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The extent that chartered project management surveying practices and clients avail themselves of professional project management practice standards.

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Abstract

The importance of project management is recognised within the UK construction industry. Various project management organisations promote and promulgate the use of their practice standards. The concepts and definitions of projects and project management, the “iron triangle” and making projects “critical” are evaluated. This literature review assesses project-based organisations and embedding new project management knowledge. The concept of projects as learning tools and the emergence of the project management office are considered. The different views on the issues that may arise from standardised project management practice are contemplated. The advantages and challenges of the codifying professional services are highlighted. The value of this research is to provide a greater understanding of the potential barriers that practitioners may encounter in knowledge transfer and learning from projects. The significant finding from the literature review is that there are challenges for practitioners in transferring knowledge, tacit or otherwise, and ironically this seems to be compounded by the characteristics of project-based working in project-based organisations. The outcome of this literature review will influence the ongoing professional doctorate research i.e. the extent that chartered project management surveying practices and clients avail themselves of professional project management practice standards.

Key words

Iron triangle, Knowledge, Project-based organisations, Professional project management practice standards,

1.0 Introduction

1.1 Focus and structure of Paper

The focus of this paper is to provide an understanding of the potential barriers that project managers may encounter in knowledge transfer and learning from projects. The first part of this paper clarifies the research method and considers the significance of project management within the UK construction industry. An overview of the growth of the project management associations and their practice standards are provided. This paper critically evaluates the definitions of projects and project management, the concepts of the iron triangle and making projects “critical”. Project-based organisations and their relevance to UK construction industry are appraised. The emergence and role of the project management based office is assessed and the penultimate section of this paper highlights the different views on standardised project management. This paper concludes with recommendations for employers and project management associations.

1.2 Research method

This paper is based on a literature review that comprised theories and concepts from different subject areas: project management theory, organisational theory, concept of workplace learning and tacit knowledge. The purpose of this literature review is to evaluate significant ideas and research that would explain how project managers acquire and transfer their knowledge. The materials for this literature review have come from peer reviewed journals, industry reports, textbooks, conference proceedings, newspaper articles and websites. The literature review has an international flavour as the research materials have been drawn from USA, France, Sweden and the UK.

1.3 The UK construction industry

The construction industry is estimated to contribute 7% of the UK gross domestic product and was valued at £90bn in 2011 (HM Government, 2013). The industry is an important one: it employs 2.93m people, comprises more than 280,000 businesses and is one of the biggest sectors in the UK economy (Department for Business, Innovation and skills, 2013). However, the construction industry has some long-term problems and arguably should improve its performance. A highly fragmented industry and inefficient procurement practices are cited as some of the reasons for its underperformance (Cabinet Office, 2011). From 1944 to 1998, the Government has procured 11 significant reviews of the construction industry (Murray & Langford, 2003). It was assessed that

the industry has become less attractive ... demands on the industry cannot be met ... cannot attract staff to deliver buildings on time (Murray & Langford, 2003, p. 7).

In 2001, more than 70% of capital projects in the public sector exceeded their original contract date and budget (National Audit Office, 2001). In 2012, only 33% of projects were delivered on time and within budget (House of Commons, 2012). Demonstrably, the industry has a significant challenge in managing the delivery of capital projects on time and within budget.

1.4 Project management in the UK

The importance of project management is recognised within the UK construction industry, which has had some high profile projects that were regarded as poorly delivered, e.g. Wembley Football Stadium, the Scottish Parliament and the Millennium Dome. The Chief Executive and Chairman of the Olympic Delivery Authority considered that effective project

management was key to the successful delivery of the London 2012 Olympic Games (APM, 2012). The UK Government has accepted that project management should be improved and has undertaken various initiatives to this effect. These include: plans to improve governance and internal client skills in accordance with the remit of the Major Projects Authority (Cabinet Office, 2012, p. 24 & 25) an acceptance that civil servants lack expertise on project management (Neville, 2014b) and sending senior civil servants for further education and training on the delivery of major projects (Neville, 2014a). The concept that project management is a successful tool for delivering projects may be undermined if not implemented consistently across Government departments. Browne (2013) cautioned that the ad hoc and piecemeal implementation of standards and the failure of Government departments to adhere to due diligence checks are a problem when delivering projects.

1.5 Growth of professional project management associations

Project management is a growing profession and this is partly evidenced by the growth of professional project management associations (PPMAs) and the development of project management as a subject in academia.

For the purpose of this paper, the group of the PPMA are considered to be the Project Management Institute (PMI), the Association for Project Management (APM) and the Royal Institution of Chartered Surveyors (RICS) Professional Project Management Group (PMPG). The PMI is the largest of the group, it was established in 1969 in the USA and has more than 500,000 members worldwide (PMI, 2015b). The APM was established in 1972 in the UK and has more than 21,150 members (APM, 2015). The RICS introduced the qualification of “Chartered Project Management Surveyor” (CPMS) in 2001 (McCann, 2013). There are more than 30,000 CPMSs worldwide (McCann, 2014).

The PPMA promote the use of their professional project management practice standards (PPMPS). Berg, Horstman, Plass, and Van Heusden (2000, p. 787) highlighted that there is often confusion as to difference between practice standards, guidelines, protocols, or codes of practice “these terms are used interchangeably and there is no general agreement on the relevance or clarity of the claimed differences”. This paper will focus on three key PPMPS: the PMI’s and APM’s Bodies of Knowledge (BoKs) and the RICS PMPG’s Guidance Notes and Information Papers. The PPMPS are regarded as a form of codified knowledge. Egbu & Robinson (2005, p. 46) argued that the construction industry is highly knowledge-intensive sector and that knowledge “is critical for effective action in the economy of the future and can bring critical competitive advantage”.

1.6 Limitations of the Bodies of Knowledge

The limitations of, and concerns with, the BoKs within the subject of project management practices have been reviewed in different ways for more than a decade (Bredillet, 2010; Cicmil & Hodgson, 2006; Dalcher, 2014; Hatfield, 2014; Kozak-Holland, 2013; Maylor, 2001).

Bredillet (2010, p. 5) proposed that the development of project management was led by the professional associations in the 1980’s but contested that the knowledge was flawed as it continued to be “very user-oriented, and did not always adhere to recognised standards of academic rigour”. Morris, Crawford, Hodgson, Sheperd, and Thomas (2006) considered that the BoK have become “de facto standards” for practitioners. It is suggested that this view was accurate for example, the PMI promotes their BoK “as the globally recognised standard and guide for the project management profession” (PMI, 2013, p. 1).

Morris et al. (2006) warned academics that they should not rely on the PPMA to set standards for education of project managers. Notable contributions from various academics have challenged traditional project management ideology. Some examples include: defining the differences between project success and project management (Munns & Bjeirmi, 1996), the concept of the “iron triangle” (Atkinson, 1999) and making projects “critical” (Hodgson & Cicmil, 2006). It is suggested that these examples provide a greater understanding of the limitations of the PPMPS. In addition they provide a basis for further exploration of other less obvious factors that may contribute to the limitations of the PPMPS including organisational theory, the concept of projects as separate learning entities and the role of practitioners in knowledge sharing.

2.0 Different perspectives on project management

2.1 Projects and project management

It is suggested it is relevant to distinguish between project and project management. De Wit (1988, p. 169) proposed that it was not straightforward to assess whether or not a project was successful

The measurement of success seems invariably to concern itself with either completed projects or at least a completed project phase. A project may be perceived a success one day and a failure the next. Therefore, to think that one can objectively measure the success of a project is an illusion.

De Wit (1988) distinguished between project success and project management success. Project management success was judged on cost, time and quality. Munns and Bjeirmi (1996) considered the differences between project and project management and asserted that project management is a short-term activity in comparison to a project that has a longer life span and therefore has different objectives or required outcomes. Munns and Bjeirmi (1996, p. 82) argued that “project management and its techniques are only a subset of wider context of the project”. Maylor (2001, p. 96) did not share this view and argued that defining project management as a one off activity, “infers a degree of novelty that is often misplaced” and that project management has a “much wider range of durations and complexity”. It is suggested that the differences between projects and project management are relevant in the context of the construction industry. The differences include time frame and the contractual role of project managers.

Capital projects have a longer life cycle when compared to the period allocated for project management period; for example, it may take two years of project management services to provide some new houses but these are likely to have a minimum life span of 60 years.

It is also pertinent to consider the role of those delivering project management services and projects. Munns and Bjeirmi (1996) argued that the project team focus on the project management tools and techniques to deliver the project. It is suggested that this analysis is correct as the various standard forms of project management consultancy services in the UK include contract conditions that consider how the project management services will be delivered. (See section 2.2 on the “iron triangle” below). These contracts do not contain legal clauses that oblige project managers to ensure the aims of the project are achieved. Project management services will normally be almost complete when the project is handed over to the client except for some later services that may be required to resolve building defects. Cooke-Davies (2002) advocated that while delivering project success was more difficult than project management success, project managers should collaborate those with line management responsibility to optimise the benefits of the project. The PMI explicitly

embraced this idea via the “PMI Talent Triangle” that practitioners must have a skills encompassing “strategic and business management insight” (PMI, 2015a).

2.2 The concept of the iron triangle

Atkinson (1999) continued the theme of questioning what constituted success for project management. He criticised the emphasis on using the standard criteria of delivering budgets on time, on cost and to the specified quality, hence his use of the term “iron triangle”. He suggested that the measurement of project success should take in to consideration other factors and questioned the implications for trying to define project management. Atkinson (1999) did not suggest any mechanism for the implementation of his proposed new criteria “The Square Route”. There has been no analysis as to how providers of professional indemnity insurance would perceive the additional potential risks to project managers from having long-term liability for projects as opposed to providing project management services during a project.

2.3 The iron triangle and its influence on practitioners knowledge sharing

The concept of the “iron triangle” is relevant. Previous studies have suggested that this long standing concept of delivering projects on time and on budget to a specified quality has influenced practitioners’ approach to long-term learning and transfer of knowledge (Foos, Schum, & Rothenberg, 2006; Pemsel & Wiewiora, 2013; Von Krogh, Ichijo, & Nonaka, 2000). Pathirage, Amaratunga, and Haigh (2008, p. 214) concluded that in an organisational context

tacit knowledge constitutes understanding, capabilities, skills and the experiences of individuals; often expressed in human action in the form of thoughts, points of view, evaluations and advice; generated and acquired through past experiences, individuals, and repositories; utilised for the benefit of individual and organisational development.

Foos et al. (2006, p. 15) concluded that project managers were not interested in the long-term transfer of tacit knowledge as they perceive they are rewarded on delivering the project’s “iron triangle” requirements also known as the project manager’s “execution realm”. Their findings revealed senior managers viewed the transfer of tacit knowledge as strategically important. Their research focused on the development of external technology integration from various sectors but excluded the construction industry. Egbu and Robinson (2005) highlighted intra- and inter-organisational knowledge sharing within the construction industry and that there is unease regarding the latter type of knowledge sharing. Some of these concerns include copyright and confidentiality. It is suggested that the aforementioned concerns including an individual’s perception of commercial advantage may contribute to practitioners reluctance to share or transfer tacit knowledge.

Von Krogh et al. (2000, p. 14) considered that tacit knowledge was likely to emerge in micro-communities over time rather than during project work. The rationale being that there is more time for members to get to know each other, their personalities and rituals etc. and establish the micro-communities as a stable group rather than being disbanded as soon as the project is finished.

Pemsel and Wiewiora (2013) concluded that the nature of projects as temporary organisations can impede knowledge sharing among practitioners as there focus is on delivering their current project with little time for reflection before the next one. Bordass and Leaman (2013, p. 1) presented a view that “designers and builders are trained to ... hand over the keys, not to look in to what happens afterwards”.

The nature of the construction industry with its emphasis on competitive tendering especially in the public sector for design services and works does not encourage the design team and contractors to remain in teams that get the opportunity to create long-term and sustainable relationships. However it is suggested that there are also specific challenges for practitioners embedding new project management knowledge within project-based organisations which are discussed in section 3.3.

2.4 The concept of making projects “critical”

Cicmil and Hodgson (2006, p. 1) highlighted that various individuals have questioned the traditional approach to project management and its body of knowledge since 1994. Their overarching concern was that while universal principles may be of some use for managing projects, this approach does not consider that project managers operate in an ever-changing and competitive environment. They challenged the long-held conventional view that project managers have purely rational and technical skills, e.g. planning, commanding, controlling etc. Cicmil and Hodgson (2006, p. 11) summarise the conundrum by asserting “project management is perceived as social, context-bound practice which cannot be reduced to a set of theories, tools and techniques”. Blomquist and Packendorff (1998) concurred with the view that projects must not be perceived as operating as a distinct system impervious to outside political or economic pressures. The perspective of looking at projects and project management in this way allows research to consider other theories e.g. organisational theory that may have been regarded as traditionally outside the project management domain.

3.0 Project-based organisations

3.1 The projectified society

Lundin and Soderholm (1998, p. 16) asserted that use of projects by organisations to remain competitive is likely to continue and introduced the term “projectified society”. However they suggested that a society organised or dominated by projects would face uncertain and complex problems including the temporary and unpredictable nature of the labour market and the difficulty of maintaining a stable knowledge reservoir. They suggest that the projectified society is partly in existence as projects will continue to fulfil an important economic role in society. The issue of a growing projectified society would appear to present long-term challenges for project managers when passing on knowledge to others.

3.2 Project-based organisations and the construction industry

Bresnen, Goussevskaia, and Swan (2004) argued that the construction industry is a good example of where project-based organisations are located due to its extensive range of activity. The nature of construction encourages project-based working as clients requires project-specific and unique requirements, multiple inter-professional contractual arrangements and heterogeneous project teams. However project-based organisations may have potential problems when they are implementing new management ideas or procedures that may be regarded for general application and therefore perceived as context free and open to interpretation by project managers in different ways. Bresnen et al. (2004) highlighted that implementing new management initiatives should be done so with an awareness of the social context in which they occur. They concluded that the development of new project management practice is a two-way process and depends on the organisation’s system of guidelines and the individual practitioners’ actual use and interpretation of them in practice.

3.3 Project-based organisations and embedding new project management knowledge

Bresnen et al. (2004) judged that the introduction of new measures or knowledge by companies was complex within project-based organisations that had embedded project management practices. Their research clarified that it was not that the working on projects that prevented new knowledge from being embedded, but that the ongoing interactions and praxis were changing on the basis of practitioners' experience of projects. They considered the use of structuration theory to comprehend that diversity of practice is acceptable.

Goussevskaia, Scarbrough, Swan, and Bresnen (2006) considered that due to the characteristics of project-based learning, careful consideration was required before introducing new organisational practices. Their research focussed on the implementation of new project management practices in four UK construction companies. They drew attention to the features of project-based organisations, the transitory nature of projects, the short term emphasis on performance and decentralised work locations. Their research showed that some new project management practices were not accepted and this was partly due to the perceived validity of the new procedures and politics within the organisation. These findings are consistent with other research. Hatfield (2014, p. 205) undertook some scenario planning and predicted "managers continuing to do what they do regardless of what professional institutes and standard writers say they ought to". Garcia (2005) highlighted the issue of adopting project management standards and cautioned against the introduction of more unnecessary standards. Her view was that organisations must comply with various standards to remain competitive in the market place but cautioned against imposing a new standard that conflicted with an existing one or was incompatible with the organisation's culture.

4.0 Project learning

4.1 Project learning tools

Ayas (1998, p. 90) argued that "professional" project management" is "building long term capability for learning and continuous improvement with every project undertaken". Ayas (1998) added to the debate that project managers are focussed on short-term performance and this was not conducive to the investment required for "professional" project management. She proposed that the following mechanisms or tools could be useful for learning from projects: a project audit, a generic work breakdown and a demonstration project. The ability to undertake a project audit is recognised by the RICS's PMPG Board as a CPMS competency. It is suggested that a generic work breakdown structure may exist in professional companies as part of their in-house project management procedures. Some PPMPS already include checklists and aide-memoirs; for example, the RICS's Project Monitoring Guidance Note includes Appendix A that sets out an extensive generic check list for project managers' use in compiling an Initial Audit report.

It is suggested that demonstration projects for a capital project are rare in the construction industry. Several factors may contribute to this: a perceived unwillingness of clients to invest in a capital project that could be expensive to monitor over a long period of time, the public sectors obligation to competitively tender works and, more widely, the industry's reluctance to invest in research and development. The construction industry has not demonstrated a high level of investment in research and development; for example, it has a turnover of £65bn but spent only £270m on research and development in 1999 to 2000 (National Audit Office, 2001, p. 9). Arguably the UK Government's own commitment to research has diminished as it has committed only £150m to the construction industry from 2013 to 2018 (Department for Buisness, Innovation and Skills, 2015).

Ayas (1998) did not directly refer to the potential of other project learning concepts i.e. the PPMPS or the project management office (PMO) that may be of value to practitioners. The

rationale for this anomaly may be that the emergence of the PMO was a relatively new idea in 1998 (Hobbs, Aubry, & Thuillier, 2008).

4.2 The project management office

Hobbs et al. (2008) proposed that the emergence of the PMO was another response by organisations to remain competitive in a global market. It is suggested that one of the reasons for the emergence of the PMO was to counteract the potential lack of knowledge sharing as part of the growing projectified society. See section 3.1 above.

Boud and Garrick (1999b) asserted that work and learning are no longer separate. Workplace learning is defined as that which is

concerned with immediate and future competencies ... too important to be left to educational institutions and in-house training departments ... (Boud & Garrick, 1999a, p. 5)

It is suggested that the emergence of the PMO may be seen as result of changes to workplace learning and employers have a vested interest in the long-term development of practitioners.

The PMI has promoted and favoured the use of the PMO as an important aspect of knowledge transfer (PMI, 2015a). Pemsel and Wiewiora (2013, p. 31) defined the PMO as “a formal layer of control between top management and project management”. The PMO’s function will vary but its role can be regarded

as an organisational unit facilitating coordination of knowledge and other resources between the PBO [project-based organisation] and its projects, and can therefore act a bridge over organisational and knowledge boundaries (Pemsel & Wiewiora, 2013, p. 32).

Pemsel and Wiewiora (2013) provided for a pessimistic view there was a significant mismatch in practitioners’ expectations of the PMO’s role and project managers’ knowledge sharing behaviours. There was a consistent finding that practitioners preferred to seek colleagues’ advice than read PMO’s guidelines as these were considered laborious. One significant weakness of the PMO is that they focus on past performance of projects rather than providing guidance to practitioners on how they can mitigate problems on future projects. Their research comprised interviews with 64 practitioners within seven organisations, including one in the construction sector.

Arguably, the PMO could have a useful role in capturing and disseminating knowledge from projects and incorporating this information in to the long-term development of practitioners and improving organisational knowledge. In this way, practitioners may consider that projects could be considered as learning entities. The issue is whether project managers can or want to transfer tacit knowledge from undertaking projects. Foos et al. (2006, p. 15) highlighted “that very few managers differentiate between technology transfer and tacit knowledge”. Kreiner (2002) argued that while there was substantial material on knowledge management, he contended that this is not an easy task to manage tacit knowledge. It is suggested that the success of the PMO will depend on its understanding of organisational politics and its support from practitioners.

4.3 Standardised project management practice

The issue of standardised project management has been considered by various researches with mixed and contrasting results. Papke-Shields, Besie, and Quan (2010) concluded there was evidence that the adoption of project management practices did lead to increased project

success. Their research in the USA indicated that project management practices for time, cost and quality were implemented more than others. It is suggested this finding reflects the tradition of measuring projects in accordance with the “iron triangle”. Approximately 54% of responses came from organisations with sales volumes between \$50m to \$1bn. 50% of the organisations employed between 1,000-25,000 employees and their research was pan-sector. Arguably, given organisations of this magnitude, there would be some project management procedures in place in contrast to a client who may commission a capital project once in a life time. Their study was cross-sectional not longitudinal. It is suggested that a longitudinal study would have proven more interesting for example, would the same levels of project management service be maintained during a period of recession? Papke-Shields et al. (2010, p. 651) commented “that we do not have a complete picture of which PM practices are being used and the relative use of these practices”.

Other research on standardised project management within the computer and electronics industry concluded that

It is wrong to assume that standardizing PM factors will automatically enhance project success ... and that increasing standardization further beyond this point – which we referred to as an inflection point may actually stifle project success (Milosevic & Patanakul, 2005, p. 191).

Conventional wisdom suggests that having standardised project management practice based on the PPMPS would help improve project management services. The standardisation of professional services could reduce scope for negligence which forms part of the corporate risk management process (Connaughton & Meikle, 2013, p. 106).

However, there are concerns about codifying professional services or practice standards. It is suggested, there is a potential risk of inexperienced practitioners falling in to the trap of “box ticking”. Hodgson and Cicmil (2006, p. 48) questioned that the “black boxing” of project management procedures and knowledge maybe detrimental, i.e. removing ethical and political dimensions of projects.

5.0 Concluding remarks and recommendations

5.1 Concluding remarks

The literature review considered some long-standing beliefs that appear to be rarely challenged in main stream project management practice. Considering the differences between projects and project management, the concept of the “iron triangle” and the idea of making projects “critical” has provided an alternative perspective on some of the barriers practitioners may encounter in knowledge transfer or learning from projects. The review of project-based organisations analysed some project management learning tools including the project management office. This paper highlighted some different views on the merits of standardised project management procedures and the codification of professional services and this is an area that should be explored in further research.

The significant finding from the literature review is that there are challenges for practitioners in transferring knowledge, tacit or otherwise, and ironically this seems to be compounded by the characteristics of project-based working in project-based organisations. This new knowledge leads to the suggestion that projects can be perceived as a learning entities in their own right and complemented by other project learning tools such as codified project management knowledge.

The aim of the research paper was to undertake a literature review that will influence the professional doctorate research. The title of the professional doctorate is “the extent that chartered project management surveying practices and clients avail themselves of professional project management practice standards”. One of the research objectives is to investigate how professional services firms and clients use professional project management practice standards in the workplace when providing training and development for their employees. The future research will provide an opportunity to explore if the professional project practice management standards can be seen as a source of consistent and lasting knowledge to practitioners and clients.

5.2 Recommendations

It is proposed that employers have an important role to play in the long-term development of practitioners due to changes in workplace learning. It is recommended that by allocating project managers’ specific time for reflection *between projects*, they can learn lessons that will be useful for future projects. In addition, it is recommended that the professional project management associations review their professional development requirements, so that there is an emphasis on incorporating lessons learnt from previous projects and knowledge sharing.

List of references

- APM. (2012). ODA Special Supplement 2012. High Wymcombe: Association for Project Management.
- APM. (2015). About APM. Retrieved 7 March 2015 from <https://www.apm.org.uk/AboutUs>
- Atkinson, R. (1999). Project management: cost, time and quality, two best guesses and a phenomena, its time to accept other success criteria. *International Journal of Project Management*, 17(6), 337-342.
- Ayas, K. (1998). Learning through projects: meeting the implementation challenge. In R. Lundin & C. Midler (Eds.), *Projects as arenas for renewal and learning processes* (pp. 89-98). Massachusetts: Kluwer Academic Publishers.
- Berg, M., Horstman, K., Plass, S., & Van Heusden, M. (2000). Guidelines, professionals and the production of objectivity: Standardisation and the professionalism of insurance medicine. *Sociology of Health and Illness*, 22(6), 765-791.
- Blomquist, T., & Packendorff, J. (1998). Learning from renewal projects: content, context and embeddedness. In R. Lundin & C. Midler (Eds.), *Projects as arenas for renewals and learning processes*. Massachusetts: Kluwer Academic Publishers.
- Bordass, B., & Leaman, A. (2013). A new professionalism: remedy or fantasy? *Building Research and Information*, 41(1), 1-7.
- Boud, D., & Garrick, J. (1999a). Understanding of workplace learning. In D. Boud & J. Garrick (Eds.), *Understanding Learning at work* (pp. 1-12). London: Routledge.
- Boud, D., & Garrick, J. (Eds.). (1999b). *Understanding learning at work*. London: Routledge.
- Bredillet, C. (2010). Blowing Hot and Cold on Project Management. *Project Management Journal.*, 41(3), 4-20. doi: 10.1002/pmj.20179
- Bresnen, M., Goussevskaia, A., & Swan, J. (2004). Embedding new management knowledge in project-based organizations. *Organization Studies*, 25(9), 1535-1555. doi: 10.1177/0170840604047999
- Browne, L. (2013). Getting a grip: How to improve major project execution and control in Government. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/175299/Getting_a_grip_Lord_Browne_major_project_review_Mar-2013.pdf
- Cabinet Office. (2011). Government Construction Strategy. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/61152/Government-Construction-Strategy_0.pdf
- Cabinet Office. (2012). *Government Construction Strategy One year on report and action plan update*. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/61151/GCS-One-Year-On-Report-and-Action-Plan-Update-FINAL_0.pdf
- Cicmil, S., & Hodgson, D. E. (2006). *Understanding Knowledge and Skills used in Project Management Practice*. Paper presented at the XII Journées de Projectique, Bidart, France.
- Connaughton, J., & Meikle, J. (2013). The changing nature of UK construction professional service firms. *Building Research and Information*, 41(1), 95-109.
- Cooke-Davies, T. (2002). The “real” success factors on projects. *International Journal of Project Management*, 20(3), 185-190. doi: [http://dx.doi.org/10.1016/S0263-7863\(01\)00067-9](http://dx.doi.org/10.1016/S0263-7863(01)00067-9)
- Dalcher, D. (Ed.). (2014). *Advances in project management: Narrated journeys in unchartered territory*. Surrey: Gower Publishing Ltd.
- Department for Business, Innovation and Skills. (2013). UK Construction: An economic analysis of the sector.

- Department for Buisness, Innovation and Skills. (2015). £150 million investment will help transform UK construction. Retrieved 20 March 2015 from <https://www.gov.uk/government/news/150-million-investment-will-help-transform-uk-construction-sector>
- De Wit, A. (1988). Measurement of project success. *International Journal of Project Management*, 6(3), 164-170. doi: [http://dx.doi.org/10.1016/0263-7863\(88\)90043-9](http://dx.doi.org/10.1016/0263-7863(88)90043-9)
- Egbu, C., & Robinson, H. (2005). Construction as a knowledge-based industry. In C. Anumba, C. Egbu & P. Carrillo (Eds.), *Knowledge management in construction* (pp. 31-49). Oxford: Blackwell Publishing.
- Foos, T., Schum, G., & Rothenberg, S. (2006). Tacit knowledge transfer and the knowledge disconnect. *Journal of Knowledge Management*, 10(1), 6-18.
- Garcia, S. (2005). How standards enable adoption of project management practice *IEEE Software*, 22(5), 22-29.
- Goussevskaia, A., Scarbrough, H., Swan, J., & Bresnen, M. (2006). *Implementing new management initiatives in project-based environments: the role of organisational practices and power dynamics*. Paper presented at the 39th Hawaii international conference on system sciences Hawaii.
- Hatfield, M. (2014). The coming sea-change in project management science. In D. Dalcher (Ed.), *Advances in project management: Narrated journeys in uncharted territory* (pp. 202-209). Surrey: Gower Publishing Ltd.
- HM Government. (2013). *Construction 2025*. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/210099/bis-13-955-construction-2025-industrial-strategy.pdf.
- Hobbs, B., Aubry, M., & Thuillier, D. (2008). The project management office as an organisational innovation. *International Journal of Project Management*, 26, 547-555.
- Hodgson, D., & Cicmil, S. (Eds.). (2006). *Making projects critical*. Basingstoke: Palgrave Macmillan.
- House of Commons. (2012). Assurance for major projects. Retrieved from <http://www.publications.parliament.uk/pa/cm201213/cmselect/cmpubacc/384/384.pdf>
- Kozak-Holland, M. (2013). *The relevance of historical project lessons to contemporary business practice*. (PhD Thesis), University of Salford, Salford. Retrieved from <http://usir.salford.ac.uk/30644/>
- Kreiner, K. (2002). Tacit knowledge management: the role of artifacts. *Journal of Knowledge Management*, 6(2), 112-123.
- Lundin, R., & Soderholm, A. (1998). Conceptualizing a projectified society. In R. Lundin & C. Midler (Eds.), *Projects as arenas for renewal and learning processes* (pp. 13-24). Massachusetts: Kluwer Academic Publishers.
- Maylor, H. (2001). Beyond the Gantt chart: Project management moving on. *European Management Journal*, 19(1), 92-100. doi: 10.1016/S0263-2373(00)00074-8
- McCann, A. (2013). Future Planning. *Construction Journal*(June & July), 25-26.
- McCann, A. (2014). *Update on RICS's Project Management Professional Group Paper* presented at the RICS and APM Project Leadership Conference, London, UK.
- Milosevic, D., & Patanakul, P. (2005). Standardized project management may increase development projects success. *International Journal of Project Management*, 23(3), 181-192. doi: <http://dx.doi.org/10.1016/j.ijproman.2004.11.002>
- Morris, P., Crawford, L., Hodgson, D., Sheperd, M., & Thomas, J. (2006). Exploring the role of formal bodies of knowledge in defining a profession - The case of project management. *International Journal of Project Management*, 24(8), 710-721.

- Munns, A., & Bjeirmi, B. (1996). The role of project management in achieving project success. *International Journal of Project Management*, 14(2), 81-87.
- Murray, M., & Langford, D. (2003). *Construction Reports 1944-1998*. Oxford: Blackwell Science.
- National Audit Office. (2001). Modernising Construction Retrieved from <http://www.neccontract.com/documents/key%20reports/NAOModernisingconstruction.pdf>
- Neville, S. (2014a, 11 August). Civil servants receive lessons in project delivery, *Financial Times*, p. 3.
- Neville, S. (2014b, 11 August). Whitehall lacks skills to steer big projects, top troubleshooter warns, *Financial Times*, p. 1.
- Papke-Shields, K. E., Besie, C., & Quan, J. (2010). Do project managers practice what they preach, and does it matter to project success? *International Journal of Project Management*, 28(7), 650-662.
- Pathirage, C., Amaratunga, R., & Haigh, R. (2008). *The role of tacit knowledge generation in the construction industry: towards a definition*. Paper presented at the Proceedings of CIB W89 International Conference on Building Education and Research, Sri Lanka.
- Pemsel, S., & Wiewiora, A. (2013). Project management office a knowledge broker in project-based organisations. *International Journal of Project Management*, 31(1), 31-42. doi: 10.1016/j.ijproman.2012.03.004
- PMI. (2013). *A guide to the project management body of knowledge* (5 ed.). Pennsylvania: Project Management Institute.
- PMI. (2015a). Capturing the value of project management through knowledge transfer. Retrieved 20 March 2015 from <http://www.pmi.org/~media/PDF/learning/capturing-value-knowledge-transfer.ashx>
- PMI. (2015b). Project Management Institute: Who we are and what we do. Retrieved 07 March 2015 from <http://www.pmi.org/About-Us/About-Us-Fact-Sheet.aspx>
- Von Krogh, G., Ichijo, K., & Nonaka, I. (2000). *Enabling knowledge creation*. New York: Oxford University Press.