1999; Bourne and Neely, 2000; Marchand *et al*., 2000; Neely *et al*., 2000; Haag *et al*., 2002; Adair, 2003; Kennerley and Neely 2003; Nudurupati and Bititci, 2005). These works also identified factors such as *System maturity; Organisational structure, size, and culture; Management style; Information and communications systems* as the key factors that influence success and failure of performance measurement (Simons, 1995; Langfield-Smith, 1997; Otley,

1999; Reid and Smith, 2000; Hoque and James, 2000; Chenhall, 2003; Franco and Bourne, 2003; Garengo and Bititci, 2007).

In parallel, the need for aligning human resource based performance management systems with organisational performance measurement systems was recognised (Meyer *et al*., 1995; Bacal, 1999; Scott and Tiessen, 1999; Baker, 2000; Corona, 2009; Dutta, 2009; Ittner and Larcker, 1998; Kaplan and Norton, 1996a; Lawler III, 2003; Sanchez and Heene, 2004). This led to new perspectives on performance management, including Teaming measures and Managerial measures (Cicek *et al*., 2005; Mendibil and MacBryde, 2005; Van Vijfeijken *et al*., 2006). Similarly, from the quality management field we have seen approaches such as Lean Enterprise and Six-Sigma making extensive use of performance measurement to manage and improve performance of processes and organisations (Hines and Rich, 1997; Lynch *et al*., 2003; Swinehart and Smith, 2005; Banuelas *et al.*, 2006; Greiling, 2006; Baker *et al*., 2007; Kanji and Sá, 2007; Purbey *et al*., 2007). In R&D and innovation management questions such as *how to measure and manage performance of R&D and innovation activities and processes* were also being explored (Adams *et al*., 2006; Chiesa and Frattini, 2007; Chiesa *et al*., 2009). It is also argued that environmental and social considerations should, and indeed do, influence the design and use of performance measurement systems from strategic, operational and supply chain perspectives (Xie and Hayase, 2006; Molina-Azorín *et al*,. 2009; Wood, 2010). A number of authors propose integration of environmental management, green supply chain and corporate social responsibility practices throughout the organisations' performance measurement systems (Ditz and Ranganathan, 1997; Epstein and Roy, 1998; Elkington, 1999; Sarkis, 2003; Andersen and Fagerhaug, 2004; Hervani *et al*., 2005; Liu and He, 2005; Tsai and Hung, 2009; Xie and Hayase, 2006).

Ostensibly, as the field has developed and matured, more specific sub-fields of performance measurements started to emerge. Research into performance measurement in Small and Medium Enterprises (SMEs) has concluded that the majority of performance measurement work, although theoretically valid, does not take into consideration the fundamental differences between SMEs and larger organisations. Thus, resulting in poor take up of performance measurement practices in SMEs (Walley *et al*., 1994; Cook and Wolverton, 1995; Burns and Dewhurst, 1996; Brouthers *et al*., 1998; Hussein *et al*., 1998; Ghobadian and Galler, 1997; Jennings and Beaver, 1997; McAdam, 2000; Franco and Bourne, 2003; Fuller-Love, 2006; Garengo *et al*., 2005; Garengo and Bititci, 2007; Hudson *et al*., 2001; Hudson-Smith and Smith, 2007; Turner *et al*., 2005; Wiesner *et al*., 2007).

Another area that seems to have spawned from the mainstream performance measurement literature is concerned with performance measurement and performance management across organisational boundaries. This includes supply chains and collaborative enterprises. Those works, exploring performance measurement in supply chains, consider operational and informational aspects that go on to propose process-based approaches to measure the performance of supply chains (Beamon, 1999a, 1999b; Brewer and Speh, 2001; De Toni and Tonchia, 2001; Chan and Qi, 2003; Gunasekaram *et al*., 2001; 2004; Folan and Browne, 2005; Huang *et al*., 2005; Kleijnen and Smits, 2003; Kroes and Ghosh, 2010; Lockamy and McCormack, 2004; Li *et al*., 2005; Shepherd and Gunter, 2006; Vachon and Klassen, 2008; Acar *et al*., 2010; Hernandez-Espallardo *et al*., 2010). The work exploring performance measurement in collaborative organisations recognises the additional complexity that is brought about by the potential conflicts between performance measurement considerations of the individual

organisations and of the collaborative organisation. These include a greater variety of operational, cultural, organizational and technological conflicts (Norek and Pohlen, 2001; Simatupang and Sridharan, 2004; Bititci *et al.*, 2005; Folan and Browne, 2005; Busi and Bititci, 2006; Parung and Bititci; 2006; Chen and Yang 2007; Chang *et al*,. 2010).

Performance measurement and management in the public sector is another area that seems to have spawned from the mainstream performance measurement literature with a plethora of works covering all aspects of public sector management. Williams (2002, 2003, 2004) provides a succinct overview of these works. As the performance measurement body of knowledge is mainly focused on the private and public sectors, scholars are also investigating if and how the knowledge could be used to inform the design of performance measurement systems in non-profit organisations (Paton, 2003; Poister, 2003; Cairns *et al*., 2005; Micheli and Kennerly, 2007; Moxam, 2010).

Performance Beyond Measurement

Based on our review so far, the performance measurement field seems to have developed over a number of phases, namely: Productivity management; Budgetary control; Integrated performance measurement and Integrated performance management. However, it would be inappropriate to close this section without due recognition of an increasingly popular and somewhat controversial view of performance measurement. The *Relevance Lost* (Johnson and Kaplan, 1987) is cited as a cornerstone in virtually all scholarly papers on performance measurement, where the authors developed the idea of what later became known as activity-based costing. Kaplan's work evolved into the concept of the Balanced Scorecard (Kaplan and Norton, 1992, 1996, 2001), which in

turn influenced much of the work on performance measurement and management presented so far. The essence of this line of research is that organisations need performance measures and they have to make them more relevant in order to use them for improving the organisations' performances. Reflecting on this, Davenport suggests that the ultimate goal of performance measurement should be learning rather than control (Davenport, 2006; Davenport and Harris, 2007; Davenport *et al*., 2010). The work of Johnson took a different direction. In his book entitled "*Profit Beyond Measure*" (Johnson and Broms, 2000), the message is that it is possible to run a well performing organisation without measuring performance. It seems that both pro- and against- measurement views agree that increased control does not lead anywhere by itself and that the organizations need to learn to perform, with or without measures. Bititci *et al*. (2006) suggest that in certain cultural contexts the use of performance measures can, and indeed does, lead to dysfunctional behaviours and poor overall performance. This line of thinking is probably best articulated by Seddon (2008) where he suggests that from a systems thinking perspective, performance measures and targets create a command and control culture that often generates hidden costs and demoralizes people by sub-optimizing various parts of the system.

This line of thinking opens up the debate around cultural controls. It is argued that the performance measurement literature reviewed in the previous section takes a rational approach to control and concentrates on the structural mechanisms to secure effective co-ordination and control in organizational interaction (Nandan, 1996). It also implies that control systems can be designed and operated for any circumstance in any organisation (Hopper and Powell, 1985). Tannenbaum (1968) and Child (1973, 1972) state that the purpose of control should be to ensure the achievement of the

organisational purpose, plans and targets. They suggest that organisational control, therefore, encompasses any process in which a person (or group of persons) intentionally affects what another person, group, or organization will do. They suggest two contradicting approaches to organisational control. First, the more rational and bureaucratic approach focusing on structural elements of the organisation. Second, the cultural control, the kind of control achieved through personal interaction and socialisation.

The performance measurement literature clearly recognises the dyadic relationship between performance measurement and organisational behaviour (Bourne et al 2002; Franco and Bourne, 2003; Nudurupati and Bititci, 2005; Bititci *et al.*, 2006). Arguably, performance measurement and management is a social phenomenon as its behaviour is shaped by the feelings, values and basic beliefs of the individuals, organisation, community and the society within which it operates.

Research Challenges in Performance Measurement

Based on the review presented in the previous section and informed by Ansoff's (1984) historical perspective on global industrial, business and social trends, it is clear that the performance measurement field has developed in parallel, and indeed in response to these global trends. During the early 1900s, with increasing industrialisation, the purpose of performance measurement was productivity management. With the emergence of more complex multi-plant organisations, we have seen the purpose of performance measurement shifting towards budgetary control whilst maintaining a focus on productivity management. Then, with the emergence of global competition and sophistication of markets, we have seen the purpose of performance measurement

shifting towards integrated performance measurement and subsequently on to integrated performance management, whilst still maintaining a focus on productivity and budgetary control. In effect, we could argue that, in following the emerging industrial, business and social trends, the purpose and the methods of performance measurement broadened by compounding multiple purposes (Figure 2). The review also reveals a number of trends emerging from the literature (also illustrated in Figure 2) that include: Performance measurement in public sector and non-profit organisations; Environmental and social performance; People and teams perspective of performance measurement and management; Performance management in SMEs; Inter-Organisational performance management; Performance measurement for innovation and intellectual property; Performance measurement as a social system.

Today, as we write this paper, we seem to be in the midst of another global revolution that seems to have been somewhat accelerated by the global financial crisis of the 2008-2009 period. With the global economic power base shifting towards emerging economies, such as Brazil, Russia, India and China (Goldman Sachs, 2009; Yamakawa *et al*., 2009), certain trends that were embryonic just a few years ago seem to be accelerating. Our review of business trends revealed a plethora of developments that we attempted to tabulate in the lower half of Figure 2. Further analysis of these developments, in relation to the themes emerging from the performance measurement literature, resulted in identification of the following business trends for further consideration:

- Emergence of the need for organisations to collaborate across global multicultural networks, facilitated to some extent by the open innovation movement (Hansen and

Birkinshaw, 2007; Pisano and Verganti, 2008; Chesbrough and Garman, 2009). This relates directly to the *Inter-organisational performance measurement* and *Performance measurement for innovation* themes identified above. It also indirectly impacts on *Performance measurement in SMEs and Public sector/non profit organisations* themes as they are increasingly playing an important and critical role in global networks.

- Increasing emphasis on servitization and the trend towards service-dominant logic (Lovelock and Gummesson, 2004; Vargo and Lusch 2004; Neely, 2007; Vargo and Lusch, 2008; White *et al*., 2009) that cuts across all of the themes identified. This has far reaching implications in the way performance is measured and managed in organisations small and large, including manufacturing, service and public sector organisations. This would include measurement of service supply chains, innovation and management of intellectual property in service dominant network organisations, etc. Thus, further research into understanding the value of these measures is deemed essential (Ostrom *et al*., 2010)

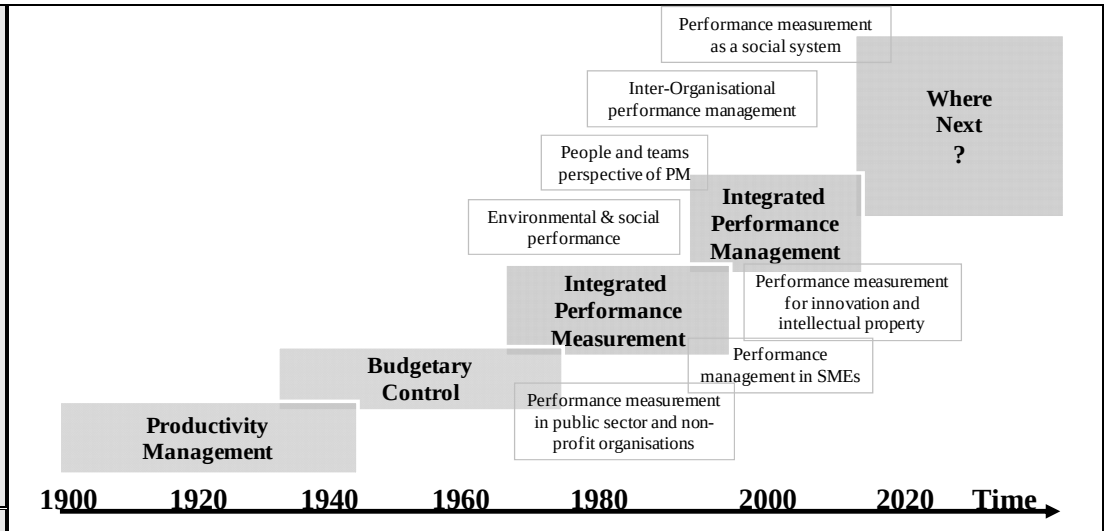
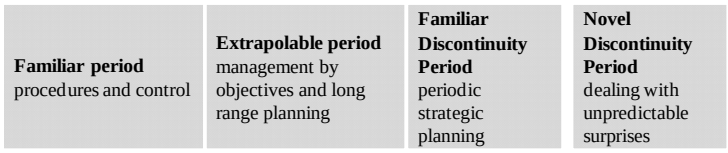
- Shifting of value from manual work towards knowledge-work, with the need for organizations to collaborate across global multicultural networks (Wenger, 1999; Berry 2004; Ulhøi, 2004; Hilton 2008; Snowden and Boon, 2007; Wenger and Snyder, 2000), directly relates to the *inter-organisational and people and teams* perspectives of performance measurement, as well as encompassing the *social systems view of performance measurement*.
- Increasing emphasis on SMEs as the future economic engines (Ruigrok and Tate, 1996; Dutta and Evrard, 1999; DeVries and Margaret, 2003; Van Gils, 2005;

Mikhailitchenko and Lundstrom, 2006; Prashantham and Birkinshaw, 2008; Herbane, 2010) directly relates to the *performance management in SMEs* theme as well as impacting on themes such as *inter-organisational performance*, *performance measurement for innovation* and *performance measurement as a social system.*

- Increasing emphasis on sustainability, if suitably managed, should become a touchstone of the future competitive advantage, as it drives cost reduction, increasing in revenues and innovations (Hopkins, 2009; Nidimolu *et al*. 2009; Lubin and Esty, 2010). This trend directly relates to the *environment and social performance* theme. It also cuts across all other themes as the notion of corporate social responsibility becomes a means of developing and sustaining competitive advantage for networks, as well as small and large organisations across all sectors.

Figure 2 maps the evolution of the performance measurement literature against the global trends observed in the literature. In the face of the emerging trends listed above, the key questions are: Is performance measurement ready for the emerging context? What are the gaps in our knowledge? and Which lines of enquiry do we need to pursue to develop a better understanding of performance measurement within the emerging context?

In the following paragraphs we will engage with the literature to explore our current state of knowledge in these areas, with a view to identifying lines of enquiry that need to be pursued. However, the complexity here is that these emerging trends and the potential performance measurement issues are not mutually exclusive; they interact and reinforce one another in complex ways. Thus, the following discussion is structured in a manner so that each section builds upon the preceding section.

Development of the performance measurement field and emerging themes	
Periods of development & corresponding man't systems (Ansoff, 1984)	

Rate and scale of change	Slow and incremental	Fast, predictable and incremental	Turbulent and discontinuous	Disruptive and transformational
Dominant Means of Production	Infrastructure owned by the organisation	Infrastructure and IP owned by the organisation.	IP owned by the organisation supported by the knowledge-worker	Knowledge and network connections owned by the net-workers
Competitive Forces	Unclear mix of all factors dominated by costs	Focus and differentiation	Value propositions	Being unique in different ways
Nature of Work	Manual work	Manual work supported by knowledge work	Knowledge work supported by manual work	Net-work supported by knowledge and manual work
Organizing principle	Autocracy	Bureaucracy	Adhocracy	Netocracy
Organisational Power	Few powerful individuals	Organisational structure	Processes, process owners and process teams	Individuals/small groups in multiple networks
People	Labour-force seen as necessary evil	Human resources seen as assets	Teams assets and investment	Individuals and autopoietic teams as innovators and heuristics
Regulatory system	Contracts, laws and regulations	Contracts, laws, regulations and industry standards	Contracts, laws, regulations, industry standards and accepted best practices	Trust, relationships and network standards
Organisational Relationships	Inter-organisational and Adversarial	Inter-organisational and Cooperative	Inter / trans organisational and Collaborative	Trans organisational, communities of practice
Market dominance	Producer	Cost-conscious customer	Value-conscious, loyal customer	Disloyal, picky, curious, impulse-customer

Figure 2. Development of the performance measurement literature and global trends.

Collaborative organisations and performance measurement

It is now widely accepted that inter-organisational collaborations, by breaking down traditional organisational boundaries, allow intellectual property, ideas and people to flow freely between organisations, promoting increased levels of innovation whilst reducing risks (Hansen and Birkinshaw, 2007; Chesbrough and Garman, 2009). According to Pisano and Verganti (2008) the question regarding collaboration is no longer about whether to collaborate, rather it is about the need to understand and choose the suitable collaboration options.

The literature on performance measurement recognises the trends towards inter-organisational working and regularly calls for research into performance measurement in supply chains and collaborative organisations. This covers issues such as: inter-organisational agreement on performance measurement; managing the entire supply chain beyond the single dyadic relationship; green supply chain management and green performance measurement; product stewardship, design for life cycle along the supply chain and so on (Beamon, 1999b; Brewer and Speh, 2001; Folan and Browne 2005; Li *et al*., 2005). There is evidence in the literature of some progress towards these issues. However, most of the research presented is either theoretical in nature or based on simple supply chain case studies.

Furthermore, the performance measurement literature on inter-organisational collaboration identifies an additional degree of complexity that is associated with collaborative organisations (Bititci *et al*., 2005; Folan and Browne, 2005; Busi and Bititci, 2006). In short, it is claimed that the collaborative organisation represents a

virtual organisation that is additional to the organisations that are participating in the collaborative enterprise. That is, the collaboration between three separate organisations by its very nature creates a fourth enterprise that needs to be managed separately. Although this point is made quite succinctly by a number of authors, there is very little grounded empirical research that explores the performance measurement and management related issues in such collaborative organisations. As yet, we do not truly understand the performance measurement and management challenges, theoretical and practical, associated with such a system of collaborative enterprises, where the act of collaboration creates an additional dimension of complexity. Here the key question is:

- How do we concurrently manage the performance of the collaborative organisation whilst also managing the performance of the participating organisations as a complete system?

Networks and performance measurement

Today, thinking has already moved from simple collaborative organisations involving few partners to complex networks of organisations, working together to create competitive advantage and value, i.e. value networks involving a combination of highly specialised large and small organisations collaborating around the world (cf Handy 2002a, 2002b; Senge *et al*., 1999; Wenger, 1999; Wenger and Snyder, 2000; Davenport and Prusak, 2003). It is predicted that in the 21st century, these complex networks will create value for markets and customers at a rate and speed never seen before. According to Bard and Söderqvist (2002), the organizing principle is fast moving towards netocracy with flexible, flat and ever emerging trans-organisational networks. It is

expected that these networks will be autopoietic[1] in nature (cf Maturana and Varela, 1979, 1998). Consequently, we expect development of networks that criss-cross organisational boundaries shifting from inter- to trans-organisational networks. We are already experiencing networking where organisations, small and large, and even individuals, are forming and reforming global collaborative networks to deliver innovative value propositions to global markets and customers. Working in this fashion, these collaborative networks are able to compete with, and indeed threaten, the dominance of large corporations (e.g. Linux vs. Microsoft).

We would propose that, as we evolve from simple collaborative relationships between a small number of enterprises towards autopoietic networks, the importance of performance measurement as we know it today will diminish and be replaced with a form of performance evaluation within the network. Today, performance measurement is based around business structures, units, processes and workflows measuring efficiency and effectiveness of actions using variables such as cost, quality and time. For example, all of the performance measurement frameworks identified earlier in the paper (such as SMART, IPMS, BSC, Performance Prism and so on) are focused on performance measurement in a single organisation and rely on defined business structures and processes. Similarly, other inter-organisational performance measurement frameworks (Gunasekaran *et al.* 2001; 2004; Angerhofer and Angelides, 2006; etc) focus on extended processes and attempt to measure the effectiveness and efficiency of inter-organisational actions and workflows (Lehtinen and Ahola, 2010). Although Marr and Neely (2001) carried out an empirical study to explore the organisational performance measurement in the emerging digital age, their study was limited to single

[1] the notion of autopoiesis, meaning self-making, goes beyond the concept of self-regulation and also includes the idea that such systems define their own boundaries

organisations, including bricks-and-mortars, clicks-and-mortars and dot.coms. In fact, Holmberg (2000) wrote that most organizations are unable or unwilling to measure and manage performance collaboratively with partners. According to the literature on networking, performance of an organisation or individual will be judged by the network/community they belong to, according to their contribution, where factors such as trust, relationship and ingenuity will become important dimensions of performance evaluation. Whilst health-check, communicate, compel progress and comply with non-negotiables will still be valid objectives for performance measurement (Neely *et al*. 2000), the context will be different. It is likely that performance will propagate through networks in ways unknown earlier, creating synergies at some nodes (interfaces) and/or destroying existing synergies at others. Today's frameworks and models for performance measurement may not be able to deal with this level of complexity and dynamism. Thus, the research challenges we identified here include:

- Do we need performance measures to manage autopoietic networks?
- Are the current performance measurement concepts (productivity, control, etc.), frameworks and techniques appropriate or adequate for these autopoietic networks?
- What will be the interplay between network politics and performance measurement?
- How would power relationships effect how performance is evaluated in a network?
- Are there different network types with different measurement needs?
- How can performance be planned in trans-organisational, autopoietic networks?

Turbulent operating environment and performance measurement

It seems that as the maturity of our understanding in the field of performance measurement grew, our concern shifted from measurement towards how to make best

use of these measures to manage the performance of the organisation (Lebas, 1995; Bititci *et al*., 1997; Adair, 2003). This development was driven from two related sources. Firstly, the recognition of the turbulent nature of the organisations' operating environment that led to the need to understand how performance measurement systems can be used and how they could adapt to the changing operating environment. Secondly, as the availability of the empirical data on the use of performance measurement systems became available, a number of factors relating to implementation and use of measurement systems started to emerge. These included organisational, people, behavioural and cultural factors. Although many authors recognise and confirm the interplay between success and failure of performance measurement initiatives and the organisational culture, to date there is little longitudinal empirical data that makes these dependencies explicit. Indeed, there is need for longitudinal studies that explore and explain the evolution of performance measurement systems within organisations as well as in collaborative networks. The pertinent questions are:

- How do performance measurement systems evolve in response to changes in the organisations inner and outer operating environment?
- How does network-based performance measurement systems evolve in response to changes in networks inner and outer operating environment?

Culture, networks and performance measurement

Continuing on the theme of the interplay between an organisation and its dynamic environment, the commonly held belief that organisations managed through measures perform better is now being challenged (Johnson and Broms, 2000; Bititci *et al.*, 2007; Seddon, 2008; Sobotka and Platts, 2010). However, it is also contested that in certain

circumstances performance measurement and management may be counterproductive to performance. It is thought that the culture of the organisation and the nature of the work that is being conducted, although not mutually exclusive, have an impact on how performance should be measured and managed, if at all. There appears to be a need for better understanding of the interplay between organisational culture and performance measurement. Here the particular questions are:

- When to use performance measures and when not to?
- How to use performance measures and how not to?

Building upon the previous themes, as the level of globalisation deepens, organisations and individuals are likely to be networking across multiple and diverse national and organisational cultures. Above, we have already identified separate research challenges with respect to inter-firm collaboration, networking, dynamic organisational environment, organisational culture and performance measurement. The notion of multi-cultural collaborations or multi-cultural networks raises a new set of compounded research challenges that need to be pursued. The challenge here is:

- How would performance measurement and management practices need to change to be effective in multicultural collaborations and networks?

Open innovation and performance measurement

The literature clearly recognises the importance of R&D, innovation, management of knowledge and intellectual property to future competitiveness of an organisation. Adams *et al* (2006) suggest that measurement and benchmarking, although difficult, are vital for driving continuous innovation and creativity. Today, the measurement of

innovation and creativity remains a current research challenge that is widely discussed. However, open innovation is identified as an emerging model for promoting access to the end-product's source materials (Raymond, 2001; Berry, 2004; Ulhøi, 2004). It is argued that opening the source enables a self-enhancing diversity of production routes, communication paths and interactive communities to emerge. In contrast with more centralized models of innovation, the main principle of open innovation is peer production and collaboration, with the end-product and source-material available to anyone, sometimes at no cost. This is increasingly being applied in fields such as software and biotechnology (Menon, 2009).

However, the majority of the performance measurement research relating to innovation seems to focus on traditional centralised structures (Adams, 2006) with little attention on how to measure knowledge and intellectual property in this completely new and unfamiliar territory. The literature makes it clear that, in order to operate in this open environment, we would be increasingly relying on trust and relationships rather than protection of formal contracts, laws and regulations. Here the pertinent questions are:

- Do we need to measure and manage innovation and knowledge in an open environment?
- Would performance-evaluation rather than performance measurement, provide an adequate indication of trust?

Servitization and performance measurement

The servitization movement has been fuelled from the need for creating new value through provision of services to complement traditional products (Vargo and Lusch

2004; Lovelock and Gummesson, 2004; Neely 2007; White *et al*., 2009). The main tenet that underpins the notion of servitization is the shift from value-in-exchange towards value-in-use (Woodruff 1997; Ng and Nudurupati 2010). This suggests that regardless of whether the value to the customer is delivered through products or services, the value chain should be viewed from the customer's perspective, i.e. how the customer uses the product and/or service throughout its life (Vargo and Lusch, 1994; Wise and Baumgartner, 1999). This transition from product-dominant thinking to service-dominant thinking is challenging both researchers and practitioners, requiring fresh and innovative thinking as to how organisations need to be configured, measured and managed (Ng and Nudurupati, 2010). According to Ostrom *et al*. (2010), performance measurement should transform the business strategy and service design to deliver value-in-use. Today, the majority of customer-facing measures, such as on-time delivery, flexibility, responsiveness, accuracy of documentation and even customer satisfaction, tend to focus on value-in-exchange rather than value-in-use-through-life. The questions here are:

- How the current performance measurement systems should change to measure value-in-use-through-life?
- Whether the notion of performance-evaluation (as introduced earlier in the paper), rather than measurement would be a viable alternative?
- If so, how would organisations motivate their customers to evaluate their products and services through-life?

Knowledge-work and performance measurement

The traditional performance measurement theory stipulates that performance measures for the organisation, processes, teams and individuals need to be integrated and aligned, where the performance measures for teams and individuals are used for reward and recognition purposes (Sink, 1986; Dixon *et al*., 1990; Goold, 1991; Lynch and Cross, 1991; Kaplan and Norton, 1992, 1996; Neely *et al*., 1994; Atkinson and Waterhouse, 1997; Keegan *et al*. 1989; Bourne *et al*. 2000; McAdam and Bailie, 2002). However, this notion of alignment seems to conflict with the emerging networked, open-innovation environment where the knowledge workers within networks dominate the economics of production (Wenger, 1999; Wenger and Snyder, 2000 Berry 2004; Ulhøi, 2004). According to Hilton (2008), in the future the nature of work will be affected by the globalization of science and technology and the knowledge workers will require a greater complexity of skills. Hilton (2008) suggests that the core of the emerging knowledge economy is based on the indistinct boundaries between knowledge and service work (fuelled through servitization), which is creating new knowledge-based occupations combining products, services and technology. Moreover, there is also a growing consensus that the performance of a knowledge worker cannot be effectively measured or managed (Johnson and Broms, 2000; Bititci *et al*., 2007; Seddon, 2008; Sobotka and Platts, 2010).

In the context of networking, where the community of practice evaluates a member's performance, it is not clear how this performance will be measured or rewarded. The open-innovation environment creates similar challenges where it is not clear who the

creator or owner of new knowledge may be. This line of thinking has led us to ask the following questions:

- How can we measure performance of knowledge workers that operate within an autopoietic network? Indeed, do we even need to?
- How would the network evaluate its members' performance?
- How do we manage reward and recognition in an autopoietic network or in an open-innovation environment?

SMEs and performance measurement

The literature on performance measurement in SMEs seems to accept the fact that the take-up of performance measurement practices amongst SMEs is likely to remain low due to contextual differences of SMEs (Cook and Wolverton, 1995; Garengo *et al*., 2005; Hudson-Smith and Smith, 2007; Wiesner *et al*. 2007; Garengo, 2009). However, other literature suggests that for economic sustainability, SMEs are increasingly playing a key role as engines of economic growth in industrialised world economies (Ruigrok and Tate, 1996; Dutta and Evrard, 1999; DeVries and Margaret, 2003; Van Gils, 2005; Mikhailitchenko and Lundstrom, 2006). It is estimated that in the European Union SMEs account for 75% of GDP[2]. Worldwide, they account for 70% of the world's production (Moore and Manring, 2009). Furthermore, it is thought that SMEs will play a key role on globalization and make significant contributions to the economy at a time of crisis (Herbane, 2010). Prashantham and Birkinshaw (2008) point out that, on one hand, in some industries small local businesses have a level of agility, market knowledge and innovative capabilities that allow them to prosper in the shadow of the

[2] http://ec.europa.eu/enterprise/sme/index_en.htm

large multinational corporations. On the other hand, they are capable of operating globally through partnerships, which they can leverage to generate opportunities on a global scale.

It seems that in the future SMEs will play an important role in economic development and indeed innovation. In this context, they are expected to work and thrive within globalised autopoietic networks, working across multiple cultures, contributing to and benefiting from the emerging open-innovation environment. However, our current state of knowledge with respect to performance measurement in SMEs seems to be limited to study of SMEs from more traditional performance measurement perspectives. As yet, there is little evidence of theoretical or empirical research into how the contextual differences of SMEs may advantage or disadvantage SMEs. The key questions are:

- Whether SMEs need to adopt traditional performance measurement practices in open-innovation driven global networks or would their inherent characteristics allow them to operate more effectively in this emerging environment using different or indeed no performance measurement?
- What would be the performance measurement challenges for SMEs be in the emerging context?
- Would these new challenges compound the current difficulties SMEs have with performance measurement or would their characteristics and the emerging operating environment alleviate some of their current challenges?

Global sustainability and performance measurement

The emergence of sustainability and the need for sustainable development as a global challenge is recognised by everyone. The notion of sustainability encompasses global challenges such as energy, pollution, food-supply, overpopulation, the built environment and transport, to mention a few. According to Nidumolu *et al*. (2009), in the future only companies that make sustainability a goal will achieve competitive advantage. They suggest that sustainability presents an opportunity towards improving performance and gaining competitive advantage by making sustainability a touchstone for rethinking business models, as well as products, technologies, and processes.

The literature on performance measurement and sustainable development recognises the need for performance measurement systems to incorporate dimensions of sustainability, and proposes models for integrating sustainability measures along the supply chains and value chains (Ditz and Ranganathan, 1997; Epstein and Roy, 1998; Elkington, 1999; Sarkis, 2003; Andersen and Fagerhaug, 2004; Hervani *et al*., 2005; Liu and He, 2005; Xie and Hayase, 2006; Tsai and Hung, 2009). However, in tackling this area, this body of literature takes an isolated view of performance measurement and sustainability without sufficient recognition of the challenges performance measurement faces as discussed so far. We would argue that in the future the sustainability agenda needs to be explored as part of the whole rather than as standalone, exclusive, and an independent performance measurement system within the organisation or the value chain. The challenge here is:

- How to take an integrated systems view to performance measurement in general, whilst ensuring that the sustainability agenda is explored in sufficient depth and breadth?

Indeed, this is true for many areas we have covered in our review, which we discuss later in the paper.

Information technologies for performance measurement

In conducting this review and engaging in the dialogue that followed, our intention was not to engage in a detailed discussion on information technologies and systems that are used to support performance measurement systems. However, today many performance measurement and management practices are supported by information technology platforms specifically designed and developed in the way we currently think performance should be measured and managed. Although we did not include the specific software platforms in our review, they all attempt to provide support to make performance measurement and management practices more efficient and effective. In fact there is some evidence that performance measurement systems without information technology support are likely to be short-lived (Bourne *et al*. 2000; Marr and Neely, 2002; Kennerley and Neely, 2003; Nudurupati and Bititci, 2005). Many of the information technology platforms that are available to support performance measurement and management practices are either standalone applications (such as pbViews, PerformancePlus, etc.), or they are integrated within major Enterprise applications such as SAP, Oracle, MS Dynamics and so on. Consequently, their focus is very much performance measurement and management in a single enterprise with some

support towards sharing performance information with external parties, such as customers and suppliers.

Based on the discussion we presented above, we believe that the questions and challenges posed require a complete rethink of how we measure and manage performance of organisations in the future. Thus, it is highly likely that the current information and communication technology (ICT) platforms would be inadequate to support our future performance measurement and management needs. Here the questions are:

- Are current ICT platforms capable of supporting our future performance measurement and management needs? If not, how should they be designed, developed and configured?
- What will the forthcoming information technologies enable the organisations to do that we cannot even imagine today?
- Will information technology be a barrier or will it be an enabler that offers us new ways of performance measurement and management?

Towards a Holistic Research Framework for Performance Measurement

It seems that as we move deeper into the 21st century and as the forces of globalisation change the face of the economic landscape, organisations, small and large, will need to evolve their operating models and working practices in order to adapt to, and possibly innovate, new ways of working. From a performance measurement perspective this represents a number of theoretical and practical challenges, as discussed in the previous section. In the first instance, it appears that the research community is aware of these

research challenges. However, our review also suggests that the community is aware of these challenges as discreet areas of research, but pays little attention to the complexity and additional challenges associated with an integrated holistic view of these discreet areas of research. For example, there are theoretical works that address performance measurement in collaborative organisations, there is an awareness of the need to understand performance measurement in networks and there are various theoretical and empirical works that explore performance measurement challenges in SMEs. However, there is little or no awareness of performance measurement implications of SMEs working and collaborating in multicultural, open-innovation driven, autopoietic networks. Similarly, there is no recognition of the complexities associated with integrating sustainability-based measures across an industrial network where performance measurement may have been replaced with performance evaluation.

In addition, even from a narrow and discreet perspective, some areas present specific research challenges. For instance, with respect to performance measurement in collaborative organisations, we seem to be aware of the research challenges and there appears to be some theoretical works that propose how performance could be measured and managed in collaborative enterprises. However, there is little or no empirical research to further strengthen our understanding in this area. Similarly, although we may be aware of the performance measurement challenges in autopoietic networks, there are no theoretical or empirical works that attempt to address this area.

It seems that the current trends, such as globalisation, increase in multicultural collaboration, the emergence of autopoietic networks, servitization, the open-innovation movement, the increasing value of knowledge-workers and SMEs, is going to change

the way we measure, manage and evaluate performance of organisations and individuals in the future.

The fact that the new context is rapidly emerging, and we have little or no reference points upon which we can base our research, represents an additional research challenge. On one hand, from a deductive perspective it is difficult to judge whether existing assumptions and theories remain relevant or how they should be modified or extended, as there are very few practical cases that could be used to test them. On the other hand, from an inductive perspective, lack of easily accessible cases also limits our ability to develop a grounded understanding of these research challenges. In the authors' collective experience, it is much simpler to conduct research in a single organisation or in a limited number of collaborating organisations. However, conducting empirical research in an autopoietic network represents another challenge. Perhaps the researchers would need to embed themselves into such networks in order to conduct the research.

In order to address the challenges posed above, it may be appropriate to conduct research in existing networks or communities of practice with different profiles. For example, on-line market places, such as EBay.com or AliBaba.com, may be considered a network or a community of practice that continually evaluates its members' performance. Similarly, there are several academic networks where a member's performance is informally evaluated according to the contribution they make, as well as the network they belong to. Organisations or networks such as Linux and Mozilla are the architects of the open-innovation movement. Studies comparing performance measurement and management practices of on-line and academic communities that

either formally or informally peer-evaluate each member's performance may yield some insights towards addressing the research challenges posed in this paper.

Synthesising a research framework

Finally, it is evident that the fundamental purpose behind performance measurement may be changing, with a diminishing emphasis on control and increasing emphasis on learning (Johnson and Broms, 2000; Davenport and Harris, 2007; Davenport *et al*., 2010). Particularly in the context of autopoietic networks the behaviour of organisations are being influenced through social interaction and relationships through peer-evaluation rather than bureaucratic processes. Consequently, one could argue that performance measurement is evolving from rational control towards cultural control (Tannenbaum, 1968; Child, 1973; 1972). Although the performance measurement literature already recognises the dyadic relationship between performance measurement and organisational behaviour, it is becoming increasingly apparent that performance measurement is a social phenomenon where behaviours (organisational and individual) are shaped by the values and perceptions of the individuals and the communities within which the individual operates.

Ostensibly, because from its origins performance measurement has been associated with accounting and operations management disciplines, it has been more closely relating to a positivistic epistemology where emphasis has been on the creation of rational early warning control systems based on leading indicators. However, the discussion above suggests that future research needs to adopt a more interpretive approach towards understanding performance measurement as an integrated social system, holistically, within the ever emerging context. Perhaps peer evaluation, network engagement,

innovation and knowledge indicators will provide the early warning systems for the future performance measurement systems.

Based on the review presented in this paper, our view is that there are three grand challenges the performance measurement research community needs to address in an integrated manner. These are:

- Understanding performance measurement as a social system
- Understanding performance measurement as a learning system
- Understanding performance measurement in autopoietic networks

However, we believe that the real challenge lies in the development of an integrated and holistic understanding of performance measurement, ***i.e. performance measurement as a social system that enables learning in autopoietic networks.*** In Figure 3 we have attempted to synthesize our conclusion in the context of individual research challenges identified earlier in this section.

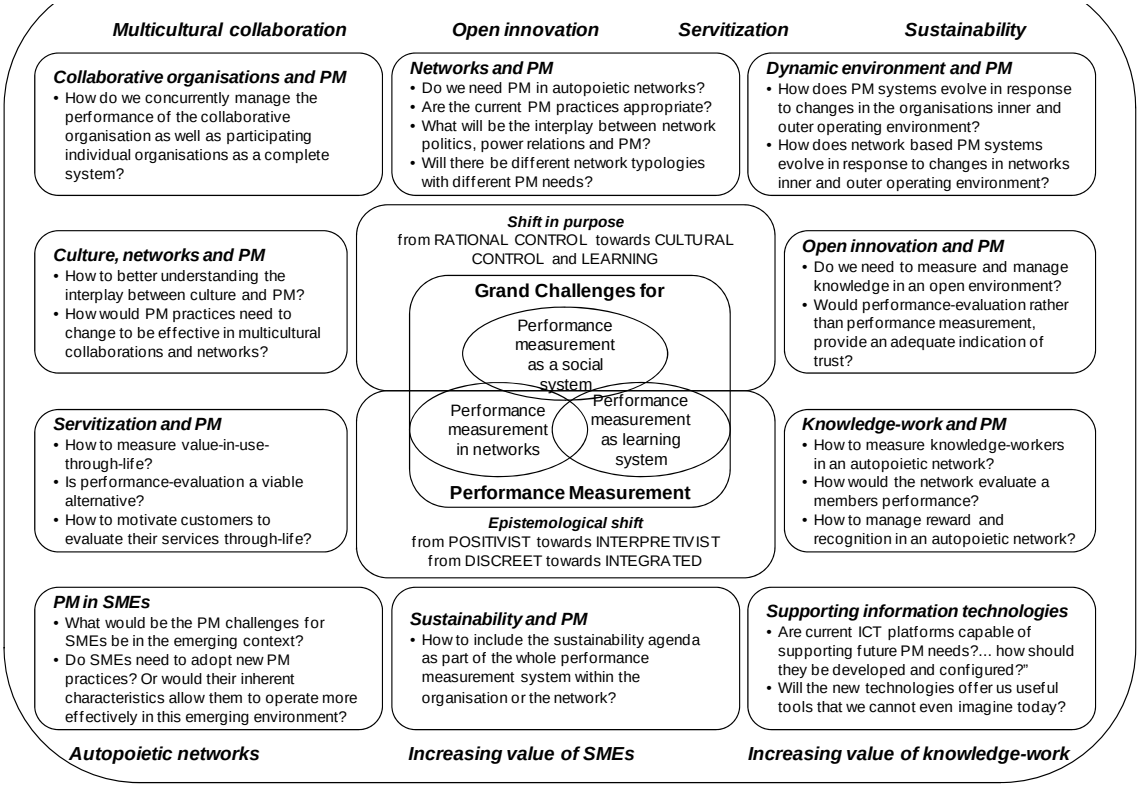


Figure 3. A holistic research framework for performance measurement.

Conclusions

Having reviewed and tackled the evolution of the performance measurement field in the context of global and business trends, we can conclude that in general the performance measurement field seems to have developed in response to global and business trends. The researchers studied and described issues faced in practice and studied practitioners' responses to these issues leading to better understanding and explanation of the causal relationships. This improved understanding led to the development of frameworks and models that were adopted and implemented in practice, in effect testing these models and frameworks that in turn led to identification of further issues, and so Meredith's (1993) Description-Explanation-Implementation-Testing cycle continues.

In conducting this review, we have also identified some new but rapidly emerging trends that are likely to present practical and theoretical challenges for performance measurement. Although the review of performance management literature identified several research agendas, they were largely dealing with contemporary issues, which are valid in their own right, but fail to develop a holistic, integrated and forward-looking view of the challenges for performance measurement. Through this paper, we have predicted and identified performance measurement challenges of the future, thus presenting the community with an opportunity for developing proactive research programmes in anticipation of these challenges.

The principle limitation of the paper is that it covers a broad base, reviewing and discussing literature from different aspects of performance measurement without necessarily exploring the intricacies of each area in any significant depth. However, we believe that this weakness is also the strength of this paper. In undertaking this broad literature review and discussing its findings, we have identified a number of research challenges. Still ***what is perhaps more significant is that there is a need for rethinking our approach to how we research the field of performance measurement.*** Indeed, there is a need for research that takes a holistic systems-based approach recognising the integrated nature of challenges the field faces whilst focusing on a specific challenge. As researchers we may be motivated towards focusing and understanding a single phenomenon within this complex system. However, the practitioners have to live and deal with all this complexity and phenomenon concurrently. ***Thus, the opportunity for rethinking and reshaping how we research performance measurement in the future.***

REFERENCES

Acar, Y., Kadipasaoglu, S. and Schipperijn P. (2010). A decision support framework for global supply chain modelling: an assessment of the impact of demand, supply and lead-time uncertainties on performance. *International Journal of Production Research*, **48**, pp. 3245-3268

Adair, C.E., Simpson, L., Birdsell, J.M., Omelchuk, K., Casebeer, A.L., Gardiner, H.P., Newman, S., Beckie, A., Clelland, S., Hayden, K. A. and Beausejour, P. (2003). *Performance measurement systems in health and mental health services: models, practices and effectiveness*. Edmonton, CA: The Alberta Heritage Foundation for Medical Research.

Adams, R., Bessant, J. and Phelps, R. (2006). Innovation management measurement: A review. *International Journal of Management Reviews*, **8**, pp. 21-47.

Andersen, B. and Fagerhaug, T. (2004). Green performance measurement. *International Journal of Business Performance Management,* **1**, pp. 171-185.

Angerhofer, B.J. and Angelides, M.C. (2006). A model and a performance measurement system for collaborative supply chains. *Decision Support Systems*, **42**, pp. 283-301.

Ansoff, I.H. (1984). *Implanting Strategic Management*, Englewood Cliffs, N.J.:Prentice Hall.

Atkinson, A. and Waterhouse, J. H. (1997). A Stakeholder approach to strategic performance measurement. *Sloan Management Review*, **38**, pp. 25-37.

Bacal, R. (1999). *Performance Management*. New York, NY: McGraw-Hill.

Baker S.L., Beitsch, L., Landrum, L.B., Rebecca, H. (2007). The role of performance management and quality improvement in a national voluntary public health

accreditation system. *Journal of Public Health Management and Practice,* **13**, pp. 427-429.

Baker, G. (2000). The use of performance measures in incentive contracting. *The American Economic Review,* **90**, pp. 415-420.

Banuelas, R., Tennant, C., Tuersley, I. and Tang, S. (2006). Selection of six sigma projects in the UK. *The TQM Magazine,* **18**, pp. 514-527.

Bard, A. and Soderqvist, J. (2002). *Netocracy: The new power elite and life after capitalism*. London: Reuters.

Beamon, B.M. (1999a). Measuring supply chain Performance. *International Journal of Operations and Production Management*, **19**, 275-292.

Beamon, B.M. (1999b). Designing the green supply chain. *Logistics Information Management,* **12**, pp. 332-342.

Berry, D.M. (2004). Internet research: privacy, ethics and alienation: an open source approach. *Internet Research,* **14**, pp. 323-332.

Bititci, U., Turner, T., Mackay, D., Kearney, D., Parung, J. and Walters, D. (2007). Managing synergy in collaborative enterprises. *Production Planning & Control*, **18**, pp. 454–465.

Bititci, U.S. and Carrie, A.S. (1998). *Integrated performance measurement systems: Structures and relationships*. EPSRC Final Research Report, Grant GR/K 48174, Swindon UK.

Bititci, U.S., Carrie, A.S. and McDevitt, L. (1997). Integrated performance measurement systems: a development guide. *International Journal of Operations and Production Management,* **17**, pp. 522-534.

Bititci, U.S., Mendibil, K., Albores, P. and Martinez, M. (2005). Measuring and managing performance in collaborative enterprises. *International Journal of Operations and Production Management,* **25**, pp. 333-353.

Bititci, U.S., Mendibil, K., Nudurupati, S., Turner, T. and Garengo, P. (2006). Dynamics of Performance measurement and organizational culture. *International Journal of Operations and Production Management*, **26**, pp. 1325-1350.

Blackler, F. and Brown, C. (1987). *Information technology and people: designing for the future*. Leicester, UK: The British Psychology Society.

Bourne, M. (2001). *The handbook of performance measurement*. London: Gee Publishing.

Bourne, M. and Neely, A. (2000). Why performance measurement interventions succeed and fail. *Proceedings of the 2nd International Conference on Performance Measurement,* Cambridge, pp. 165-173.

Bourne, M., Mills J., Wilcox M., Neely, A. and Platts, K. (2000). Designing, implementing and updating performance measurement systems. *International Journal of Operations and Production Management,* **20**, pp. 754-771.

Bourne, M., Neely, A., Platts, K., Mills, J. (2002). The success and failure of performance measurement initiatives. *International Journal of Operations & Production Management,* **22**, pp. 1288-1310

Brewer, P. and Speh, T. (2001). Adapting the balanced scorecard to supply chain management. *Supply Chain Management Review,* **5**, pp. 48-56.

Brouthers, K. Andriessen, F. and Nicolaes, I. (1998). Driving blind: strategic decision-making in small companies. *Long Range Planning*, **31**, pp. 130-138.

Burns, P. and Dewhurst, J. (1996). *Small business and entrepreneurship.* London: Macmillan.

Busi, M. and Bititci, U.S. (2006). Collaborative performance measurement: a state of the art and future research. *International Journal of Performance and Productivity Management,* **55**, pp. 7-25.

Cairns, B., Harris, M., Hutchison, R. and Tricker, M. (2005). Improving performance? The adoption and implementation of quality systems in UK nonprofits. *Nonprofit, Management and Leadership*, **16**, pp. 135-151.

Chan, F.T.S. and Qi, H.J. (2003). An innovative performance measurement method for supply chain management. *Supply Chain Management: An International Journal,* **8**, pp. 209-223.

Chandler, A.D., (1977). The Visible Hand, Harvard University Press, Cambridge Mass., USA.

Chang H.H., Wang, H.W. and Kao, T.W. (2010). The determinants of long-term relationship on inter-organizational systems performance. *Journal of Business and Industrial Marketing*, **25**, pp. 106-118.

Chen, M.C., Yang, T. and Li. H.C. (2007). Evaluating the supply chain performance of IT-based inter-enterprise collaboration. *Information and Management*, **44**, pp. 524-534.

Chenhall, R.H. (2003). Management control systems design within its organizational context: findings from contingency-based research and directions for the future. *Accounting, Organizations and Society*, **28**, pp. 127-168.

Chesbrough, H.W. and Garman, A.R. (2009). How open innovation can help you cope in lean times. *Harvard Business Review*, **87**, pp. 68-76.

Child, J. (1972). Organization Structure and Strategies of Control: A Replication of the Aston Study. *Administrative Science Quarterly*, June 1972, pp. 163-177.

Child, J. (1973). Strategies of Control and Organizational Behavior. *Administrative Science Quarterly*, March 1973, pp. 1-17.

Chiesa, V. and Frattini, F. (2007). Exploring the differences in performance measurement between research and development: evidence from a multiple case study. *R&D Management*, **37**, pp. 283-301.

Chiesa, V., Frattini, F., Lazzarotti, V. and Manzini, R. (2009). Performance measurement in RandD: exploring the interplay between measurement objectives, dimensions of performance and contextual factors. *R&D Management*, **39**, pp. 488-518.

Cicek, M. C. Koksal, G. and Oxdemirel, N.E. (2005). A team performance measurement model for continuous improvement. *Total Quality Management and Business Excellence*, **16**, pp. 331-349.

Cook, R.A. and Wolverton, J.B. (1995). A scorecard for small business performance. *Journal of Small Business Strategy*, **6**, pp. 1-18.

Corona, C. (2009). Dynamic performance measurement with intangible assets. *Review of Accounting Studies*, **14**, pp. 314-348.

Cross, K. F. and Lynch, R. L. (1988-1989). The SMART way to define and sustain success. *National Productivity Review*, **9**, pp. 23-33.

Davenport, T H. and Prusak, L. (2003). *What's the big idea? Creating and capitalizing on the best management thinking.* Boston, MA: Harvard Business School.

Davenport, T.H. (2006). Competing on Analytics. *Harvard Business Review*, **84**, pp. 98-107.

Davenport, T.H. and Harris, J.G. (2007). *Competing on analytics: The new science of winning.* Boston, MA: Harvard Business School Press.

Davenport, T.H., Harris, J.G. and Morison, R. (2010). *Analytics at Work: Smarter Decisions, Better Results*. Boston, MA: Harvard Business School Press.

De Toni, A.F. and Tonchia, S. (2001). Performance measurement system – Models, characteristics and measures. *International Journal of Operations and Production Management,* **21**, pp. 46-70.

De Vries, H. and Margaret, J. (2003). The development of a model to assess the strategic management capability of small and medium-size businesses. *Journal of American Academy of Business,* **3**, pp. 85-92.

Denyer, D. and Tranfield, D. (2008). Producing a systematic review. In Buchanan, D. (ed.), The *Sage Handbook of Organizational Research Methods*. London: Sage.

Ditz, D. and Ranganathan, J. (1997). *Measuring up: Toward a common framework for tracking corporate environmental performance*. Washington, DC: World Resources Institute.

Dixon, J.R., Nanni, A.J. and Vollmann, T.E. (1990). *The new performance challenge: measuring operations for world class competition*. Irwin Homewood, IL: McGraw-Hill.

Drucker, P.F. (1969). *The age of discontinuity: guidelines to our changing society.* London: Heinemann Press.

Drucker, P.F. (1994). The Theory of the Business. *Harvard Business Review*, **72**, pp. 95-104.

Drucker, P.F. (2002). *Management challenges for the 21st century,* Burlington, MA: Butterworth-Heinemann.

Dutta, S. (2009). Discussion of Dynamic performance measurement with intangible assets. *Review of Accounting Studies*, **14**, pp. 349-357.

Dutta, S. and Evrard, P. (1999). Information technology and organisation within European small enterprises. *European Management Journal*, **17**, pp. 239-251.

EFQM, (1999). *Self-assessment guidelines for companies*. Brussels: European Foundation for Quality Management.

Elkington, J. (1999). *Cannibals with forks: The triple bottom line of 21st century business*. Oxford: Capstone.

Epstein, M. and Roy, M.J. (1998). Managing corporate environmental Performance: A multinational perspective. *European Management Journal*, **16**, pp. 284-296.

Fitzgerald, L., Johnston, R., Brignall, T.J., Silvestro, R. and Voss, C. (1991). *Performance measurement in service industries*. London: CIMA.

Folan, P. and Browne, J. (2005). A review of performance measurement: Towards performance management. *Computers in Industry*, **56**, pp. 663-680.

Ford, H. (1922). *My life and work*. Garden City, NY: Doubleday, Page and Company.

Franco, M. and Bourne, M. (2003). Factors that play a role in managing through measures. *Management Decision*, **41**, pp. 698-710.

Franco-Santos, M., Kennerley, M., Micheli, P., Martinez, V., Mason, S., Marr, B., Gray, D., Neely, A. (2007). Towards a definition of a business performance measurement system. *International Journal of Operations and Production Management*, **27**, pp. 784-801.

Fuller-Love, N. (2006). Management development in small firms. *International Journal of Management Reviews*, **8**, pp. 175-190.

Garengo P. (2009). Performance Measurement System in SMEs taking part to Quality Award Programs. *Total Quality Management and Business Excellence*, **20**, pp. 91-105.

Garengo, P. and Bititci, U.S. (2007). Towards a contingency approach to performance measurement: an empirical study in Scottish SMEs. *International Journal of Operations and Production Management*, **27**, pp. 802-825.

Garengo, P., Biazzo, S. and Bititci, U.S. (2005). Performance measurement systems in SMEs: a review for a research agenda. *International Journal of Management Reviews*, **7**, pp. 25-47.

Ghobadian, A. and Gallear, D. (1997). TQM and organisation size. *International Journal of Operations and Production Management*, **17**, pp. 121-163.

Glueck, W. F., & Jauch, L. (1984) Business policy and strategic management (4th ed.). New York: McGraw-Hill.

Goldratt, E.M. and Cox, J. (1986). *The goal: A process of ongoing improvement*, New York, NY: North River Press.

Goldman, Sachs, 2009. *The BRICs Nifty 50: The EM and DM winners, Goldman Sachs Global Strategy Report*, 4 November 2009, (http://www2.goldmansachs.com/ideas/brics/nifty-50-doc.pdf) Accessed on 9 April 2010.

Goold, M. (1991). Strategic control in the decentralised firm. *Sloan Management Review*, **32**, pp. 69-81.

Goold, M. and Quinn, J.J. (1990). The paradox of strategic controls, *Strategic Management Journal*, **11**, pp. 43-57.

Greiling, D. (2006). Performance measurement: a remedy for increasing the efficiency of public services?. *International Journal of Productivity and Performance Management*, **55**, pp. 448-465.

Gunasekaran, A., Patel, C. and McGaughey, R.E. (2004). A framework for supply chain performance measurement. *International Journal of Production Economics*, **87**, pp. 333-347.

Gunasekaran, A., Patel, C. and Tirtiroglu, E. (2001). Performance measures and metrics in a supply chain environment. *International Journal of Operations and Production Management*, **21**, pp. 71-87.

Haag, S., Cummings, M. and McCubbrey, D.J. (2002). *Management information systems for the information age*. New York, NY: McGraw-Hill.

Hammer, M. (2001). *The agenda: What every business must do to dominate the decade*. London: Random House Business Books.

Hammer, M. (2007). The process audit. *Harvard Business Review*, **82**, pp. 111-123.

Handy, C. (2002a). *The age of unreason: New thinking for a new world*. London: Arrow Books.

Handy, C. (2002b). *The elephant and the flea: Reflections of a reluctant capitalist*. Boston, MA: Harvard Business School Press.

Hansen, M.T. and Birkinshaw, J. (2007). The Innovation Value Chain. *Harvard Business Review*, **85**, pp. 121-130.

Hayes, R.H. and Abernathy, W.J. (1980). Managing our way to economic decline. *Harvard Business Review*, **58**, pp. 67-77.

Hax, A. C., Majluf, N. S. (1984) Strategic management: An integrative perspective. Englewood Cliffs, NJ: Prentice-Hall.

Herbane, B. (2010). Small business research: Time for a crisis-based view. *International Small Business Journal*, **28**, pp. 43-64.

Hernandez-Espallardo, M., Rodriguez-Orejuela, A. and Sanchez-Perez, M. (2010). Inter-organizational governance, learning and performance in supply chains. *Supply Chain Management: an International Journal,* **15**, pp. 101-114.

Hervani, A.A., Helms, M.M. and Sarkis, J. (2005). Performance measurement for green supply chain management. *Benchmarking: An International Journal,* **12**, pp. 330-353.

Hilton, M. (2008). Skills for Work in the 21st Century: What Does the Research Tell Us?. *Academy of Management Perspectives*, **22**, pp. 63-78.

Hines, P. and Rich, N. (1997). The seven value stream mapping tools. *International Journal of Operations and Production Management,* **17**, pp. 46-64.

Holmberg, S. (2000). A systems perspective on supply chain measurements. *International Journal of Physical Distribution and Logistics Management,* **30**, pp. 847-868.

Hopper, T. and Powell, A. (1985). Making sense of research into the organizational and social aspects of management accounting: a review of its underlying assumptions. *Journal of Management Studies*, pp. 429-65.

Hopkins M.S. (2009). 8 Reasons Sustainability Will Change Management (That You Never Thought of). *Sloan Management Review*, **51**, pp. 27-30.

Horovitz, J. H. (1979). Strategic control: a new task for top management. *Long Range Planning*, **12**, pp. 2-7.

Hoque, Z. and James, W. (2000). Linking Balanced Scorecard measures to size and market factors: impact on organizational performance. *Journal of Management Accounting Research,* 12, pp. 1-17.

Huang, S.H., Sheoran, S.K. and Keskar, H. (2005). Computer assisted supply chain configuration based on supply chain operations reference (SCOR) model. *Computers and Industrial Engineering,* **48**, pp. 377-94.

Hudson, M., Smart, P.A. and Bourne, M. (2001). Theory and practice in SME performance measurement systems. *International Journal of Operations and Production Management,* **21**, pp. 1096-1116.

Hudson-Smith, M. and Smith, D. (2007). Implementing strategically aligned performance measurement in small firms. *International Journal of Production Economics,* **106**, pp. 393-408.

Hussein, M., Gunasekaran, A. and Laitinen, E.K. (1998). Management accounting system in Finish service firms. *Technovation,* **18**, pp. 57–67.

Ittner, C. and Larcker, D. (1998). Innovations in performance measurement: Trends and research implications. *Journal of Management Accounting Research*, **6**, pp. 205–238.

Jennings, P. and Beaver, G., (1997). The performance and competitive advantage of small firms: A management perspective. *International Small Business Journal*, **15**, pp. 63-75.

Johnson, H.T. (1981). Towards an understanding of 19th century cost accounting. *The Accounting Review,* **56**, pp. 510-518.

Johnson, H.T. and Broms, A. (2000). *Profit beyond measure: extraordinary results through attention to work and people*, Englewood Cliffs, NJ: Prentice Hall.

Johnson, H.T. and Kaplan, R.S. (1987). *Relevance lost – The rise and fall of management accounting*, Boston, MA: Harvard Business School Press.

Kanji, G. and Sá, P. (2007). Performance measurement and business excellence: the reinforcing link for the public sector. *Total Quality Management and Business Excellence,* **18**, pp. 49-56.

Kaplan, R.S. (1983). Measuring manufacturing performance: A new challenge for management accounting research. *The Accounting Review*, **18**, pp. 686-705.

Kaplan, R.S. (1984). The evolution of management accounting. *The Accounting Review,* **59**, pp. 390-418.

Kaplan, R.S. and Norton, D.P. (1992). The Balanced Scorecard – Measures that drive performance. *Harvard Business Review,* **70**, pp. 71-79.

Kaplan, R.S. and Norton, D.P. (1996). *Translating strategy into action: The balanced scorecard*. Boston, MA: Harvard Business School Press.

Kaplan, R.S. and Norton, D.P. (1996a). *The Balanced Scorecard*. Boston, MA: The Harvard University Press.

Kaplan, R.S. and Norton, D.P. (2001). *The strategy-focused organization: How balanced scorecard companies thrive in the new business environment*. Boston, MA: Harvard Business School Press.

Keegan, D.P., Eiler, R.G. and Jones, C.R. (1989). Are your performance measures obsolete? *Management Accounting,* **70**, pp. 45-50.

Kennerley, M. and Neely, A. 2003. Measuring performance in changing business environment. *International Journal of Operations and Production Management,* **23**, pp. 213-229.

Kleijnen, J.P.C. and Smits, M.T. (2003). Performance metrics in supply chain management. *Journal of the Operational Research Society*, 54, pp. 507–514.

Kroes, J.R. and Ghosh, S. (2010). Outsourcing congruence with competitive priorities: Impact on supply chain and firm performance. *Journal of Operations Management,* **28**, pp. 124-143.

Langfield-Smith, K. (1997). Management control systems and strategy: A critical review. *Accounting, Organizations and Society*, **22**, pp. 207-232.

Lawler, E.E., III. (2003). Reward practices and performance management system effectiveness. *Organizational Dynamics,* **32**, pp. 396-404.

Lebas, M. (1995). Performance measurement and management. *International Journal of Production Economics*, **41**, pp. 23-35.

Lehtinen, J. and Ahola, T. (2010). Is performance measurement suitable for an extended enterprise?. *International Journal of Operations & Production Management*, **30**, pp. 181-204.

Li, S., Rao, S., Ragu-Nathan, T.S. and Ragu-Nathan, B. (2005). Development and validation of a measurement instrument for studying supply chain management practices. *Journal of Operations Management,* **23**, pp. 618-641.

Liu, Y. and He, M. (2005). Design of “green grade” rating system for the environmental performance assessment of a firm. *International Journal of Management and Enterprise Development.* **2**, pp. 183-203.

Lockamy, A. and McCormack, K. (2004). Linking SCOR planning practices to supply chain performance: An exploratory study. *International Journal of Operations and Production Management,* **24**, pp. 1192-1218.

Lovelock, C. and Gummesson, E., (2004). Wither service marketing? In search of new paradigm and fresh perspectives. *Journal of Service Research,* **47***,* pp. 9-20.

Lubin, D.A. and Esty, D.C. (2010). The Sustainability Imperative. *Harvard Business Review,* **88**, pp. 42-50.

Lynch, D.R., Cloutier, E. and Bertolino, S. (2003). How to scope DMAIC projects. *Quality progress,* **36**, pp. 37-41.

Lynch, R. and Cross, K. (1991). *Measure up! Yardsticks for continuous improvement*. Cambridge, MA: Blackwell Publishers.

Macpherson, A. and Jones, O. (2010). Editorial: Strategies for the Development of International Journal of Management Reviews. *International Journal of Management Reviews*, **282**, pp. 107-113

Marchand D., Davenport T. and Dickson T. (2000a). *Mastering information management,* London: Prentice Hall.

Marr, B. and Neely, A. (2001). Organisational performance measurement in the emerging digital age. *International Journal of Business Performance Management,* **3**, pp. 191-215.

Marr, B. and Neely, A. (2002). Software for measuring performance. In M., Bourne (Ed.), *Handbook of Performance Measurement*, London: Gee Publications.

Maturana, H.R. and Varela, F.J. (1979). *Autopoiesis and cognition: The realization of the living.* Dordrecht, Netherlands: Kluwer Academic Publishers.

Maturana, H.R. and Varela, F.J. (1998). *The tree of knowledge: The biological roots of human Understanding,* Boston, MA: Shambhala.

McAdam, R. (2000). Quality models in an SME context. *International Journal of Quality and Reliability Management,* **17**, pp. 305-323.

McAdam, R. and Bailie, B. (2002). Business performance measure and alignment impact on strategy - The role of business improvement models. *International Journal of Operations and Production Management,* **22,** pp. 972-966.

Meekings, A. (1995). Unlocking the potential of performance measurement: A practical implementation guide, *Public Money and Management,* **15**, pp. 5-12.

Mendibil, K. and Macbryde, J. (2005). Designing effective team-based performance measurement systems: an integrated approach, *Production Planning and Control,* **16**, pp. 208-225.

Menon, S, (2009). Researchers sans borders: Science 2.0 is here as CSIR resorts to open source drug research for TB, *Business Standard* (New Delhi), 1 March 2009.

Meredith, J. (1993). Theory building through conceptual methods. *International Journal of Operations and Production Management,* **13**, pp. 3-11.

Meyer, H.H., Kay, E. and French, J.R.P. (1995). Split roles in performance appraisal. *Harvard Business Review,* **43**, pp. 123-129.

Micheli, P. and Kennerly, M. (2005). Performance measurement frameworks in public and non-profit sectors. *Production Planning and Control,* **16**, pp. 125-134.

Mikhailitchenko, A. and Lundstrom, W.J. (2006). Inter-organizational relationship strategies and management styles in SMEs - The US-China-Russia study. *Leadership and Organization Development Journal,* **27**, pp. 428-448.

Mintzberg, H. (1983). *Structure in fives: designing effective organizations.* Englewood Cliffs, NJ: Prentice Hall.

Mintzberg, H. (1994a). The fall and rise of strategic planning. *Harvard Business Review,* **72**, pp. 107-114.

Mintzberg, H. (1994b). *The rise and fall of strategic planning,* London: FT Prentice Hall.

Mintzberg, H. (1998). *Strategy safari: The complete guide through the wilds of strategic management,* London: FT Prentice Hall.

Molina-Azorín, J.F., Tarí, J.J., Claver-Cortés, E. and López-Gamero, M.D. (2009). Quality Management, Environmental Management and Firm Performance: A Review of Empirical Studies and Issues of Integration. *International Journal of Management Reviews,* **11**, pp. 197-222.

Moore, S.B. and Manring, S.L. (2009). Strategy development in small and medium sized enterprises for sustainability and increased value creation. *Journal of Cleaner Production,* **17**, pp. 276-282.

Morgan, D.L. (1997). *Focus groups as qualitative research,* London: Sage.

Moxham, C. (2009). Performance measurement Examining the applicability of the existing body of knowledge to non-profit organisations. *International Journal of Operations and Production Management,* **29,** pp. 740-763.

Nandan, R.K. (1996). Management control systems: a 'structurationist' perspective, in Vagneur, K., Wilkinson, C., Berry, A.J. (Eds). *Beyond Constraint: Exploring the Management Control Paradox,* The Management Control Association, London, pp.345-60.

Neely, A. (1999). The performance measurement revolution: why now and what next? *International Journal of Operations and Production Management, **19**,* pp. 205-228.

Neely, A. (2005). The evolution of performance measurement research - Developments in the last decade and a research agenda for the next. *International Journal of Operations and Production Management*, **25**, pp. 1264-1277.

Neely, A. (2007). The servitization of manufacturing: an analysis of Global Trends. *Proceeding of the 14th European Operations Management Association Conference*, Ankara, Turkey, 17-20 June

Neely, A. and Adams, C. (2001). The Performance Prism perspective. *Journal of Cost Management,* **15**, pp. 7-15.

Neely, A., Gregory, M. and Platts, K. (1995). Performance measurement system design – A literature review and research agenda. *International Journal of Operations and Production Management, 15*: 80-116.

Neely, A., Mills, J., Gregory, M., Richards, H., Platts, K. and Bourne, M. (1996). *Getting the measure of your business*, Cambridge, UK: Cambridge University Press.

Neely, A., Mills, J., Platts, K., Richards, H., Gregory, M. and Bourne, M. (2000). Performance measurement system design: developing and testing process a process-based approach. *International Journal of Operations and Production Management*, **20**, pp. 1119-1145.

Neely, A., Mills, J.F., Platts, K.W, Gregory, M. J. and Richards, A.H. (1994). Realising strategy through measurement. *International Journal of Operations and Production Management,* **14**, pp. 140-152.

Ng, I.C.L. and Nudurupati, S. (2010). Outcome-Based Service Contracts In the Defence Industry – Mitigating the Challenges. *Journal of Service Management*, **21**, (forthcoming).

Nidumolu, R., Prahalad, C.K. and Rangaswami, M.R. (2009). Why Sustainability is Now the Key Driver of Innovation. Harvard Business Review, **87**, pp. 57-64

Norek, C.D. and Pohlen, T.L. (2001). Cost knowledge: A foundation for improving supply chain relationships. *International Journal of Logistics Management*, **12**, pp. 37-51.

Nudurupati, S. and Bititci, U.S. (2005). Implementation and impact of IT-supported performance measurement systems, *Production Planning and Control*, **16**, pp. 152-162.

Ostrom, A. L., Bitner M. J., Brown S. W., Burkhard, K. A., Goul, M., Smith-Daniels, V., Demrikan, H. and Rabinovich, E. (2010). Moving Forward and Making a Difference: Research Priorities for the Science of Service, *Journal of Service Research*, **13**, pp. 4-36.

Otley, D. (1999). Performance Management: a framework for management control systems research. *Management Accounting Research*, **10**, pp. 363-382.

Parung, J. and Bititci, U.S. (2006). A conceptual metric for collaborative networks, *Journal of Modelling in Management*, **1**, pp. 116 -136.

Paton, R. (2003). *Managing and Measuring Social Enterprises*, London: Sage.

Pisano. G.P. and Verganti, R. (2008). Which kind of Collaboration is right for you? *Harvard Business Review*, **86**, pp 1-8

Poister, T.H. (2003). *Measuring Performance in Public and Non-profit Organisations*. Wiley, New York, NY.

Porter, M.E. (1980). *Competitive strategy: Techniques for analyzing industries and competitors.* New York, NY: Free Press.

Porter, M.E. (1985). *Competitive advantage: Creating and sustaining superior performance.* New York, NY: Free Press.

Prahalad, C.K. (1998). Managing discontinuities: The emerging challenges. *Research Technology Management*, **41**, pp. 14-22.

Prahalad, C.K. and Hamel, G. (2001). The core competence of the organisation. *Harvard Business review*, **68,** pp. 79-91.

Prahalad, C.K. and Krishnan, M.S. (2002). The Dynamic synchronisation of strategy and information technology. *MIT Sloan Management Review,* **43**, pp. 24-33.

Prashantham S. and Birkinshaw J. (2008). Dancing with Gorillas: how small companies can partner effectively with MNCs. *California management review*, **51**, pp. 6-23.

Prusak, L. and Davenport, T. (2003). Who are the gurus' gurus, Harvard Business review, vol. 81, December, pp 14-16.

Purbey, S., Mukherjee, K. and Bhar, C. (2007). Performance measurement system for healthcare processes. *International Journal of Productivity and Performance Management*, **56**, pp. 241-251.

Raymond, E.S. (2001). The cathedral and Bazaar. Sebastopol, CA: O'Reilly Media.

Reid, G.C. and Smith, J.B. (2000). The impact of contingencies on managerial accounting systems development. *Management Accounting Research*, **11**, pp. 427-450.

Richard, P.J., Devinney, T.M., Yip, G.S. and Johnson, G. (2009). Measuring organisational performance: Towards methodological best practice. *Journal of Management*, **35**, pp. 718-804.

Rousseau, D., Manning, J. and Denyer, D. (2008). Evidence in management and organizational science: assembling the field's full weight of scientific knowledge through syntheses. *Academy of Management Annals*, **2**, pp. 475–515.

Ruigrok, W. and Tate, J.J. (1996). Public testing and research centres in Japan: Control and nurturing of small and medium-sized enterprises in the automobile industry. *Technology Analysis and Strategic Management*, **8**, pp. 381-406.

Sanchez, R. and Heene, A. (2004). *The new strategic management. Organization, competition and competence*, Chichester, UK: John Wiley and Sons.

Sarkis, J. (2003). A strategic decision framework for green supply chain management. *Journal of Cleaner Production*, **11**, pp. 397-409.

Schonberger, R.J. (1982). *Japanese manufacturing techniques: Nine hidden lessons in simplicity*. New York, NY: The Free Press Publishers.

Schreyögg G. and Steinmann H. (1987). Strategic Control: A New Perspective. *The Academy of Management Review*, **12**, pp. 91-103

Scott, T.W. and Tiessen, P. (1999). Performance measurement and managerial teams. *Accounting, Organizations and Society*, **24**, pp. 263-285.

Seddon, J. (2008). *Systems Thinking in the Public Sector: The Failure of the Reform Regime.... and a Manifesto for a Better Way*, Axminster, UK: Triarchy Press.

Senge, P.M., Kleiner, A., Roberts, C., Ross, R., Roth, G. and Smith, B. (1999). *The dance of change: The challenges to sustaining momentum in learning organization*, New York, NY: Doubleday Currency.

Shepherd, C. and Gunter, H. (2006). Measuring supply chain performance: current research and future directions. *International Journal of Productivity and Performance Management*, **55**, pp. 242-258.

Simatupang, T.M. and Sridharan, R. (2004). Benchmarking supply chain collaboration: An empirical study. *Benchmarking: An International Journal*, **11**, pp. 484-503.

Simons, R. (1995). *Levels of control - How managers use innovative control systems to drive strategic renewal.* Boston, MA: Harvard Business School Press.

Simons, R. (1995). Control in the age of empowerment. *Harvard Business Review*, **73**, pp. 80-8.

Sink, P.E. (1986). Performance and productivity measurement: the art of developing creative score boards. *Industrial Engineer*, **1**, pp. 86-90.

Skinner, W. (1974). The decline, fall and renewal of manufacturing. *Industrial Engineering*, **6**, pp. 32-38.

Slack, N. (1983). Flexibility as a manufacturing objective. *International Journal of Operations and Production Management*, **3**, pp. 4-13.

Snowden, D.J. and Boon, M.E. (2007). A leader's framework for decision making. *Harvard business review*, **1**, pp. 8-13.

Sobotka, M. and Platts, K.W. (2010). Managing without measures: a study of an electricity distribution company. *Measuring business excellence*, **14**, pp 28-42.

Steiner, G. A. (1969) Top management planning. London: MacMillan

Stewart, D.W, Shamdasani P.N. and Rook, D.W. (2007). *Focus Groups. Theory and Practice.* 2nd Edn. Thousand Oaks, CA: Sage Publications.

Suzaki, K. (1987). *The new manufacturing challenge: Techniques for continuous improvement*. New York, NY: The Free Press Publishers.

Swinehart, K.D. and Smith, A.E. (2005). Internal supply chain performance measurement: A health care continuous improvement implementation. *International Journal of Health Care Quality Assurance*, **18**, pp. 533-542.

Taticchi, P., Tonelli, F., Cagnazzo, L. (2010). Performance measurement and management: a literature review and a research agenda. *Measuring Business Excellence*, **14**, pp. 4-18.

Taylor, F.W. (1911). *The principles of scientific management.* New York, NY: Harper Brothers.

Tannenbaum, A.S. (1968) Control in Organizations. New York: McGraw-Hill.

Tsai, W.H. and Hung, S.J. (2009). A fuzzy goal programming approach for green supply chain optimisation under activity-based costing and performance evaluation with a value-chain structure. *International Journal of Production Research,* **47***,* pp. 4991- 5017.

Turner, T.J., Bititci, U. S. and Nudurupati, S. (2005). Implementation and impact of performance measures in two SMEs in central Scotland. *Production Planning and Control*, **16**, pp. 135-151.

Ulhøi, J.P. (2004). Open source development: a hybrid in innovation and management theory. *Management Decision,* **42**, pp. 1095-1114.

Vachon, S. and Klassen, R.D. (2008). Environmental management and manufacturing performance: The role of collaboration in the supply chain. *International Journal of Production Economics*, **111**, pp. 299-315.

Van Gils, A. (2005). Management and Governance in Dutch SMEs, *European Management Journal,* **23**, pp. 583-602.

Van Vijfeijken H., Kleingeld, A, Van Tuijl, H., Algera, J.A., Thierry, H. (2006). Interdependence and fit in team performance management98-117.

Vargo, S. L. and Lusch, R. F. (2004). Evolving to a new dominant, logic for marketing. *Journal of Marketing,* **68**, pp. 1-17.

Vargo, S. L. and Lusch, R. F. (2008). From goods to service(s): Divergences and convergences of logics. *Industrial Marketing Management*; **37,** pp. 254–259

Waggoner, D., Neely, A. and Kennerley, M. (1999). The forces that shape organisational performance measurement systems: an interdisciplinary review. *International Journal of Production Economics*, **60/61**, pp. 53-60.

Walley, P., Blenkinsop, S. and Duberley, J. (1994). The adoption and non-adoption of modern accounting practices: a study of 20 manufacturing firms. *International Journal of Production Economics*, **36**, pp. 19-27.

Wenger, E.C. (1999). *Communities of practice: Learning, meaning and identity*, Cambridge, UK: Cambridge University Press.

Wenger, E.C. and Snyder, W.M. (2000). Communities of practice: The organizational frontier. *Harvard Business Review*, **78**, pp. 139-145.

Wheelen, T. L., & Hunger, J. P. (1983) Strategic management and business policy. Reading, MA: Addison-Wesley.

White, A., Stoughton, M. and Feng L. (1999). *Servicising: the quiet transition to extended producer responsibility*, Boston, MA: Tellus Institute.

Wiesner, R., McDonald, J. Banham, H.C. (2007). Australian small and medium sized enterprises (SMEs): A study of high performance management practices. *Journal of Management and Organization*, **13**, pp. 227-248.

Williams, D.W. (2002). Before performance measurement. *Administrative Theory and Praxis*, **24**, 457-486.

Williams, D.W. (2003). Measuring government in the early twentieth century. *Public Administration Review*, **63**, pp. 643-659.

Williams, D.W. (2004). Evolution of performance measurement until 1930. *Administration and Society,* **31**, pp. 131-165.

Wise, R. and Baumgartner, P. (1999). Go downstream: The new profit imperative in manufacturing. *Harvard Business Review*, **77**, pp. 133-141.

Wood, D.J., (2010). Measuring Corporate Social Performance: A Review. *International Journal of Management Reviews*, **12**, pp. 50-84.

Woodruff, R.B. (1997). Customer value: the next source for competitive advantage. *Journal of the Academy of Marketing Science*, **25**, pp. 139-153.

Xie, S. and Hayase, K. (2006). Corporate environmental performance evaluation: a measurement model and a new concept. *Business Strategy and the Environment*, **16**, pp. 148-168.

Yamakawa, T., Ahmed, S. and Kelston, A. (2009). *The BRICs as Drivers of Global Consumption, Goldman Sachs Global Economics, Commodities and Strategy Research* (https://360.gs.com) Accessed on 6 August 2009.