Aligning Project Quality and Risks into Business Processes: A Review of Challenges and Strategies

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Abstract: *As organisations seek competitive advantage in a dynamic business/operations environment, projects have become the tool for quickly implementing tasks geared towards adapting and transforming the organisation while the management of these projects has become the instrument and means for change and development. It has therefore become essential that projects be aligned to the organisation's strategic objectives and be integrated into the organisation's day-to-day operations and business processes. This paper explores the literature on managing project risks and quality as they relate to business processes. There has been relatively little research on the alignment of project management practices with business processes, incorporating project risks and quality. A literature search of PM processes was conducted using articles abstracted from two databases, Ebscohost and Emerald Insight, spanning the period from 2000 to 2014. The conceptual links between the PM and business processes are discussed, and the attributes of project risks and quality are identified. The paper concludes by advocating a process paradigm for managing project risks and quality in organisations.*

Keywords: Project management, business processes, strategy, alignment, quality, risks

1. Introduction

There has been a growing body of research on the application of projects and their role in modern business (Cicmil 2000, 554). A project is a "temporary endeavour undertaken to create a unique product or service in a workplace" (PMI 2013, 3). Managing projects is a source of competitive advantage for many leading global organisations such as Coca-Cola, BMW and Nike (Zdanyte and Neverauskas 2012, 782). Increasingly, managing projects has become "the preferred or dominant business process" and is widely used within the organisation for strategic and complex change (Olsson 2007, 746). Achieving success in projects is vital in the context of competitive advantage (Mishra et al. 2011, 356). Given the increasing use of projects within organisations, projects must not only be aligned with the strategic objectives and goals of the organisation but must be effectively managed consistently with everyday operations.

Other than the customer, the strategic emphasis of organisations today is on the internal and external processes. While in the past 15 years, there has been a considerable body of literature on project management (PM) processes, one challenge has been the alignment of these processes with business operations in organisations. This paper reviews two (2) core processes of PM, and discusses the challenges and strategic issues in managing project risks and quality from the business/organisational context. It attempts to shed light on the link between these PM processes with business processes and determine the attributes of aligning these processes using a generic process paradigm.

2. Literature Search and Review

In order to identify the determinants that impact the alignment of PM processes with business operations in organisations, a search was made of journal articles in the areas of PM and related areas for the period of 2000-2014. Two online databases, Ebscohost and Emerald Insight, were used. These databases host abstracts, full-text journal articles and reference details of articles in a variety of subject areas. These cover major management disciplines from marketing, human resource management, library and information management, training and education, economics, engineering, and quality, to operations management.

The key term "project management" was first used to search the abstracts. The search was narrowed into sub-categories based on the issues pertaining to this study: "project quality management", "project risk management", "project management practices", "project management challenges", and "project management and organisation strategy". These searches yielded hundreds of articles many of which focused on various aspects of

PM practices and associated processes. The first three searches yielded hundreds of articles but only a few were relevant to the study's objectives.

3. Distribution of Article Statistics

3.1 Distribution of Articles from 2000 to 2014

Table 1 shows the distribution of the articles found in the databases searched from the period 2000 to 2014. The initial search, "project management" yielded thousands of articles related to the discipline in a variety of fields including, information technology, construction, health services, and management. The data show that while the growth was not exponential over the period under consideration, there was a significant increase in the research being carried out in PM over the years. However, there was also no significant difference between the two databases with regard to total number of publications. The statistics show that the discipline gained significant ground in the mid-2000s (and particularly, in 2003-2004 for Ebscohost and in 2005 for Emerald Insight) which indicates its growing relevance.

Table 1. Distribution of PM Publications from 2000-2014

Year	Ebscohost	Emerald Insight
2000	70	126
2001	91	143
2002	83	123
2003	182	163
2004	346	147
2005	269	263
2006	288	264
2007	330	272
2008	374	299
2009	323	291
2010	373	319
2011	317	287
2012	293	324
2013	249	311
2014	77	318
Total	**3,665**	**3,650**

3.2 Distribution of Articles by PM and Related Areas

Building on the previous search summarised in Table 1, the follow-up searches focused on identifying PM related articles, more specifically PM challenges, project quality management (QM), project risk management (RM) and PM and organisational strategy. The searches were carried out probing the databases for key words in the abstracts. Table 2 identifies the distribution of articles based on overall searches carried out in these areas. The data suggest that considerable research has been carried out in these areas. The area of PM and quality has the highest number of articles (1,017 for both databases) which may indicate the growing concern for quality projects and/or project quality. This can be an indication of the increasing need to address issues of customer satisfaction at both the organisational and the project level. The high number of articles in the area of

PM challenges (a total of 967 articles found in both databases) indicates that despite studies being conducted and the increased use of PM tools, challenges in PM still exist. This also indicates an increasing need to address these challenges. Of particular interest is the low quantity of research in the areas related to PM and organisation strategy.

Table 3 shows the distribution of articles into six (6) categories based on the type of research conducted in these specific areas. Table 4 gives a total of these categories searched within the two databases for PM and related areas. The preferred method for conducting research in PM was found in the area of case studies for Emerald Insight (with a total of 301 articles across various PM areas) and the least preferred was literature reviews (with some 19 papers found). In Ebscohost, the preferred method of research was the literature review for the PM processes (with a total of 293 articles) and theoretical studies for PM challenges (with 200 articles). Case studies were also popular in each area (with 170 articles) and the least popular were empirical studies (with 28 articles). In general, the overall trend in PM research has been leaning towards case studies across various areas.

Moreover, an attempt was made to determine, from the literature, if strategies were being developed to address some of the challenges identified in the field of PM. The data suggest that strategies were indeed being developed to a fairly high degree (with a total of 556 articles across the two databases). Of particular interest was the last search in the area of "PM" and "Organisation Strategy" where very little research has been carried out in this area in comparison to the other areas searched (with a sum of 82 articles found in both databases).

3.3 Distribution of Articles by Journals

Table 5 shows the list of journals in Emerald Insight with articles on PM and related areas along with the number of articles published within each journal. These journals span a wide range of subject areas, including: business management, engineering, knowledge management, quality, information technology, library and information studies, human resources and production and manufacturing. These articles were published in journals ranging from project management, information systems, manufacturing and production, communication, engineering to human resource management. This indicates a wide use and acceptance of PM across many disciplines as well as the versatility of PM in practice.

The journal with the most publications relating to PM issues is the *International Journal of Managing Projects in Business* (with 202 articles). This is an indication of the shift in the use of PM from the traditional areas of focus in construction industry to other businesses and sectors. This is further supported by the increasing

Table 2. Distribution of Articles in PM Related Areas

PM Related Areas	Ebsohost	Emerald Insight	Total
"Project Management" and "Challenges"	386	581	967
"Project Management" and "Quality"	475	542	1,017
"Project Management" and "Risk"	429	388	817
"Project Management" and "Organisation Strategy"	16	159	175

Table 3. Distribution of Articles by Categories

Categories	Ebsohost		Emerald Insight	
	Number of Articles	Percentage (%)	Number of Articles	Percentage
Project Management Challenges				
Case Studies	60	18.3	109	24.1
Literature Reviews	8	2.4	4	1.0
Empirical Studies	7	2.1	68	15.0
Theoretical Studies	200	61.0	52	11.5
Conceptual Studies	10	3.0	38	8.4
Strategy	43	13.1	181	40.0
TOTAL	**328**	**100**	**452**	**100**
Project Quality Management				
Case Studies	44	15.9	110	29.0
Literature Reviews	154	55.8	4	1.1
Empirical Studies	9	3.3	60	15.8
Theoretical Studies	17	6.2	34	9.0
Conceptual Studies	11	4.0	35	9.23
Strategy	41	14.9	136	35.9
TOTAL	**276**	**100**	**379**	**100**
Project Risk Management				
Case Studies	64	22.1	52	19.8
Literature Reviews	139	48.1	10	3.8
Empirical Studies	11	3.9	41	15.6
Theoretical Studies	17	5.9	26	9.9
Conceptual Studies	11	3.9	26	9.9
Strategy	47	16.3	108	41.1
TOTAL	**289**	**100**	**263**	**100**
Project Management and Organisational Strategy				
Case Studies	2	66.7	30	38.0
Literature Reviews	0	0	1	1.3
Empirical Studies	1	33.3	29	36.7
Theoretical Studies	0	0	11	13.9
Conceptual Studies	0	0	8	10.1
TOTAL	**3**	**100**	**79**	**100**

Table 4. Total Number of Article by Categories

Categories	Ebscohost	Emerald Insight	Total:
Case Studies	170	301	**471**
Literature Reviews	301	19	**320**
Empirical Studies	28	198	**226**
Theoretical Studies	234	123	**357**
Conceptual Studies	32	107	**139**
Strategy	131	425	**556**
TOTAL	**896**	**1,173**	**2,069**

number of journals (i.e., 7 journals accounting for 338 articles) in management with PM articles.

These journals are *Business Process Management Journal, Journal of Management History, Management Decision, Human Resource Management International Digest, International Journal of Operations and Production Management, Strategic Direction*, and *International Journal of Productivity and Performance Management*. The widespread report of PM practices and applications implies a growing acceptance of PM in industry. This also suggests that the focus of the PM discipline which was originally designed to manage projects within the construction industry, has been expanding into other industry sectors and organisations.

4. Managing Project Quality, Risks and Challenges

Despite the increased use of PM within industry in the last 15 years, there have been many organisations facing different kinds of challenges on managing their project success and performance.

Table 5. The Distribution of PM Articles in Selected Journals for Period 2000-2014

Name of Journal (Emerald Insight)	Number of Articles	Percentage
International Journal of Managing Projects in Business	202	14.2
Engineering, Construction and Architectural Management	172	12.1
Facilities	97	6.8
Journal of Knowledge Management	86	6.0
Business Process Management Journal	81	5.7
Construction Innovation	78	5.5
Journal of Management History	66	4.6
Industrial Management and Data Systems	65	4.5
International Journal of Quality and Reliability Management	60	4.2
Management Decision	59	4.1
Journal of Enterprise Information Management	55	3.9
Library Management	54	3.8
Management of Environmental Quality: An International Journal	49	3.4
Human Resource Management International Digest	47	3.3
International Journal of Operations and Production Management	45	3.2
Strategic Direction	43	3.0
The TQM Journal	42	2.9
OCLC Systems and Services	42	2.9
Journal of Manufacturing Technology Management	42	2.9
International Journal of Productivity and Performance Management	42	2.9
Total:	**1,427**	**100**

Many of these challenges relate to managing projects in the areas of information technology, team dynamics, customer satisfaction, communication, and quality. Besides, there has been a growing need for aligning PM with the organisation's strategy and performance improvement. An attempt was made to collate the views, from the literature, on managing project quality, risks and performance in organisations. A total of 69 articles were eventually searched from 28 journals based on research methodology—case studies, literature reviews, empirical studies, and theoretical and conceptual studies.

Tables 6 and 7 present the excerpted views and some exemplified approaches and strategies as advocated by researchers and practitioners on managing project quality in organisations, respectively. Tables 8 and 9 show the excerpted views and exemplified approaches/strategies on managing project risks, whereas Tables 10 and 11 summarise the excerpted views and exemplified approaches/strategies on managing challenges associated with PM practices in organisations.

Table 6: Excerpted Views of Managing Project Quality in Organisations

Study	Comparable Views		Alternative Views	
	Author(s)	Views	Author(s)	Study/View
Role of PM in quality and quality management (QM)	van der Water and de Vries (2006)	Organisations define project in areas of quality and QM as a means to improving their competitive advantage	Orwig and Brennan (2000)	By instituting a formal PM methodology and basic PM techniques, organisations are fulfilling the principles of quality
	Hides and Irani (2000)	Projects are used to adopt total quality principles and PM is required for successful programmes of continuous improvement		
QM theories and practices usage	Barad and Raz (2000)	A holistic approach to implementing QM results in improvements to product quality as compared to a more fractional implementation	Hides and Irani (2000)	Implementing total quality tools on a case by case basis enables companies to identify their specific needs and outline their own processes.
			Henderson and McAdam (2000)	Organisations should select an approach to quality that is most suitable to their varying tasks and specific priorities
Criteria to determining successful project performance	Bryde and Robinson (2007)	Organisations with total quality management (TQM) programmes are more customer-focused in their PM practices than organisations with no TQM programme	Toakley and Marosszeky (2003)	Project quality measures consist of other measures such as flexibility, customer satisfaction, and training and responsiveness

Table 7: Approaches and Strategies of Managing Project Quality

Author(s)	Research and Findings	Approaches and Strategies
Cicmil (2000)	Defining the critical factors for project success criteria and the quality aspects within the project	Project management multiple perspective (PMMP) framework
Henderson and McAdam (2000)	A key to managing quality in organisations	Organisational change as a shared vision
Van der Water and de Vries (2006)	Changing company culture through commitment from all levels of management	
Henderson and McAdam (2000)	Designing quality into the organisation by incorporating it into projects	Self-assessment systems
Orwig and Brennan (2000)	Identifying where improvement are needed such that it becomes the foundation of continuous improvement	
Henderson and McAdam (2000)	Quality approaches selected based on the tasks and priorities as outlined by the strategy of the organisational as opposed to standard approaches to QM	Flexible organisations
Hides and Irani. (2000)	Discussing an international standard which integrates both QM and PM	*BSI 1995*
LePrevost and Mazur (2005)	Tool to managing the project resources and priorities as well as prioritising the internal initiatives based on their benefits	Quality function deployment (QFD)
Chao and Ishii (2004)	Tool to clarify project goals and achieving organisational alignment by analysing the organisations requirements and resources	
Bryde and Robinson (2007)	Improving performance through the implementation of TQM with PM in areas such as process management	Total quality management (TQM)
Orwig and Brennan (2000)	Providing assistance in assessment and facilitating continuous improvement on a long term basis	A document or knowledge management strategy
Orwig and Brennan (2000)	Providing the organisation with means to formalise its PM methodology	A project management office
Neale and Letza, (1996)	Enhancing decision making throughout the organisation	Post-audits

Table 8: Excerpted Views of Managing Project Risks in Organisations

Study Issues	Author(s)	Views
Challenges to managing risk in projects	Kutsch and Hall (2009)	The research focused on developing ways to manage risk with few assessing their effectiveness
	Olsson (2007)	Methodologies of RM were focused exclusively on "*single-project management*"
	Shimizu et al. (2012)	Overall business risks must be minimised through systematic risk management
Linking risk management (RM) to organisational factors	Parker and Mobey (2004), Kutsch and Hall (2009), Olsson (2007)	There should be a link between the strategy for RM and organisational behaviour
	Besner and Hobbs (2012)	The use of PM tools and practices such as RM is influenced by both the project context and the organisational context
The way risk and RM is viewed by the organisation and managers	Olsson (2007)	Managers often acknowledge the relevance of RM but fail to apply them in managing projects
	Besner and Hobbs (2012)	A gap exists between the organisations interest expressed in RM and the allocation of resources
	Shimizu et al., (2012	Project managers focus on lower level risks and senior management focus on higher-level risk
	Parker and Mobey (2004)	RM was *ad hoc* because it was reliant on the experience and expertise of the manager and formal risk analysis was seldom used by managers when making decisions
	Cervone (2006)	Project managers often only carry out minor examination of the risk related issues and then add a "*margin of risk.*"
	Kutsch and Hall (2009)	Project managers only focus on certain risk based on "*the perceived ease of information processing*"

Table 9: Approaches and Strategies of Managing Project Risks

Author(s)	Research/Findings	Approaches and Strategies
Besner and Hobbs (2012)	Developing new responses for specific contexts for which it was not primarily developed	Flexible approaches
Cervone (2006)	Adapting and changing plans as new information became available, as the cornerstone on which to build continuous risk assessment	
Jafari et al. (2011)	Storing for future use, in planning and during implementing of projects, the knowledge associated with key issues in RM	RM model of knowledge
Patterson and Neailey (2002)	Documenting information and data collected during project for use in future project RM	Risk register database system
Kohlmeyer and Visser (2004)	Measuring project performance (to measure the effectiveness of risk management in projects) and documenting for future comparisons and evaluation	Key performance indicators and documenting
Shimizu et al. (2012)	Responding to the requirement for an integrated and comprehensive strategic approach to managing risks	Enterprise-wide RM

Table 9: Approaches and Strategies of Managing Project Risks (continued)

Author(s)	Research/Findings	Approaches and Strategies
Parker and Mobey (2004)	Managing information technology infrastructural projects and re-engineering projects	Change management techniques
Kohlmeyer and Visser 2004	Developing a single process, comprising of both the project risk process with the project management life cycle process, that distinguishes it from the existing processes	Risk project life cycle

Table 10. Excerpted Views of Managing Challenges Associated with PM Practices

Author(s)	Views	PM Challenges
Hides and Irani(2000)	Commitment by both management and employees as essential to PM success within the organisation	Management commitment and related factors
Harding (2012)	Commitment of essential resources to the project	
Hides and Irani(2000)	Leadership as critical to project success	Leadership and related factors
Pressman (1998)	Project success is about the person leading the team	
Perkins (2006)	Project managers abilities and their inability to apply their knowledge impact negatively on projects and their management within the organisation	
Harding (2012)	Proper support network comprising PM and subject matter experts that the project manager could contact or call upon to give advice	Team dynamics and related factors
Cicmil (2000)	Choosing appropriate personnel and the compatibility of the members selected for the project	
Hides and Irani (2000)	Training of the team members to generating company-wide employee commitment	
Cerpa and Verner (2009)	Factors that could de-motivate team members	
Hides and Irani (2000)	Six human factors that could affect PM practices in an organisation; training employees in skills to which they are best suited enhances their role or level of competency; competence development; and empowering of employees	Human resource and related factors
Hidesand Irani(2000)	Organisational physiological factors such as structures, functions, performance and human behaviour (group and individual)	Organisational and related factors
Yazici (2009)	Organisational culture impact on the project performance and on the organisation	
Ritter (2008)	Organisational structure, and culture and style also influence the project	
Harding (2012)	Effective communication within the organisation could contribute to PM performance and project success.	
Newell (2004)	Sharing the lessons learned from previous projects with future project team members	
Cerpa and Verner (2009)	Learning from failed projects due to post-mortems not carried out on projects as well as ignoring lessons learned from past projects	
Yazici (2009) and Ritter (2008)	Level of maturity that an organisation has with regard to managing projects impacts on the performance of the project and its management	
Pinto and Mantel (1990)	Identifying and understanding the causes for project failure	Project management and related factors
Cicmil (2000)	Reasons for project failure	

Table 11. Approaches and Strategies of Managing PM Challenges in Organisations

Author(s)	Research and Findings	Approaches and Strategies
Gasik (2011)	Identifying knowledge an important resource for PM and as a basic prerequisite for effective PM	Project knowledge management
Hides and Irani (2000)	Ensuring that the lessons learned from new product development projects could be used to inform future project work to improve successive project performance	
Newell (2004)	Capturing the learning that took place during the project by conducting end of project reviews and the information collected stored on a database which is uploaded for easy access for future or current team members	
Jafari et al. (2011)	Protecting the knowledge gained from projects as it could give the organisation an advantage over their competitors and make PM a foundation of competitive advantage	
Zdanyte and Neverauskas (2012)	Sustaining and driving PM strategies	PM maturity models
Mullaly (2006)	Assessing the capabilities of organisations specifically functional capabilities as well as organisational excellence	
Yazici(2009)	Providing a standardised approach to measurement and benchmarking and serving as a road map for strategic improvement	
Hides and Irani. (2000)	Developing a business strategy to reflect the dynamic of competitive advantage	Strategic management
Kenny (2003)	Viewing projects as a means of implementing strategy and PM as a process applied to manage the implementation of strategy	
Aubry et al. (2007)	Using PM as a means of implementing the organisations strategy	
Henderson and McAdam (2000)	Managing and implementing the proposed strategy while allowing that strategy to evolve in response to the changing business and global environment	Balanced scorecard

5. Discussion and Recommendations

5.1 Aligning PM with Business Strategy

According to Mintzberg and Waters (1985), there are two types of strategy. These are: 1) deliberate strategy which is "*realised as intended*" and can be considered the traditional approach to developing strategy within an organisation, and 2) emergent strategy which are "*patterns or consistencies realised despite, or in the absence of intentions*" (Mintzberg and Waters 1985, 257). Srivannaboon and Milosevic (2006, 499) argued that they found instances where PM elements impacted business strategy. This was as a result of information gained during the management of projects used to adapt the business strategy. This was in line with Mintzberg's concept of emergent strategies. Alsudiri (2012, 601) argues for the need to incorporate portfolio management, strategic planning and emergent approach as steps in the alignment process.

Organisations plan and implement innovative business strategies to attain or maintain a competitive advantage (Srivannaboon and Milosevic 2006, 493). They utilise projects to implement their innovative business strategies and this has resulted in PM being considered an important business process. The need to align strategic priorities across the organisational hierarchy – the corporate, business and functional levels – has also become a dominant concern within the literature on strategic management. Of particular concern is the alignment of the functional level (for instance, R&D, marketing, production, and human resources) with the business level strategies. Project management can be considered a functional strategy because it is a building block of organisational strategy similar to functional strategies and as such could be aligned with the business strategy.

While some research has been undertaken in aligning these two areas, none discuss explicitly the relationship between the areas. Research by Srivannaboon and Milosevic (2006, 495), however, sought to explore the interaction between these two areas by what they refer to as the "*nature of the alignment*" and developed a theoretical framework showing the impact of these two areas on each other (i.e., the PM elements on the business strategy and then the business strategy on the PM elements). Their research was based on Porter's generic strategies (i.e., cost leadership, differentiation and best-cost) using a case study methodology to examine eight case studies that covers nine projects in seven organisations.

Alsudiri et al. (2013, 596) argued that business outcomes could be considered another dimension of project success and it can be achieved through the alignment of the PM process and the business strategy. They reported that misalignment between these two areas results in 30 per cent of project failures. As such, their research looked at the misalignment between PM with business strategy. Based on case study methodology using four case studies in the telecommunications industry, they looked at three types of strategy which were based on the corporate, business and functional levels within a typical business. Alsudiri et al. (2013) developed a conceptual framework which aligns PM with the business strategy and looked at the factors that impact the process of the alignment. Several internal factors (such as, communication, leadership competency, involving the project manager in strategy planning and executive management commitment) and external factors (such as, vendors, contractors, government agencies and the change market) were regarded as important elements in their alignment approach for the telecommunications industry. This framework could be extended to include multi-projects based on more than one business strategy.

Moreover, several benefits could be obtained from aligning PM process with business strategy. For instance, this could 1) help organisations focus on the right projects based on the objectives of the business strategy (Srivannaboon and Milosevic, 2006, 493); 2) ensure the successful overall direction of both strategy and project (Alsudiri 2012, 597), that is, every aspect of the organisation's activities would be integrated and move in the same direction based on achieving the organisations goals; and 3) assist the team to implement the organisation's business strategy through the projects in the correct way (Alsudiri 2012, 600).

5.2 Aligning PM with Operations Strategy

The strategy that was utilised by Alsudiri et al. (2013) was based on the organisation's business strategy. It was a top-down approach to strategic development where top management determines the strategy and the objectives over the long-term for the organisation. An alternative is a bottom-up approach to developing emergent and/or operations strategy. The strategy is developed based on the ideas and input from various employees, at any level of the hierarchy depending on the location of the expertise (Lister, 2014; Sting and Loch 2009).

Operations strategy looks at the strategies of managing resources which produce products and services over the long-term. According to Slack et al. (2010), the traditional view of operations strategy is based on several functional strategies and uses the top-down approach. In this approach, overall business strategy determines the direction of the organisation and the functional areas (such as operations, marketing, and finance) interpreting it in their functional strategies. On the other hand, the bottom-up approach of operations strategy suggests that strategic decisions are based on an accumulation of practical experiences (Slack et al., 2010). Ideas are developed based on experiences with customers, suppliers and even the organisation's own processes. This type of strategy is referred to as the emergent strategy because strategic ideas emerge over

time as the organisation starts to understand the realities of their situation. A strategy that could therefore be used to improve PM practice within organisations could be to align PM with the operations strategy of the organisation based on this emergent strategy perspective.

5.3 Integrating PM Processes with the Business Processes

In organisations today, the strategic emphasis is placed on the customer as well as on both internal and external processes. The process view is built on the belief that the functional areas within an organisation need to work together based on a common goal if the organisation is to run more effectively and efficiently (Sandhu and Gunasekaran, 2004, 673-677).

Processes exist in three (3) different forms within the organisation; formal processes (used by management), best practices (used by consultants who learn real processes from workers and sell back to management) and real processes (used by workers who are doing the work experientially and come up with the ideas) and there is no connection between these three processes (van der Merwe 2002, 408). In many organisations, operations are driven by projects, the benefits of aligning or integrating the project processes and the operational processes would be relevant and advantageous. Sandhu and Gunasekaran (2004, 678) stress three (3) basic processes in organisations. These are 1) the strategic process which is the formulation of the organisations strategy; 2) the functional process which is the procedural and operational requirement within the organisation; and 3) the administrative process which is the overall management including the functional processes.

While van der Merwe (2002, 408) argues that the management of business process is different from the management of scientific processes in that there is "no measurement, no control, no maintenance and no incremental improvement". Orwig and Brennan (2000, 351) maintains that the management of processes in an organisational setting is different from the management of processes in a project setting. The management of processes in an organisational setting is an aspect of operations management where processes are repetitive while the management of processes in a project environment, which is a temporary and unique endeavour, is based on the particular requirements of each project (Orwig and Brennan 2000, 351). Also most processes are 'cross-functional' spanning the various functional areas within the organisation, a factor which van der Merwe (2002, 407) argues is similar to projects and their management.

Research carried out by van der Merwe (2002, 408) shows a link between projects and processes, and contends that "the management of business processes and the management of projects are interrelated" and that "the process team can be directly equated with the project team" because they both work across functions. According to van der Merwe (2002), business processes are governed by three rules, namely: 1) they must have a clear purpose (goal); 2) there must be incremental improvement while seeking to reach the goal; and 3) each incremental improvement must be a project involving people. Based on these rules, it is claimed that "processes are governed by a group of projects that bring about incremental improvement."

Orwig and Brennan (2000, 352) sought to integrate QM with PM to improve business performance in organisations. Since projects are the organisation's basic form of operation, PM can be viewed as an ongoing repetitive operation as is the case with business processes such as QM. Their approach is that integration is possible based on selecting common criteria from the disciplines' fundamental principles, methodologies and techniques. Three (3) principles are considered crucial to business success, namely 1) customer focus, 2) continuous improvement, and 3) teamwork. Orwig and Brennan (2000) argue that these principles are critical to projects as key project deliverables include, for instance, customer satisfaction, team collaborations and continuous improvement.

Moreover, continuous improvement in a PM setting can be facilitated through project debriefings, assessment of project performance against planned results, and the establishment of a Project Management Office (PMO) to serve as a project archive for future project planning (Orwig and Brennan, 2000). While Project Management Institute (PMI) acknowledges that project QM must address both the management of the project and the product of the project, the quality tools and techniques identified in the Project Management Body of Knowledge (PMBOK) are explicitly described in terms of their application to project deliverables and not the management process (Orwig and Brennan 2000, 354). It is therefore possible to integrate the PM processes with the operational processes.

6. A Generic PM Process Model

In responding to the changing nature of projects, the discipline of PM now embraces several of the underlying concepts and assumptions from the various related fields. Based on a project-based strategic management process advocated by Cicmil (2000 p. 558), a generic process model was developed. This model attempts to incorporate various strategies/approaches identified in the literature. Figure 1 is a diagrammatic representation of this generic process model. It shows on-going feedback at each level to facilitate both continuous improvement and organisational learning.

This generic model comprises a series of processes and steps. Figure 2 depicts the process flow chart for this generic model. The first step would begin with the process of developing an organisational strategy. Once this has been agreed upon, the next step would be the

process of operationalising strategies into projects. These projects would be managed through the development of a PM strategy. It is at this PM strategy level that PM is aligned to the organisational/business strategy. At the PM strategy level, it is important to ensure that the projects identified would be aligned to the organisational strategy, mission, vision and strategic direction. At this level, senior management leadership would be reinforced, and performance criteria would be identified to measure the success of the project against the organisation's strategic objectives and goals.
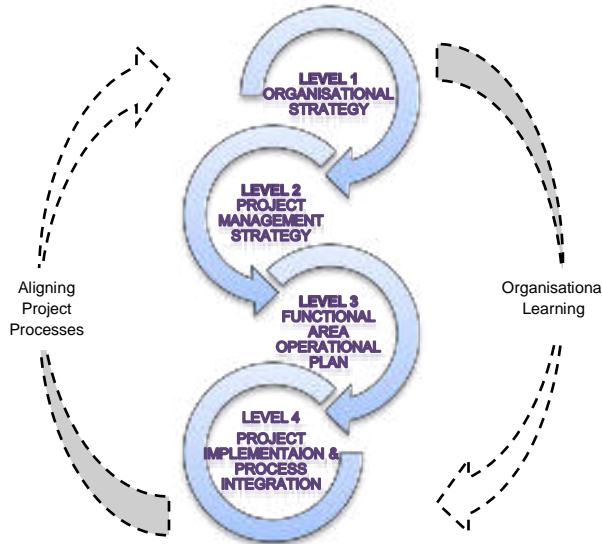
Figure 1: A Generic Process Model of Project-based Strategic Management

Figure 2: A Process Flow Chart for Aligning PM with Business Strategy and Operations

Within this PM strategy, other functional areas (e.g., R&D, marketing, and production) for each project would be identified. It is at this point that a project team should be created. This team should comprise members from each functional area within the organisation that was identified as being required for the project. The team should be trained in PM practices as well as in team dynamics and should be chosen based on their individual skills as deemed necessary for the project and on their

compatibility with the rest of the team members. Within each functional area, the operation strategy should seek to include the project resource requirements for the processes that would be impacted. It is at this level of the operation strategy within each functional area that the PM processes are aligned with the operational strategy/business processes and it is at the process management level that the PM processes could be integrated with the operational/business processes.

At the process level, a strategy for integrating the PM processes and the operational/business processes in such areas as managing operations/project quality and risks could be developed and implemented. The integration would be based on the QM and RM principles that are considered crucial to the success of the operations strategy, the business, and the project itself. This integration strategy could be developed as an overall strategy or a case-by-case strategy specific to the varying needs of the project or the changing environment.

Moreover, effective communication could be achieved through formal meetings held on a regular basis or through update reports sent to members of the team. A feedback mechanism should be put in place to enable continuous improvement and facilitate organisational learning. Through the documentation and management of knowledge gained throughout the project, organisational learning could be reinforced. This feedback would be based on the bottom-up approach, where lessons in implementing at the bottom are fed back up through the model to the relevant decision makers. This guarantees that the strategy formulation is based on input from those who actually carry-out the projects. This would ensure organisational-wide acceptance of the strategy. Any refinement would be based on the input from the persons actually implementing the project or working directly with the process.

7. Conclusion

Despite the myriad of information regarding PM issues within the published literature, there are still many challenges related to the successful PM implementation in organisations. Various approaches and strategies advocated in the literature address challenges associated with PM practices in organisations. Analysis of these findings suggests that integrating PM processes with the business processes is worth exploring in relation to incorporating PM practices and managing project risk and quality into the business/organisational context.

This paper explores a variety of determinants that would affect the management of the PM processes, and identifies the common factors affecting PM processes in organisations. It also advocates the need to 1) integrate the PM processes with business processes and 2) incorporate viable approaches, for facilitating improvement in project and organisational performance.

One approach was to align PM with the business strategy of the organisation. Through this alignment, the right projects could be chosen to facilitate the particular needs of the organisation as outlined in its strategic plan. This would ensure the commitments from managers across various departments and ensure that they chose projects based on the objectives of the organisation. Moreover, by aligning PM with the operations strategy, the experience and inputs from various levels of employees could be incorporated into the organisation's strategy at the operations level.

Aligning PM to the strategic focus would enable organisations to remain relevant and attain competitive advantage. There is a need to expand the project-based strategic management process by aligning it to the organisation's strategic objectives and goals. This paper also proposes a generic project model that incorporates the project process in aligning PM with business strategy and operations in organisations. Further research would lead to the identification of other fundamental principles on which to integrate the PM and business processes, thus improving performance of projects and business operations.

References:

Alsudiri, T., Al-Karaghouli, W. and Eldabi, T. (2013), "Alignment of large project management process to business strategy", *Journal of Enterprise Information Management*, Vol.26, No.5, pp.596-615.

Artto, K. A. and Wikstrom, K. (2005), "What is project business?" *International Journal of Project Management*, Vol.23, pp.343-353.

Aubry, M., Sicotte, H., and Drouin, N. (2012), "Organisational project management as a function within the organisation", *International Journal of Managing Projects in Business*, Vol.5, No.2, pp.180-194.

Aubry, M. and Hobbs, B. (2010), "A fresh look at the contribution of project management to organisational performance", *Project Management Journal*, Vol.42, No.1, pp.3-16.

Aubry, M., Hobbs, B. and Thuillier, D. (2008), "Organisational project management: an approach to the study of PMOs." *International Journal of Project Management*, Vol.26, pp.38-43.

Aubry, M., Hobbs, B. and Thuillier, D. (2007), "A new framework for understanding organisational project management through the PMO", *International Journal of Project Management*, Vol.25, pp.328-336.

Barad, M. and Raz, T. (2000), "Contribution of quality management tools and practices to project management performance", *International Journal of Quality and Reliability Management*, Vol.17, No.4/5, pp.571-583.

Besner, C. and Hobbs, B. (2012), "The paradox of risk management: a project management practice perspective", *International Journal of Managing Projects in Business*, Vol.5, No.2, pp.230-247.

Bryde, D. J. and Robinson, L. (2007), "The relationship between total quality management and the focus of project management practices", *The TQM Magazine*, Vol.19, No.1, pp.50-61.

Cavaleri, S and Fearon, D. S. (2000), "Integrating organisational learning and business praxis: a case for intelligent project management", *The Learning Organisation*, Vol.7, No.5, pp.251-258.

Cerpa, N. and Verner, J.M. (2009), "Why did your project fail?" *Communications of the ACM*, Vol.52, No.12, pp.130-134.

Cervone, H. F. (2006), "Managing digitil libraries: The view from 30,000 feet - project risk management", *OCLC Systems and Services International Digital Library Perspective*, Vol.22, No.4, pp.256-262.

Chao, L.P. and Ishii, K. (2004), "Project quality function deployment", *International Journal of Quality and Reliability Management*, Vol.21, No.9, pp.938-958.

Cicmil, S. (2000), "Quality in project environment: a non-conventional agenda", *International Journal of Quality and Reliability Management*, Vol.17, No.4/5, pp.554-570.

Cirtina, L.M., Cirtina, D. and Radulescu, C. (2013), "Quality management in projects: Establish the quality objectives of the project", *Fiability and Durability*, Vol.2, pp.42-46.

Comindwork (2014), "OPM3: Organisational project management", *Comindwork Weekly* Accessed December 5, 2014, from http://www.comindwork.com/weekly/2014-09-08/productivity/opm3-organisational-project-management-maturity-model

Craigree (2011), "Search capability maturity model", Accessed on December 5, 2014, from http://www.craigrees.com/blog/?tag=search-maturity-model

Davenport, J. (2006), "UK film companies: project-based organisations lacking entrepreneurship and innovativeness?" *Creativity and Innovation Management*, Vol.15, No.3, pp.250-257.

Dorofee, A. J., Walker, J.A., Alberts, C.J., Hignera, R.P., Murphy, R.L. and Williams, R.C. (1996), *Continuous Risk Management Guidebook*, Software Engineering Institute, Carnegie Mellon University.

Ford, D. and Bhargav, S. (2006), "Project management quality and the value of flexible strategies", *Engineering, Construction and Architectural Management*, Vol.13, No.3, pp275-289

Gasik, S. (2011), "A model of project knowledge management", *Project Management Journal*, Vol.42, No.3, pp.23-44.

Harding, J. (2012), "Avoiding project failure", Accessed October 24, 2014, from http://www.chemengonline.com/business_and_economics/project_mgmt/Avoiding-Project-Failures_9988.html

Henderson, J. and McAdam, R. (2000), "Managing quality in project-based emerging network organisations", *International Journal of Quality and Reliability Management*, Vol.17, No.4/5, pp.365-376.

Hides, M. T. and Irani, Z. (2000), "Facilitating total quality through effective project management", *International Journal of Quality and Reliability Management*, Vol.17, No.4/5, pp.407-422.

Hobday, M. (2000), "The project-based organisation: an ideal form for managing complex products and systems?" *Research Policy*, Vol.29, pp.871-893.

Hossenlopp, R. (2010), *Organisational Project Management: Linking Strategy and Projects*, Management Concepts, Virginia, USA.

Jafari, M., Rezaeenour, J., Mazdeh, M.M. and Hooshmandi, A. (2011), "Development and evaluation of a knowledge risk management model for project-based organisations: A multi-stage study", *Management Decision*, Vol.49, No.3, pp.309-329.

Kenny, J. (2003), "Effective project management for strategic innovation and change in an organisational context", *Project Management Journal*, Vol.34, No.1, pp.43-53.

Kerzner, H. (2006), *Project Management: A Systems Approach to Planning, Scheduling, and Controlling*, John Wiley, New Jersey.

Kloppenborg, T. (2009), *Contemporary Project Management*, South-Western Cengage Learning, Ohio.

Kohlmeyer, D. K. and Visser, J.K. (2004), "A risk management approach for the project management process", *South African Journal of Industrial Engineering*, Vol.15, No.2, pp.79-90.

Kutsch, E. and Hall, M. (2010), "Deliberate ignorance in project risk management", *International Journal of Project Management*, Vol.28, pp.245-255.

LePrevost, J. and Mazur, G. (2005), "Quality infrastructure improvement: using QFD to manage project priorities and project management resources", *International Journal of Quality and Reliability Management*, Vol.22, No.1, pp.10-16.

Leung, H.M., Chuah, K.B. and Rao Tummala, V.M. (1998), "A knowledge-based system for identifying potential project risks", *Omega International Journal of Management Science*, Vol.26, No.5, pp.623-638.

Leybourne, S.A., and Sainter, P. (2012), "Advancing project management: authenticating the shift from process to 'nuanced' project-based management in the ambidextrous organisation", *Project Management Journal*, Vol.43, No.6, pp.5-15.

Liberatore, M. and Pollack-Johnson, B. (2012), "Improving project management decision making by modelling quality, time, and cost continuously", *Proceedings for the Northeast Region Decision Sciences Institute*, Northeast Sciences Institute Conference Proceedings, March 2012, pp. 422

Lister, J. (2014), "The difference between top down and bottom up strategic management", Accessed November 1, 2014, from http://smallbusiness.chron.com/difference-between-top-down-bottom-up-strategic-management-25957.html

Martinsuo, M., Hensman, N., Artto, K., Kujala, J. and Jaafari, A. (2006), "Project-based management as an organisational innovation: drivers, changes and benefits of adopting project-based management", *Project Management Journal* 36(3): 87-97.

Mintzberg, H. and Waters, J.A. (1985), "Of Strategies, deliberate and emergent", *Strategic Management Journal*, Vol.6, No.3, pp. 257-272.

Mishra, P., Dangayach, G.S. and Mittal, M.L. (2011), "An empirical study on identification of critical success factors in project-based organisations", *Global Business and Management Research*, Vol.3, No.3/4, pp.356-368.

Muffee, V.W. (2007), *Risk Management: Theory and Practice*, Nova Science Publishers, New York.

Mullaly, M. (2006), "Longitudinal analysis of project management maturity", *Project Management Journal*, Vol.36, No.3, pp.62-73.

Neale, C.W. and Letza, S. (1996), "Improving the quality of project appraisal and management: an exercise in organisational learning", *The Learning Organisation*, Vol.3, No.3, pp.26-30.

Newell, S. (2004), "Enhancing cross-project learning", *Engineering Management Journal*, Vol.16, No.1, pp.12-20.

Olsson, R. (2007), "In search of opportunity management: Is the risk management process enough", *International Journal of Project Management*, Vol.25, pp.745-752.

Orwig, R.A. and Brennan, L. (2000), "An integrated view of project and quality management for project-based organisations", *International Journal of Quality and Reliability Management*, Vol.17, No.4/5, pp.351-363.

Parker, D. and Mobey, A. (2004), "Action research to explore perceptions of risk in project management", *International Journal of Productivity and Performance Management*, Vol.53, No.1, pp.18-32

Patterson, F. D. and Neailey, K. (2002), "A risk register database system to aid the management of project risk", *International Journal of Project Management*, Vol.20, pp.365-374.

Perkins, T. (2006), "Knowledge: The core problem of project failure", Accessed October 13, 2014, from http://www.crosstalkonline.org/storage/issue-archives/2006/200606/200606-Perkins.pdf

Pinto, J.K. and Mantel, S.J. (1990), "The causes of project failure*", IEEE Transactions on Engineering Management*, Vol.37, No.4, pp. 269.

PMI (2013), *A Guide to the Project Management Body of Knowledge*, Project Management Institute, Newtown Square, PA, pp. 3.

Pressman, R. (1998), "Fear of trying: The plight of rookie project managers", *IEEE Software*, Vol.15, No.1, pp.50-54.

Ritter, D. (2008), "Organisational influences on a project", Accessed November 4, 2013, from http://certifedpmp.wordpress.com/tag/organisations/

Rose, K. (2005), *Project Quality Management: Why, What and How*, J. Ross Publishing, Florida.

Sandhu, M. and Gunasekaran, A. (2004), "Business process development in project-based industry", *Business Process Management*, Vol.10, No.6, pp.673-690.

Shimizu, T., Park, Y.W. and Hong, P. (2012), "Project managers for risk management: case for Japan", *Benchmarking: An International Journal*, Vol.19, No.45, pp.532-547.

Slack, N., Chambers, S. and Johnston, R. (2010), *Operations Management*, Pearson Education, Accessed from http://wps.pearsoned.co.uk/ema_uk_he_slack_opsman_4/

Srivannaboon, S., and Milosevic, D. Z. (2006), "A two-way influence between business strategy and project management", *International Journal of Project Management*, Vol.24, pp.493-505.

Sting, F. and Loch, C.H. (2009), "How top-down and bottom-up strategy processes are combined in manufacturing organisations", *INSEAD Working paper,* pp. 1.

Summer, D.C.S. (2000), *Quality*, New Jersey: Prentice-Hall.

Tariq, M.U. (2013), "A six sigma based risk management framework for handling undesired effects associated with delays in project completion", *International Journal of Lean Six Sigma*, Vol.4, No.3, pp.265-279.

Toakley, A. R. and Marosszeky, M. (2003), "Towards total project quality – a review of research needs", *Engineering, Construction and Architectural Management*, Vol.10, No.3, pp.219-228.

van de Water, H. and de Vries, J. (2006), "Choosing a quality improvement project using the analytic hierarchy process", *International Journal of Quality and Reliability Management*, Vol.23, No.4, pp.409-425.

van der Merwe, A.P. (2002), "Project management and business development: integrating strategy, structure, processes and projects", *International Journal of Project Management*, Vol.20, pp.401-411.

Webster, G. (2000), "There's no such thing as a risk-free project", *The Antidote*, Vol.27, pp.24-27.

Wickramasinghe, V. and Liyanage, S. (2013), "Effects of high performance work practices on job performance in project-based organisations", *Project Management Journal* 44(3): 64-77.

Wikipedia (2013), "Organisational project management", Accessed November 18, 2013, from http://en.wikipedia.org/wiki/Organisational_project_management

Yazici, H.J. (2009), "The role of project management maturity and organisational culture in perceived performance", *Project Management Journal*, Vol.40, No.3, pp.14-33.

Yoo, D.K., Vonderembse, M.A. and Ragu-Nathan, T.S. (2010), "Knowledge quality: antecedents and consequence in project teams", *Journal of Knowledge Management*, Vol.15, No.2, pp.329-343

Zdanyte, K.D. and Neverauskas, B. (2012), "Selection of appropriate project management tool for advanced organisations", *Economics and Management*, Vol.17, No.2, pp.782-787.

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