

7-15-2012

# Portfolio management: The Australian experience

Aileen Koh

*Bond University, Aileen\_Koh@bond.edu.au*

Follow this and additional works at: [http://epublications.bond.edu.au/sustainable\\_development](http://epublications.bond.edu.au/sustainable_development)



Part of the [Management Information Systems Commons](#)

---

## Recommended Citation

Aileen Koh. (2012) "Portfolio management: The Australian experience" PMI Research and education conference 2012. Limerick, Ireland. Jul. 2012.

[http://epublications.bond.edu.au/sustainable\\_development/139](http://epublications.bond.edu.au/sustainable_development/139)

This Conference Paper is brought to you by the Institute of Sustainable Development and Architecture at [ePublications@bond](#). It has been accepted for inclusion in Mirvac School of Sustainable Development by an authorized administrator of [ePublications@bond](#). For more information, please contact [Bond University's Repository Coordinator](#).

# Portfolio Management: The Australian Experience

Aileen Koh

**BSc, MPM, CGEIT, CRISC**

## Abstract

The increasing use of project and programs by organizations to achieve business strategy and goals have led to the need to understand project portfolio management. Along with the increasing diffusion of portfolio management, a new managerial role evolves: the portfolio manager. This new role is pivotal in planning and controlling complex project landscapes more effectively and efficiently. This study is to investigate the governance structures and the roles, responsibilities and practices of portfolio managers. A sequential mixed method approach under a realism paradigm is used. This paper presents the first stage qualitative study, using an inductive interview based approach with six portfolio managers for six organizations in Australia. The results of six case studies from the qualitative study are used to validate the research model developed on the basis of previous research and develop the constructs for the concept of portfolio context and the roles, responsibilities and practices of portfolio managers.

Keyword: Portfolio Management, Strategic Alignment, Benefit Realization

## 1. Introduction

Portfolio management has been acknowledged by the project management community as the coordinated management of portfolio components to achieve specific organizational objectives. It is a technique for optimizing the organizational returns from project investments by improving the alignment of projects with strategy and ensuring resource sufficiency. It aims to optimize the outcomes from project investment across a portfolio and it is also regarded as the governance method for selection and prioritization of projects or programs. Organizations that do not align their project portfolio with organizational strategies and governance will tend to increase the risks of running projects that are low priority initiatives. As a result, there will be critical resource shortages, and investments will not be optimised. Therefore, application of the techniques of portfolio management within the context of organizational governance provides reasonable assurance that the organizational strategy can be achieved.

Portfolio management can be seen as providing governance structures adopted to minimize the overall costs in converting “input” to “output” through projects. When viewing projects as transactions, these costs are known as transaction costs, which are the sum of all costs for governing projects. Several researchers, such as [Muller and Turner \(2005\)](#) and [Blomquist and Muller \(2006\)](#), have proposed that transaction cost economics or TCE theory provides one theoretical framework for explaining the project and portfolio phenomenon.

Portfolio management, however, presents a challenge for middle managers to manage its processes, people and practices. The portfolio management role is

supposed to be pivotal in planning and controlling complex project landscapes more effectively and efficiently. Literature indicates that the roles and practices of portfolio managers vary and need to be adapted to organizational situations. The aims of this research are to identify the theoretical gap in the area of portfolio management particularly concerning the role of managers in portfolio management. As stated by [Elonen and Arto \(2003\)](#) and [Blomquist and Muller \(2006\)](#), the manager's roles & responsibilities in multi-projects vary, are unclear, and characterized by a lack of resources, low levels of support or commitment and poor information flow. This suggests a need to investigate and improve practices of portfolio management. Good portfolio management is becoming a key competence for organizations handling numerous projects simultaneously ([Martinsuo and Lehtonen 2007](#)) and needing the capability to produce products or services to compete globally ([Killen et al. 2008](#)).

This paper presents results of a qualitative study using an inductive interview based approach with portfolio managers from service and manufacturing organizations in Australia. To assess the validity and reliability of past research, we pose the following research questions:

***What are portfolio manager's roles and responsibilities in service and manufacturing organizations in Australia? Are there any differences in roles, responsibilities and practices between service and manufacturing organizations in Australia?***

The unit of analysis is portfolio managers in service and manufacturing organizations in Australia.

## **2. Research Method**

This paper adopts pragmatic perspective and proposes the use of sequential multi-method approach. The design which involves a first phase of qualitative data collection and analysis, followed by a second phase of quantitative data collection and analysis that builds on the results of the first qualitative phase. This method is to counterbalance the limitations of one approach with the strengths of the other in order to enhance the reliability of the results ([Rudestam & Newton 2001](#)). While the qualitative methods enable flexible and detailed exploration of issues, the quantitative component helps make statistical inference about the relationships between concepts ([Punch 1998](#)).

The execution of the research starts with an exploratory qualitative study to develop a basic understanding of the roles and responsibilities of managers in portfolio management. The aim of the qualitative study is to:

- Test the validity of the research model qualitatively which examining whether there is a positive relationship between the TCE dimensions and the portfolio manager's roles, responsibilities and practices

- Explore the portfolio management in Australian organizations context and find constructs and measurement scales for the concept of portfolio management in the research model:

To address the research aim, six case studies of organizations in Australia were analysed (refer to Table 1). The sampling method used for interviews is theoretical sampling. The interviewees are the people who have the best knowledge of the research subject and the number of interviews determined by theoretical saturation, which means when the answers from interviewees no longer contribute to generate new concepts or categories, the sampling process will be stopped (Strauss & Corbin 1990). In order to collect a variety of data and get integral information, the targeted interviewees were Portfolio Managers from large service and manufacturing industries that have implemented project management.

Case Studies						
Service			Manufacturing			
Interviews	A Energy Company	B Local Council	C Finance & Insurance	D Health & Wealth Being	E Pharmaceutical	F Diagnosis and treatment
Position	Corporate Portfolio Manager	Project Portfolio Officer	Head of Strategic Initiative Office	General Manager Innovation	New Product Group Planning Manager	New Product Development Manager
Number of Projects per annum	100	200	60	50	100	50
Project Types	Internal	Internal	Internal	Internal	Internal & External	Internal & External
Types of Portfolio	Corporate Portfolio (IT, Asset, Fleet)	IT Portfolio	Corporate Portfolio (IT, NPD)	R&D NPD	R&D, NPD	R&D, NPD

Table 1: Six case studies of Portfolio Management

### **Data Collection**

The constructs of the variables in the research model, which are the roles, responsibilities and practices will be operationalized. The data collection instrument used is semi structured interviews with six portfolio managers; three managers are from service organizations and the final three managers are from manufacturing organizations in. The interviews were held either face-to-face or through conference calls and interviewed were tape-recorded for subsequent analysis. Transcriptions were made immediately after the interviews and sent back to the interviewees for validation. The roles and responsibilities of managers in portfolio managers have been identified through a continuous comparison of interview results.

### ***Data Analysis Method***

The aim of the interviews is to generate constructs and measurement scales for the concepts of portfolio manager's roles, responsibilities and practices in Australia. There is a very little pre-conception about portfolio management context and the roles, responsibilities and practices of portfolio managers in Australia. The literature (Blomquist & Muller 2006; Killen et al. 2008; Jonas 2010) focuses on portfolio managers but there may be some differences in the roles, responsibilities and practices in the Australian context. This research reflects on the practical lives of portfolio managers to build constructs for the concepts and portfolio context and roles, responsibilities and practices in Australia.

The inductive data display and analysis technique to analyse the interview data is used. This is done using the process of data reduction, data display, and conclusion drawing and verification (Miles & Huberman 1994). The raw data gathered from the interview is immediately coded in this iterative process using NVIVO 9 software. The raw data is disaggregated into conceptual units and the labels were provided.

### **3. Case Descriptions**

Using the following themes drawn from the preceding literature review, the text of the six case studies interviews were analysed to provide insights into the nature of the context, the history, and current status of portfolio implementation, challenges, roles, responsibilities and practices. The themes are:

- Strategic alignment
- Portfolio prioritization and selection
- Stakeholder management
- Risk management
- Resource planning
- Value assessment and benefits realization

#### ***Case A (An Energy Organisation): Context***

Case A is an energy distribution network organization that distributes electricity to more than 1.3 million residential, industrial and commercial customers across a population base of around 3.1 million with total assets worth more than \$9.8 billion. The core business is the provision of network asset management capabilities including specialised engineering services, metering applications and energy solutions. It performs roughly 100 projects a year, 80% of which are asset management and fleet projects, with the remaining 20% dealing with business systems and strategy.

### ***Case A: History and current status of Portfolio Management Implementation***

Portfolio Management Office (PMO) was created in 2007 as part of an organizational restructure of Information Technology Department. This new structure provides IT project governance and assisted project management team to develop their project management capability especially when they are embarking on new IT initiatives. The Portfolio Management process includes identify, categorize, evaluate, select, prioritize, balance, authorise and review within portfolio of IT projects. This has represented a dramatic shift from previous ways of doing IT projects.

### ***Case A: Practices, Roles and Responsibilities of managers in Portfolio Management***

The PMO of Case A has a team of six members and led by Corporate Portfolio Manager (CPM). He is a senior manager that reports to Portfolio Review Board (PRB), chaired by CEO and represented by other senior executives such as CFO and CIO. In pre-project stage, the CPM plays a key role in alignment of projects to strategic goals. He is responsible in project identifying, categorizing, prioritizing and evaluates the benefit of all project business case for PRB to select and approve.

During the project, the CPM and his team will assist project sponsor, stakeholders, and project managers on project budget, scope, timeline, resources planning and risk management. Using ISACA VAL IT framework, the CPM provides timely portfolio assessment and component of performance. The value of investment is measured through investment instruments such as Net Present Value (NPV) and Return of Investment (ROI). Quarterly performance of the portfolio will be reported to Portfolio Review Board and Case A uses Microsoft office tools such as MS Excel to manage the tracking and reporting of Portfolio Management.

There were significant improvements after implementation of Portfolio Management. The IT department manage to reduce the duplication of projects and optimized resources which have significant saving of almost thirty per cents (30%) of IT project investment. Due to the success, the Corporate Portfolio Office was setup in 2010 to manage all Case A's assets investments to bring the value of investment to the organizations.

### ***Case B (Local Council): Context***

Case B is a local council, the lowest level of government in Australia, often seen as being the most accessible to the people. Local government bodies such as Council have specific responsibilities, duties and limitations on their areas of responsibility or influence. The Coucil employed 10,000 employees and provide range of services from engineering, road planning and environment planning

community services. The Council has an annual budget of \$100 million budget to implement approximately 100 Integrated projects (IT and engineering) a year.

### ***Case B: History and current status of Portfolio Management Implementation***

The Council set up the Portfolio Management for their IT department since 2006. A Committee of C-level Executives (CEO, CIO and CFO) is responsible for the Portfolio Management Review Board and meet monthly to monitor and manage the portfolio of IT investment. The Council has an obligation to deliver 'value for money' in terms of the efficiency and effectiveness of its investments. The Council must select the 'right initiatives' to invest in to ensure that this obligation is fulfilled.

### ***Case B: Practices, Roles and Responsibilities of managers in Portfolio Management***

At the time of interview, the Council's Project Portfolio Officer reports to Portfolio Management Review Board via CIO. This role is to facilitate the development and ongoing management of an optimized portfolio, ensuring senior management decisions lead to the fulfilment of strategic objectives through the delivery of projects and programs. His responsibilities is to provide strategic overview of all programs and projects reporting anomalies and areas of concern to senior management. Other responsibilities involve developing and maintaining Portfolio Management dashboard and help to implement process improvements to improve more effective delivery.

The Council adopted ISACA VAL IT for the implementation of Portfolio Management. Over three years, the Council was credited with increasing benefits threefold and manage to reduce the cost by twenty per cents. The Council uses Clarity System to manage the portfolio status.

### ***Case C (Finance and Insurance Organization): Context***

Case C is a leading global finance and insurance organization with offices widespread in Australia and globally. This organization is backed by the vast experience and solid finances of one of the oldest and largest life insurers in the business. The core products and services range from Business Insurance and Business Expense products.

Locally in Australia, the organization provides finance and life insurance cover to over 2 million Australians which are approximately 20% of the working population.

### ***Case C: History and current status of Portfolio Management Implementation***

In 2008, Case C set up an Enterprise Project Management Office (EPMO) to manage projects, programs and portfolio. It is a centralised project office with 4

staff delegated to manage, monitor and govern new IT projects that is worth approximately A\$10 million annually. The PMO provides project management services such as resources (computers, software developers, system administrator, business analysts), knowledge such as methodology and best practices for the organizations. The PMO integrate the completed projects with operation team using ITIL framework to deliver smooth transitions of post-projects activities. This integration and transitions have been successful to resolve post-implementation issues, change and new requests.

### ***Case C: Practices, Roles and Responsibilities of managers in Portfolio Management***

The Portfolio Management of Case C is managed by Head Of Strategic IT. As a senior manager, his role requires strong leadership, management and strategy/business planning skills. It faces strategic challenge and scrutiny to ensure alignment with wider policy and strategic initiatives. His responsibilities include developing and implementing the terms of reference for the CEO and Portfolio Management Board. He ensures the portfolio activities contribute to the bottom line value of the organization and deliver of benefits from all projects.

To ease the portfolio management process, Case C implemented MS Project Server last year to manage and monitor the project, programs and portfolio. The project and program managers use this system to upload the project information such as plan, budget, schedule for the project team to collaborate. This system also provides portfolio view to measure project/programs performance (finance, customer satisfaction and HR). Over three years, Case C was able to reduce the cost of projects and programs by thirty percents through project governance and and deliver to the customers on most of the planned benefits outcome.

### ***Case D: (Health and Wellbeing) Context***

Case D is a health and wellbeing product manufacturing organization based in Australia for more than 100 years. The organization has six sites and employed about one thousand five hundred employees. The organization produce health food for Australia and international market and has about annual revenue turnover over 100 million dollars.

### ***Case D: History and current status of Portfolio Management Implementation***

Case D establish their new product portfolio management about 18 years ago to monitor their research and development (R&D) and new product development project. It is about how to invest their business's product development resources – project prioritization and resource allocation across development projects. There are four goals in their portfolio management – maximizing the value of the portfolio, seeking the right balance of projects, ensuring that the portfolio is strategically aligned, and making sure that don't have too many projects for limited resources. The organization manages approximately 40 different projects (new to current products) with 3 years business strategic goals. The

performance is measured through revenue growth, marginal growth and customer satisfactions.

### ***Case D: Practices, Roles and Responsibilities of managers in Portfolio Management***

The General Manager (GM) of Innovation for Case D reports to the Chief Executive Officer and is responsible for the new product portfolio management. His roles involve business planning, opportunity and knowledge gap identification, category, brand plan development and sign off. His responsibilities are to provide the strategic and operational leadership to 10 R&D staff, ensure the Innovation Department is effectively integrated into the organization and deliver the Corporate Strategy Matrix targets (revenue growth, marginal growth and customer satisfactions) and other operational goals.

The GM of Innovation chaired the Product Control Group that comprised of middle managers from production, R&D, marketing that meet monthly to discuss innovative product development, risk and resource allocation for new and on-going projects. The team uses scoreboard (traffic light system) and stage gate to deliver data integrity and weed bad projects early for effective portfolio management. The organization uses intranet and MS office products to calculate NPV of new product development and generate bubble chart or pie chart reports for senior management to identify the high return with acceptable risk product development.

This practices has helped to maximize the value of the portfolio, seeking the right balance of projects to ensure the portfolio is strategically aligned with limited resources. There has been an improvement of twenty five percents (25%) of resource allocation, selecting the right products after implementing this practices in Case D.

### ***Case E: (Phamaceutical) Context***

Case E is a global phamaceutical organizations that has its operation in Australia for more than 40 years. It has approximately \$2 billion annual turnover of revenue and focus on primary care and innovation product. The are about 100 new products and R&D annually being carried out in Australia operations.

### ***Case E: History and current status of Portfolio Management Implementation***

The prioritization and selection of new product for R&D and manufacturing are crucial in this organization. This logically translates into portfolio management whereby the ability to select today's projects that will become tomorrow's new product winner. Their new product development is the manifestation of this organization business's strategy and is important ways they operationalize the business strategy through this process. This organization believes that if their new products initiatives are wrong – the wrong projects, or the wrong balance— then they fail at implementing their business strategy.

Their portfolio management helps in resource allocation. As public listed company that preoccupied with value to the shareholder and doing more with less, technology and marketing resources are simply too scarce to waste on the wrong projects. Therefore, the consequences of poor portfolio management are to be avoided that will squander scarce resources, and as a result, starve the truly deserving projects.

### ***Case E: Practices, Roles and Responsibilities of managers in Portfolio Management***

In Case E, the New Product Planning Group (NPPG) Manager reports to Head of Commercial division to manage the organization R&D and new product development. He has a team of 11 staff that involve in R&D product development and portfolio management implementation. Due to long term R&D initiatives and high investment cost, a successful new product effort is fundamental to business success. The NPPG roles involve in annual business strategic alignment, senior executive and stakeholder engagement, portfolio management to prioritize, categorize, select new product development. He is responsible for overall new product development resource planning, risk management and value assessment.

Case E uses Cost Benefit Analysis for their Portfolio Management to prioritize the R&D and new product development projects for execution and hidden opportunities offered by various market access factors in enhancing and expanding the competitive advantages of a firm.

MS Project Server is used as a tool to capture the new product development process and documents. Portfolio Management is essential for Case E as it has proven to assist the Senior Executives to make good business decision in R&D and new product development.

### ***Case F: (Health & Medical equipment) Context***

Case F is a leading developer, manufacturer and distributor of medical equipment founded in Australia in 1990. The company is dedicated to developing innovative products to improve the lives and invest approximately 6-7% of revenues in research and product development. Their investment grows every year, demonstrating their commitment to continuing global leadership based on their innovative technologies. The company has over 3,000 patents granted or pending worldwide and 30 offices globally.

### ***Case F: History and current status of Portfolio Management Implementation***

Case F manufactured seven core health products and has a team of R&D to innovate and develop new medical equipments to global market. The Portfolio Management is established by the global Strategic Business Group that manage the R&D, new product development and manufacturing of the core strategic

products. This group focus on assigning priorities, investment and resource allocation decisions. Due to varying degrees of complexity of R&D projects, the portfolio approach forces strategic managers from different organizational functions to reach consensus between R&D and innovation management. The complexity of innovation management encourages evaluations of R&D projects from strategic managers of different functions to reach consensus by allowing flexibility in setting specifications and goals. The detail projects such as product specifications, marketing strategies, logistic targets and production technologies are often set after consensus has been reached (Mikkola, 2000).

### ***Case F: Practices, Roles and Responsibilities of managers in Portfolio Management***

The Strategic Business Manager reports to the President of Strategic Business unit to manage the core health products new product development. His role is to assist senior executive to make decisions of capital investment allocation, project selection, prioritization and resource allocation, identify gaps and future development opportunities and assist in the consensus of R&D and Innovation management.

He is responsible in reporting the status of projects, the inter-dependencies of R&D and Innovation projects that link to business level performances. Using Project Portfolio Matrix, the strategic business manager involve in the evaluation of a portfolio of R&D projects to include:

- Specification of appropriate R&D projects
- Classification of the projects according to sustainable competitive advantages created by the firm such as technical advantage and the benefits offered to customers.
- The management of R&D projects with respect to risks, dynamics, and balance of the portfolio

## **4. Comparing the Six Cases**

### ***Roles, Responsibilities and Practices***

The roles of portfolio managers for both service and manufacturing organizations in Australia are found at medium and higher levels in the organization structure. Their responsibilities generally involve aligning projects/program/products with strategy, prioritization, and resource management across portfolio. The portfolio managers for both manufacturing and service organizations are report or work closely with corporate financial services to achieve financial objectives in managing their portfolio. The portfolio managers for both industries are require to achieve financial results in relation to the annual plan. Tools that the portfolio managers used are financial system and enterprise project management software to track the schedule, budget and

resources of projects, program or product development. The portfolio managers in manufacturing also work closely with the sales and marketing team to monitor the competitor strategies on product development.

The coding method described in the data analysis method section and developed the codes on roles, responsibilities and practices from the raw data. During the interview, interviewees were asked to give some keywords about their roles, responsibilities and practices. The most frequently used keywords were: Business planning & strategic alignment, portfolio prioritization and selection, stakeholder management, risk management, regulatory, value assessment and benefit realisation. The code is analysed based on (Blomquist & Muller 2006; Killen et al. 2008; Jonas 2010) roles and practices of portfolio manager. In this study, these keywords/codes are grouped into six categories:

- Business planning & strategic alignment
- Portfolio prioritization and selection
- Stakeholder management
- Risk management
- Resource planning
- Value assessment and benefits realization

## 5. Discussion

The Portfolio manager's roles for both service and manufacturing organizations involve before and after a single project/program/product. From the interview, it indicates that portfolio manager has similar roles and is stated as below:

- a) Involves in strategic business planning with stakeholder during prestage of project or product development
- b) Ensure projects/programs/products delivered on time, budget and scope during the project or product development
- c) Managing risks
- d) Project reviews, coaching, issue handling and improvement of corporate processes after the project or product development.

Though the portfolio manager's roles are similar, they differ slightly in the extent due to their different portfolio management context. For example, in services organizations, the business planning processes are relatively shorter term (1-3 years) compare to manufacturing. The process on ensuring the projects/program deliver benefits/value and alignment with organizations strategy are essential. Those business case that do not have strong benefit/value to organization strategy or business change will not be in top

priority on delivery or even approved by their Portfolio Review Board. Their responsibilities include compliance with corporate policies, development, implement and maintain Investment Framework and the investment model such as Value Assessment model/Benefit Realization model and achieving financial target.

As for manufacturing organizations, portfolio managers will need to work on portfolio strategy and work on longer term product roadmaps (1-10 years) due to research and development activities required for their industries. The roadmap outlines how management wants to achieve their desired objectives (product and technology) and allows for identification of needed capabilities, which then be planned for in terms of time and budget (Cooper et al. 2004). The portfolio managers work closely with their sales and marketing team to monitor competitor product information and trend. They are also working closely with their R&D and quality team to monitor the quality of products before delivery as defects product will incur heavy losses (profit and goodwill) to the organizations. The portfolio manager in manufacturing are involve in several stages such as new product development, new product management and new categories opportunity and their responsibilities include integration of business drivers, team leadership and achieving financial target.

### **Practical Implication**

The practical implications of the results are:

- Portfolio managers are focusing on business results, stakeholder satisfaction and long term strategy and results of their portfolio
- Portfolio managers from service industry require not only project management skills but also financial analysis skills for reporting and communications
- Top management in both service and manufacturing industries are involved in portfolio management to achieve business results, strategy alignment of the projects and accountable for the value of projects requested.

### **Theoretical Implications**

The TCE's underlying assumption that different project types need different governance structures (Williamson 1985) is supported by this preliminary results. Organizations from both industries; service and manufacturing show flexibility in adapting their governance to the requirements of their environment. However, in service industries organization are new to portfolio management and are looking for the best practices for their project, program and portfolio management. The organizations use specific processes and tools to counteract the problem of bounded rationality in decision making, issues handling and business planning.

The role of portfolio manager is to put together the network of resources to

deliver projects/product development. They ensure the availability of the right resource at the right place and time and interaction with other projects and the resources needs. Their role becomes pivotal as one of organizational integrator to co-ordinate resources, advisor to management teams and escalator of issues across organizational boundaries.

## References

Blomquist, T., Müller. (2006). "Practices, Roles, and Responsibilities of Middle Managers in Program and Portfolio Management." *Project Management Journal* 37(1): 52-66.

Cooper, R.G., Edgett, S.J., and Kleinschmidt, E.J. (2004), "Benchmarking Best NPD Practices -I," *Research Technology Management* 47(1): 31-43.

Crawford, L., Helm, J. (2009). "Government and Governance: The Value of Project Management in the Government owned-corporation Sector." *Project Management Journal* 40 (1): 73–87.

Drake, J. R., Byrd, T.A., (2006). "Risk in Information Technology project portfolio management." *Journal of Information Technology Theory and Application* 8(3): 1-11.

Elonen, S and Arto, K A (2003) Problems in managing internal development projects in multi-project environments. *International Journal of Project Management*, 21 (6), 395-402.

Engwall, M., & Jerbarant, A. (2003). The resource allocation syndrome. The prime challenge of multi-project management, *International Journal of project management* 21(6), 403-409

Jonas, D. 2010. Empowering project portfolio managers: How management involvement impacts project portfolio management performance. *International Journal of Project Management*, 28, 818-831.

Killen, C. (2008). "Project portfolio management for product innovation", *International Journal of Quality & Reliability Management* 25(1).

Martinsuo, M., Lehtonen, P. (2007). "Role of Single Project Management in achieving portfolio Management efficiency." *International Journal of Project Management* 25(1): pp56-65.

Miles, M. H., AM Ed. (1994). *Qualitative Data Analysis*. London, Sage.

Mikkola, J. H. (2001). "Portfolio Management of R&D projects: implications for innovation management." *Technovation* 21: 423-435.

Muller & Turner (2005) "*The impact of principal-agent relationship and contract type on communication between project owner and manager*" *International Journal of Project Management* 23:398-403.

Olsson, R. (2008). "Risk Management in a multi-project environment." *The International Journal of Quality & Reliability Management* 25(1): 60-71.

PMI *the Standard for Portfolio Management*, Project Management Institute, 2008.

Punch, K. F., Ed. (1998). *Introduction to Social Research: Quantitative & Qualitative Approaches*. London, Sage.

Rudestam, K. N., RR Ed. (2001). *Surviving Your Dissertation: A comprehensive Guide to Content and Process*. Thousand Oaks, California, Sage.

Simon, H. (1957), *Models of man*. New York; John Wiley & Sons

Strauss A., Corbin J.M. (1990). *Basics of qualitative research: Grounded theory procedures and Techniques*. Newbury Park (CA): Sage.

Williamson, O. E., Ed. (1985). *The economic institutions of capitalism*. New York: The Free Press.