

Engendering Change within a Water Infrastructure Client Organisation: A Participatory Action Research Approach

M. Potts¹, B. Awuzie², P. McDermott³, and A. Stephenson⁴

Abstract

Continuing demands by stakeholders for improved service delivery has caused Infrastructure Client Organisations (ICO) in the UK to embark upon organisational restructuring. It is expected that such restructuring would enhance cost-effectiveness and quality in asset management and service delivery. However, this change, if not properly managed and sustained, could result in the inability of the ICO to achieve these targets. This study outlines the use of systemic thinking and Participatory Action Research (PAR) in driving and managing such change within a UK-based Water and Wastewater ICO (UK WASC). Besides highlighting the context for change in response to policy, austerity and regulatory pressures, this study portrays how the PAR approach can assist in the management of change within ICOs. Furthermore, it provides an insight into the evolution of an external researcher, from a novice to an expert within the ICO, imbued with the required knowledge to encourage other stakeholders to participate in driving the change management process. Preliminary findings indicate the usefulness of this phased approach toward PAR. This study provides a platform for researchers wishing to engage with ICOs to improve service delivery; identifying the value of engagement, change and systemic thinking.

Keywords: Infrastructure delivery, participatory action research, change management.

Introduction

Issues concerning poor quality infrastructure and the delivery of infrastructure-related services have continued to elicit high levels of interest in recent times (HM Treasury 2010). Successive governments have sought to devise strategies that ensure investments in the provision of infrastructure achieve optimum benefits for both society and the economy. Regulation, deregulation and unbundling of service provisions are among a plethora of mechanisms through which governments aim to achieve value for money amongst other favourable benefits associated with the delivery of infrastructure services (Alexander & Estache 2000; Kessides 2005; Eberhard 2007). However, criticisms continue to trail these Infrastructure Client Organisations (ICOs) especially with regard to poor cost effectiveness and service delivery despite the introduction of these mechanisms (IUK 2012).

In the UK, these criticisms have led to a shift in focus towards the resilience, value, investment and efficiency of infrastructure assets; coupled with their procurement, delivery and management (IUK 2012). ICOs in the UK are being tasked to streamline their internal and external processes towards efficient and effective procurement, delivery and management of critical infrastructure assets and services to the final consumer (IUK 2013). Undoubtedly,

¹ PhD Candidate, School of the Built Environment, University of Salford, Salford; Email: mike.potts@edu.salford.ac.uk

² PhD Candidate, School of the Built Environment, University of Salford, Salford; Email: b.o.awuzie@edu.salford.ac.uk

³ Professor of Construction Management, School of the Built Environment, University of Salford, Salford; Email: p.mcdermott@salford.ac.uk

⁴ Industry Supervisor, UK WASC, Greater Manchester, Email: mr_a_stephenson@hotmail.com

streamlining the internal and external processes within these ICOs would bring about change. Achieving such change can pose a herculean task; and often, introducing enduring change into such organisations requires the collaborative resolve of all stakeholders involved. One of these such ICOs in the UK (UK WASC) keen on achieving both regulatory and organisational service delivery targets, commissioned a study into a review of its internal and external processes. It is expected that this study would identify barriers to efficiency and introduce change processes to influence and enhance optimised service delivery.

This paper seeks to highlight the significant value of the approach applied to this project. Whereas the capability of the Participatory Action Research (PAR) approach in facilitating enduring and sustainable change has been buttressed elsewhere (Whyte 1991, Rahman 1993), there appears to be a paucity of studies detailing the evolution of the researcher from an external party to the organisation and its processes, through to an involved practitioner able to drive change and encourage participation of various stakeholders. This is what this paper seeks to achieve. This evolution has been summarised as the Three Phase Change Approach (TPCA), which sees a transition from using Participant Observation (PO), to Action Research (AR) and onto PAR.

Infrastructure Investment and Delivery: Issues Arising

As far back as Adam Smith (1776), the topic of infrastructure spend to encourage economic growth has been a focus for policy. Notably, 'there is an obvious and important policy implication (from the 'Aschauer Hypothesis'): that governments can increase real output and productivity substantially by stepping up infrastructure investment' (Ford & Poret 1991). Although more recent reports (Egert et al 2009, Crafts 2009) point towards the positive impact of infrastructure investment on GDP growth, Gramlich (1994) draws attention to the need to understand appropriate levels of infrastructure requirement. Infrastructure investment and its resilience (Bissell 2010) and the future challenges to the economy, industry and national prosperity are also important (Ofwat 2013). This has led to a two pronged discussion around infrastructure, namely; the requirement to invest in infrastructure to facilitate growth; and the efficient delivery of that infrastructure to gain best value (HM Treasury 2010; 2013).

The divestiture of the water sector in England & Wales, resulting in private regulated regional monopolies, can be seen as an example of this drive to create efficient delivery; while issues with monopolistic infrastructure delivery pertain to vertical integration, bilateral monopolies, and lack of competition and monopoly-monopsony relationships (Hillebrandt 1985). Within this type of delivery arrangement, there is an assumption which indicates that the need to drive value and competitiveness does not exist. The water sector and its typically long term relationships and high fixed investment costs (Akintoye & Renukappa 2013) should therefore become subject to assessment of its delivery of relational contracting and the effectiveness of their delivery systems. Buoyed by the construction industry's prevalence towards a 'systematic approach' to delivery (Mazet & Portier 2010), creating an industry of specialists, there is a need to focus on the 'systemic' delivery of services to drive out inefficiencies and create value. The high costs associated with the delivery of infrastructure services have been traced to stop-start investment programmes; lack of clarity and direction; poor budget management; over-specification; in-effective use of competition; poor strategic use of supply chains; and a lack of investment in skills (HM Gov. 2011) resulting in the UK having the fifth highest civil engineering costs in Europe (HM Treasury 2010).

The State of Infrastructure in the UK Water Sector

Within the UK context, the sector's focus on resilience, value, investment and efficiency is evident in Infrastructure UK (IUK 2012) and the Industrial Strategy (HM Gov. 2013) both of

which build on the principles within the National Infrastructure Plan (IUK, 2011). The focus here is on the maximization of investment below the optimum level discussed by Barro (1990) and with the financial crash and resultant downturn in GDP (OECD 2013) policy makers have focused their attention towards issues such as stability, value, client skills, efficiency, cost benchmarking and growth (Cabinet Office 2011).

Despite an increase in annual infrastructure investment in the UK from the £41 billion annual average between 2005 and 2010 to its present level of £45 billion per annum (IUK 2013), EC Harris (2013) lists the UK as being 'asset rich' and relatively 'cash poor'. The World Economic Forum (2012) lists the UK as 24th in terms of overall infrastructure quality while the Treasury (2013) and Infrastructure UK (2013) refer to ageing assets and inefficient delivery of projects as the main stumbling blocks in UK infrastructure. Efficiency and maximizing appropriate value from infrastructure investment is the key to sustaining a strong economy; and to this end, focus is given to critical, asset rich, but efficiency poor infrastructure providers such as the privatised water sector in England & Wales (HM Gov. 2013). Private water and waste water companies regulated by Ofwat (The Water Services Regulation Authority) can see this value focus on efficiency, as recently as January 2013 and the 'Setting price controls for 2015-2020 framework and approach' issued by Ofwat focusing on delivery; securing Value for Money; using water resources better; evaluating and mitigating risk; and assessing historic performance. With an ageing infrastructure and forecast population growth, the water sector is under considerable scrutiny with regard to its effectiveness in delivering value, driving innovation and their preparedness for the growth in demand (Akintoye & Renukappa 2013).

Change within UK WASC

Change management is an important process which assists an organisations' transition to a desired future state. It can focus on a number of levels, from the individual, to the team or the whole organisation (Kotter 2011). Balogun & Hope Hailey (2004) assert that seventy percent of change management programmes fail; Todnem (2005) traces this failure to the likely 'lack of a valid framework of how to implement and manage organisational change'. This project seeks to address the gap in knowledge around the improvement of the delivery of infrastructure within a regulated environment. The research proposition is to address the institutional gap in knowledge with regard to the delivery of infrastructure assets within the UK context through a single institutional arrangement, such as with a regional monopolistic Water and Sewerage Company (UK WASC).

This project has been formulated around a three phase participative process, utilising a PhD programme as a driver (among other initiatives), in tandem with the formulation and creation of a new Infrastructure Delivery System (IDS) to act as facilitators for change. The project focuses on a core compliment of change within the organisation to facilitate the data gathering for the system itself. Building on Lewin's Unfreeze, Move and Re-freeze (Lewin 1951), this project is aligned to a 3+ year relationship with the ICO during which an embedding of the researcher within UK WASC; data gathering; changing and testing; and finally, adapting and finalising the changes occurs. A valuable business change and procurement process was underway within UK WASC and the value of immediate change and the creation of self-help competencies (Shani & Pashmore 1985) was seen as an invaluable process. This caused the creation of an Action Research Framework (ARF) (McNiff & Whitehead 2009) with a three phased approach aligned to Lewin (1951). However, considering the emergent approach to change; the development of the researcher within the focus ICO; the development of organisational acceptance of the approach; and the need to ensure active participation of stakeholders; the approach is better described as the Three

Phase Change Approach (TPCA). The TPCA is split into Unfreeze, concerned with PO, among other methods; Move which utilises AR; and Re-freeze which is focused on PAR.

PAR- An Appropriate Approach for Change Management?

PAR has been defined as a research approach wherein persons from within the organisation actively participate with the professional researcher throughout the research process (Whyte 1991). Similarly, whilst appraising the strength of PAR, Argyris and Schon (1974) observe that the approach offers a more practicable platform to enable researchers to achieve both rigour and relevance when carrying out a research project; a constraint which had appeared insurmountable in the past for social science researchers. The decision to adopt the PAR approach was premised on achieving sustainable change within UK WASC via collaboration with the various stakeholders identified as being responsible for the organisation's internal change processes. As a result, it was vital that stakeholders participated in the identification of the problem, data collection, and reflection in collaboration with the researcher. This active participation in the research process has since been identified as a salient advantage of the PAR approach (Rahman 1993). It leads to the development of workable change model(s) based on group consensus, as well as the promotion of the continual improvement and if need be, (re)invention of the developed model(s) long after the culmination of the research project.

Research Methodology

In this study, a qualitative single case strategy was applied within the focus ICO. Although there continues to be concerns about the validity of single case study findings, Yin (2009) insists that the choice of whether to adopt a single or multiple case study strategy is dependent on the purpose and nature of the research. It is maintained that single case studies are especially advisable where the case is either unique, critical or an exploratory one. In this study, the case satisfies these three tenets. In similar studies, it has been shown that the collection of data has involved a great degree of spontaneity (Hartley 2004), and is usually of a qualitative nature. This made the adoption of PO, unstructured and semi-structured face-to-face interviews and workshop sessions, a natural route for data collection.

As with most cases involving participatory focused research, the process of initiation always poses a challenge to the researcher. Whether initiated by the client or researcher, the entry paradigm differs; such as with guaranteed organisational entry with client initiated research, but this can be counterbalanced by a drive to focus on client derived issues (Schein 1999). It is important then to define the social and psychological contract that will govern the relationship, and thus make clear its foundation and focus. To this end, a project evaluation model is proposed in Table 1. For this project, the initial originator of this project is the research body, in collaboration with UK WASC with a view to the development of a PhD programme within the research body. With this, the level of organisational entry is high; however, the focus is loosely prescribed and the skill level of the researcher is expected to develop in stages. The results are concerned with the parameters set in collaboration between researcher and organisation, utilising high client involvement.

Schein (2008) observes that researcher initiation of a 'project' where the researcher and client involvement is high, usually results in AR. When linked in conjunction with the development of a PhD programme, the associated change in researcher skill level requires the division of the research process into phases, and as such aligns with the Three Step Change model of Kurt Lewin (1951). This is not to say that the consideration of 'change readiness and facilitating for change' (Todnem 2005) of the emergent approach is not considered, especially with regard to the changing internal and external pressures of a contingent approach to change strategies (Fawcett et al. 2008). But that, although the three step model may be

criticised for its small scale nature, its application is being used in a macro 'structural' sense, and thus the overall structure of the change approach is in three phases, with contingent strategies within it that correspond to a changing research narrative.

Table 1: Project Initiation

| Originator | Entry | Focus | Skill level expectations | Results expectations | Client involvement |
|----------------------|--------------|-------------------|---------------------------------|-----------------------------|---------------------------|
| Client | Specific | Predefined issues | Medium | Practical and directive | Medium |
| Research body | High | As unearthed | Low - High | Unexpected | Low - High |
| Consultant | Low | Within skill-set | High | Specific to topic | Low |

The PAR Approach to Fostering Sustainable Change

Considering a multitude of factors, from understanding the focus organisational issues, researcher development, project definition to participatory learning through an iterative cycle; the TPCA is split according to three constituent research phases, each representing a differing psychological contract with the focus ICO.

Firstly, PO is in essence a data collection method, whereby immersion of the researcher into the setting allows the researcher to gain a rich understanding of the factors affecting those being studied (DeWalt & DeWalt 2010). By 'putting you where the action is' (Bernard 2011), PO acts as one of several methods within the qualitative research framework, whereby the goal is to understand the nature of the phenomena opposed to quantification of it. Multiple sources are used from informal interviews, pure observation, a review of policy and literature, document reviews and the building of social networks within the organisation. Gorman & Clayton (1997) identify four main qualitative research approaches as observation, interviewing, historical research and group discussion; all of which are utilised in this approach. It is important that a social contract is created here by which the practitioners understand the aims of the project and its foundations (Mackenzie et al. 2012); collaboratively and sensitively defining the project expectations in the process (Denscombe 2010). A moderate participation role (Spradley 1980) is taken in order to differentiate between researcher and practitioner whereby PO in this manner allows appropriate involvement and a relevant amount of detachment to remain objective (DeWalt & DeWalt 2010). A primary aim with Phase 1 of the research is to define the baseline from which the AR effectiveness can be judged (McNiff & Whitehead 2009) and future organisational engagement can be addressed (Mackenzie et al. 2012).

As the researcher becomes more skilled and further aligned with the processes and forces affecting the focus organisation, collaborative working strategies with participants begin to form and an effective 'observation into action' barrier is crossed. This leads to the use of AR and the beginning of Phase 2. AR is a self reflective process aimed at improving practice, that goes beyond the extent of external review and strategic theory building, but keeps full integration at arm's length. Again, multiple methods are used, from semi-structured interviews, surveys, workshops, discussion groups and further policy and literature reviews as action strategies are developed with co-researchers. Shani and Pashmore (1985) summarize the situation as 'it (AR) is simultaneously concerned with bringing about change in

organizations, in developing self-help competencies in organisational members and adding to scientific knowledge'. AR and the 'Action Reflection Cycle' (ARC) of McNiff & Whitehead (2009), follows a process of 'Observe, Reflect, Act, Evaluate, Modify, Move in new directions'. This cycle, which is self-perpetuating in nature, suits the enacting of organisational change within a project or programme culture. With this, AR becomes 'Research in action, rather than research about action' (Coghlan & Brannick 2005), so takes a pro-active role within an organisation. It therefore takes on a human role within the organisation as the researcher becomes an active member of the process. A key point is the responsibility on the researcher to 'enact' change. This imparts a component of direction, such that the researcher dictates the extent to which the result will be defined.

Following a series of ARC's, the researcher gathers knowledge and generates a set of skills comparable to that of their peers. As the researcher and peer group begin to focus on 'I/we' and 'our practice', the research process moves beyond the PO focus on 'they', and the directive 'we' of AR to become a collective 'I/we' of PAR. This then becomes Phase 3. Ottoson (2003) connects the holistic 'quantum' paradigm of PAR with self reflection and managerial / organisational change, utilising participation or involvement as a key differentiator of the method from Newtonian classical approaches. PAR is focused on the improving of group / organisational practice wherein the process itself forms an appropriate basis for effective change within the given scenario (Whyte 1991). Here the focus is on enacting real world organisational learning to better understand the complexities of the organisational issues (Ottoson 2003, Mackenzie et al. 2012). This leads to an ongoing reflective process where actions have become the ownership of the individual and the ICO, and 'spin-off' groups / actions and changed processes replace the directive focus of AR. It is important during this stage to take stock of the resultant knowledge change within the organisation and the formation of new behaviours (Burnes 1996). Here, the data gathered during the AR cycles will be viewed in relation to the initial baseline defined by PO. It will be instrumental to seeing the effectiveness of diffusion (Hall & Mairesse 2006) within the ICO to provide feedback into the organisation about how to reflectively enact the process again. Here, artefacts such as Action Research Reports will become important reflective documents for the ICO. During Phase 3, it is important to act and reflect simultaneously, identifying one's own practice and reflecting on next steps (Kindon et al. 2007).

It is important to note that this structure shares some comparisons with the Soft Systems Methodology (SSM) of Checkland (1989) and lends heavily to interpretive systems thinking (Daellenbach 2001). A key difference with the TPCA structure, is the creation of what can best be described as the '8th step' (see Table 2), whereby the next step encompasses 'finding and changing', and PAR encompasses practice, off-shoots in action and the 'refreezing' of change into commonality.

Table 2. The TPCA in comparison

| | Soft Systems Methodology | Action Reflection Cycle | 3 Step model | TPCA |
|-----------|---------------------------------|--------------------------------|---------------------|-------------|
| 1. | Entering the situation. | Enter organisation | Unfreeze | PO |
| 2. | Expressing the situation. | Observe | | |
| 3. | Formulating root definitions | Reflect | | |
| 4. | Building Conceptual Models | Act | Transition | AR |
| 5. | Comparing the models | Evaluate | | |
| 6. | Defining changes | Modify | | |
| 7. | Taking action | Move in new directions | | |
| 8. | | | Refreeze | PAR |

Contingency theory plays an important part in this change, whereby moving away from the no-one best way paradigm of polar opposites towards a more situation specific approach is considered. This places the specifics of the situation at the forefront of the decision making process (Woodward 1965). While restricted by the internal and external forces via the planned approach, managers utilising an emergent / contingent view are free to determine the extent to which factors exist or play a part on the key elements of technology, size and environment (Burnes 1996). This ability to modify parameters led to the focus of change within a planned 'structure', but with a focus on emergent principles. Such that, change, and change management is coherent, with the initial focus issues being targeted, but with the aim of facilitating 'change' skills and creating 'changing' knowledge pathways opposed to creating a desired future state. The TPCA is thus aligned to the 5 stage ICO internal re-procurement change process within the UK WASC; see Figure 1 below.

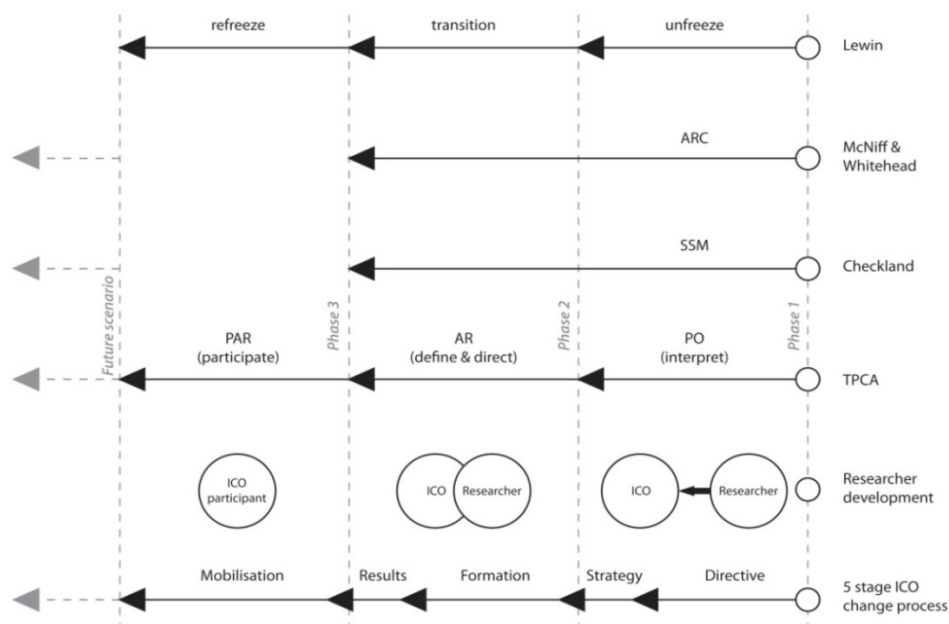


Figure 1. The TPCA structure in comparison

Findings and Discussion

As a method, the TPCA demands a high level of commitment, from both researcher and organisation. Change does not naturally sit well with everybody, and little credence is often given to 'outsiders' to change processes. This evolution from outsider to insider is the core tenet of the TPCA. The process cannot be thrown to one side as a consultants whimsy to suit the bias' and demands of a task master, but instead is as much the responsibility of the organisation as it is the researcher who primarily enacts it. In accordance with the 5 stage ICO internal re-procurement change process, the following outlines the value of the TPCA:

(1) Directive: The project is initiated and the respective roles of participants are made clear. Initial focus on intervention areas remains unclear while the researcher is immersed into the focus environment. It is important to limit the focus scope to a manageable level at this pointence making project drivers clear throughout the research is vital. The next step is to gather information on focus areas, creating a picture and definition of the wider issue.

(2) Strategy: There should be an amalgam between research focus areas and areflection on theory. This is where the step into praxis begins. The focus areas remain ostensibly large at this point, but the definition of the project can take place. There is synthesis between literature and the ICO to find a valuable, effective and usable medium between wider systemic focus, internal politics and availability of resources (primarily). Coming toward the end of the stage, the understanding of the project drivers are more clearly known by ICO participants and they can push back on the final areas of focus. This creates a tiered level of 'buy-in' from stakeholders, those with little interest, and then those that either (1) want the result, (2) want a result and the knowledge of how, and (3) those that want to co-design the process and be a part of the result.

(3) Formation: The key participants are both emotionally and resourcefully brought into the process and areas of focus are clear. The next step is to design the range of interventions collaboratively, ironing out stakeholder engagement issues and tying together with other relevant ICO processes. Interventions at this stage may very well become of more interest to the disengaged. It is then important to begin the interventions, being careful and open enough to either abandon a route of enquiry, or re-assess assumptions to suit the changing ICO environment. At this stage, the co-creation of objectives may lead to unknown outputs born out of collective and collaborative learning requiring reflection on initial change parameters.

(4) Results: Here, the results of any intervention are communal. Researcher becomes a developed participant and the value of the process may have become more valuable to others. The value at this stage is engagement and progression and the developmental knowledge of the fellow participants. The researchers' role is now to facilitate the embedding of these results into practice and day to day working. This requires the focus of what's next, and how would we be better?The researcher should now be viewed as an instigator of the programme at hand. The trust and focus on 'ours' and 'mine' is where the interventions and changes now spiral out beyond the design of a research intervention as organisational participants take their respective learning and affect their day to day lives.

(5) Mobilisation: Here, the focus is on enactment and the value of day-to-day working. Processes and practices focused on 'moving' from one state to another have been replaced with the performing of 'new working'. The focus is now on my work, and how I interact with my fellow employees; this may require clarification of the intent of the researcher around the initial reasons for the focus.

The TPCA is an effective process for managing change in a number of ways. In Phase 1, this is by using objectivity and externalisation as reasoning behind identification of change factors of focus. Then in Phase 2, it takes the organisation 'on the journey' to redefining strategies in relation to those issues. In Phase 3, those strategies become as much the responsibility of the researcher as they do anyone else. This transition from external to internal, from identification to enactment is a core tenet of the TPCA.

Conclusion

The TPCA has helped to identify preliminary findings, such as the usefulness of the PO, AR & PAR phased approach. The TPCA approach has unearthed issues such as the duplication of resource, internal power structures as inhibitors and the need to change behaviours to overcome internal organisational silos as the core areas requiring change management. The study provides a platform for engaging with ICOs to improve service delivery. It identifies the value of engagement, change and systemic thinking as well as a process for use beyond the focus context. This study offers an alternative approach to the delivery of service improvements from within an infrastructure client organisation besides identifying the nature of intervention in a collaborative and innovative manner to drive and manage internal change.

References

- Alexander, I., & Estache, A. (2000) *Infrastructure restructuring and regulation: Building a base for sustainable growth*, World Bank
- Akintoye, A., & Renukappa, S. (2013). 4. The UK water industry: infrastructure, governance and. *Water Governance: An Evaluation of Alternative Architectures*, 81.
- Argyris, C., & Schon, D. A. (1974). *Theory in practice: Increasing professional effectiveness*. Jossey-Bass.
- Balogun, J. and Hope Hailey, V. (2004) *Exploring Strategic Change*, 2nd Edn (London: Prentice Hall)
- Barro, Robert J., 1990. "Government Spending in a Simple Model of Endogenous Growth," Scholarly Articles 3451296, Harvard University Department of Economics.
- Bernard, H. R. (2011). *Research methods in anthropology*. Rowman Altamira.
- Bissell, J. J. (2010). Resilience of UK infrastructure. *Post note.*, (362), 1-4.
- Bryman, A. Eds.(1988) *Doing research in organizations*, London Routledge. 34-52
- Burnes, B. (1996). No such thing as... a "one best way" to manage organisational change. *Management Decision*, 34(10), 11-18.
- Cabinet Office (2011). National Construction Strategy 2011.
- Checkland, P. (1989). Soft systems methodology. *Human Systems Management*, 8(4), 273-289.
- Coghlan, D., & Brannick, T. (2005). *Doing Action Research in Your Own Organisation*. 2nd ed, London, Sage.
- Crafts, N. (2009). Transport infrastructure investment: implications for growth and productivity. *Oxford Review of Economic Policy*, 25(3), 327-343.
- Crespin-Mazet, F. & Portier, P. (2010). The reluctance of construction purchasers towards project partnering. *Journal of Purchasing and Supply Management*, 16, 230-238.
- Daellenbach, H. G. (2001). Hard OR, soft OR, problem structuring methods, critical systems thinking: a primer. In *Proceedings of the ORSNZ Conference Twenty Naught One*, University of Canterbury, Christchurch, New Zealand. Routledge.
- Denscombe, M. (2010). *The good research guide: for small-scale social research projects*. Open University Press.
- DeWalt, K. M., & DeWalt, B. R. (2010). *Participant observation: A guide for fieldworkers*. Rowman Altamira.
- Eberhard, A. (2007). Infrastructure regulation in developing countries: an exploration of hybrid and transitional models. *Public-Private Infrastructure Advisory Facility, World Bank, Working Paper*.
- EC Harris (2013). Global infrastructure Investment index: Move from risk to reward
- Égert, B., Kozluk, T., & Sutherland, D. (2009). *Infrastructure and growth: empirical evidence* (No. 2700). CESIFO working paper.
- Fawcett, S. E., Magnan, G. M., & McCarter, M. W. (2008). A three-stage implementation model for supply chain collaboration. *Journal of Business Logistics*, 29(1), 93-112.
- Ford, R., & Poret, P. (1991). *Infrastructure and private-sector productivity* (No. 91).
- Gorman, G. E., & Clayton, P. (1997). *Qualitative research for the information professional: A practical handbook*, Library Association. London, England.
- Gramlich, E. M. (1994). Infrastructure investment: A review essay. *Journal of economic literature*, 32, 1176-1196.
- Hall, B. H., & Mairesse, J. (2006). Empirical studies of innovation in the knowledge-driven economy. *Economics of Innovation and New Technology*, 15(4-5), 289-299.
- Hartley, J. (2004). Case Study Research. In: Cassell, C., & Symon, G. eds. *Essential Guide to Qualitative Methods in Organisational Research*. London: Sage Publications Ltd, pp. 323-333.

- Hillebrandt, P. M. (1985). *Economic theory and the construction industry* (pp. 12-19). London: Macmillan.
- HM Government (2011) Government Construction Strategy, Report by the Cabinet Office
- HM Government (2013) Construction 2025: Industrial Strategy for Construction – Government and Industry in Partnership, Report by BIS
- Infrastructure UK (2011). National Infrastructure Plan 2011. *HM Treasury, UK*
- Infrastructure UK (2012). Smoothing investment cycles in the water sector. *HM Treasury, UK*
- Infrastructure UK (2013). Infrastructure procurement route map: a guide to improving delivery capability. *HM Treasury, UK*
- Kessides, I. N. (2005). Infrastructure privatization and regulation: Promises and perils. *The World Bank research observer*, 20, 81-108
- Kindon, S., Pain, R., & Kesby, M. (Eds.). (2007). *Participatory action research approaches and methods: Connecting people, participation and place*. Routledge.
- Kotter, J. (2011). Change management vs. change leadership—what's the difference? *Forbes*, Harvard Business Press
- Lewin, K. (1947). 'Group decisions and social change'. In Newcomb, T.M. and Hartley, E. L. eds. *Readings in Social Psychology*. New York: Henry Holt.
- Lewin, K. (1951). Field theory in social science: selected theoretical papers (Edited by Dorwin Cartwright.).
- Mackenzie, J., Tan, P. L., Hoverman, S., & Baldwin, C. (2012). Article 2: The Value and Limitations of Participatory Action Research Methodology. *Journal of Hydrology*.
- McNiff, J., & Whitehead, J. (2009). *You and your action research project*. Routledge.
- OECD (2013). 'OECD Economic Surveys - United Kingdom', *Organisation for Economic Co-operation and Development*.
- Ofwat (2013). Setting price controls for 2015-20 – framework and approach: A consultation (The Water Services Regulation Authority)
- Ottosson, S. (2003). Participation action research-: A key to improved knowledge of management. *Technovation*, 23(2), 87-94.
- Rahman, M. A. (1993). *People's self-development: perspectives on participatory action research. A journey through experience*, Zed Books
- Schein, E. (1999). *The corporate culture survival guide*. San Francisco: Jossey Bass (1999)
- Schein, E. (2008). Clinical Inquiry / Research. In Reason, P., & Bradbury, H. (Eds.). (2013). *The SAGE handbook of action research: Participative inquiry and practice*. Sage.
- Shani, A. B., & Pasmore, W. A. (1985). Organization inquiry: Towards a new model of the action research process. *Contemporary Organization development: Current Thinking and Applications*, Scott, Foresman, Glenview, IL, 438-448.
- Smith, A. (1776). *The Wealth of Nations*. Modern Library. New York, 1937.
- Spradley, J. P (1980) Participant observation. *Wadsworth, Belmont, USA*.
- Todnem, B. R. (2005). Organisational change management: A critical review. *Journal of Change Management*, 5, 369-380.
- Treasury, H. M. (2013). Planning for economic infrastructure. National Audit Office
- Treasury, H. M., & UK, I. (2010). Infrastructure Cost Review: Technical Report. *HM Treasury and Infrastructure UK, London, UK*.
- Whyte, W. F. E. (1991). *Participatory action research*. Sage Publications, Inc.
- Woodward, J. (1965). *Industrial Organization: Theory and Practice*. Oxford, UK: Oxford
- World Economic Forum (2012). The Global Competitiveness Report 2012–2013
- Yin, R.K. (2009) *Case study research design and methods* (Fourth Ed) Sage Publications