

THE IMPACTS AND EFFECTS OF INTEGRATED PROJECT DELIVERY ON PARTICIPATING ORGANISATIONS WITH A FOCUS ON ORGANISATIONAL CULTURE

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ABSTRACT

This research focuses on a causal link between the involvement in Integrated Project Delivery (IPD) and changes in organisational culture within the participating organisations. It investigates the impacts and effects of IPD on these organisations and examines if these in turn can influence the organisational culture.

The study examines organisations from the standpoint of during and after involvement in IPD projects. Primary data for the research was collected through interviews with selected professionals from architectural, engineering and contractor organisations who had previously had experience on or were currently involved in, an IPD construction project. This data was examined together with secondary data collected from selected IPD case studies.

This research concludes that the involvement in IPD has the potential to lead to cultural change within the participating organisations. This includes influencing participating employee behaviour and attitudes, company processes and working practices. The main factors found to have the greatest impact on the participating organisations were; the lean tools and techniques used on the projects and the increase in understanding and knowledge of other professional disciplines gained in the process through the participation in a co-located multi-discipline team.

The recommendations following on from these conclusions include the use of continuous improvement, an investment in education and training within organisations in order to improve understanding of other disciplines and the possible internal adoption of lean tools and techniques.

KEYWORDS

Collaboration, Integrated Project Delivery, Organisational Culture, Organisational Change, Implementation.

INTRODUCTION

The aim of this study was to examine the impact and effects of the implementation of Integrated Project Delivery on participating organisations in order to determine whether organizational cultural changes occur as a result of involvement in IPD projects and the associated benefits this can bring to the organisation. The further question might be, can the use of IPD result in a change of culture within the construction industry?

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For the purposes of this research, IPD was defined as incorporating the following elements; a multi-party agreement, early involvement of all parties, shared risk and reward, the incorporation of Lean processes and principles, use of BIM technology and a co-located team. The study is limited to examining change in organisations from the standpoint of during and after involvement in IPD projects due to the long time spans involved in typical IPD projects

The Construction Industry Institute (CII, 1996) called for a cultural change in the construction industry and recommended improving collaboration as a method of achieving this. The IPD contractual relationship requires a project team culture based on risk-sharing, knowledge sharing and trust which potentially necessitates changes to participating organisations in order to align with this project culture. In relation to IPD, it is suggested that the use of this delivery method may not grow organically unless cultural change within organisations in the construction industry takes place. (Chesworth et al, 2010).

EXISTING LITERATURE

The IPD approach incorporates relational, collaborative, and lean processes in order to increase efficiency in the construction process (Cleves, 2007). As noted in the AIA definition of IPD, IPD attempts to encourage continuous improvement through communication and collaboration aiming to integrate people, systems, and business practices.

A study entitled, 'Transitioning to IPD' by Ghassemi and Bercerek-Gerber in 2010 notes that culture can be a barrier to the implementation of IPD along with financial, legal and technological factors.

Traditional delivery methods focus on defining roles and allocation of risk, whereas IPD is more focused on shared risk and reward and the sharing of information and knowledge. This difference of approach may therefore require a change in behaviour and attitudes. Songer et al, note that "*Successful transformation to collaborative delivery requires fundamental shifts in organisational operations and attendant culture.*" (Songer A, Chinowsky P, Davy, A, Organisation Management in Construction 2011, p15).

Since IPD aims to align the participating organisational goals with the project goals, the collaborative approach required may be difficult to achieve unless employees existing ways of working and thinking can be changed (AIA, 2007, DeBernard 2007). It could therefore be assumed that this transition takes place during the involvement in an IPD project when the employees from the organisations involved are required to align with the project culture rather than their own organisational culture.

Cultural change is assumed to play a role in the development of more collaborative ways of working, such as IPD, and it is documented that a partnering type of approach such as IPD requires 'changing traditional relationships to a shared culture' (CPN workshop report 1997:1).

Ballard (2000) notes that the effective implementation of lean techniques used in Integrated Project Delivery requires cultural change and new roles and responsibilities for team members. It is suggested that these factors along with a commitment by management are necessary for implementing any change and

continuous improvement, such as that required by IPD (Autodesk White Paper, 2008).

Some studies have suggested that the implementation of IPD is an evolutionary process (Chesworth et al, 2010) and therefore organisations mature as the concept is diffused. This process could therefore potentially influence the culture of the participating organisations. It is also noted that IPD projects to date ‘have revealed huge cultural barriers’ (Ghassemi et al, 2010), emphasising the importance of organisational cultural considerations.

Schein notes that culture is the most difficult organisational attribute to change, therefore suggesting that the impact and effect of IPD may take time to change any organisational culture. However, views on cultural change in the construction industry are varied. Green & McDermott (1996) imply that certain behaviours and attitudes are entrenched in the industry’s culture and that it is therefore difficult to change these quickly. This would suggest that cultural change in organisations and therefore the industry would occur slowly, through organic development. In contrast, Bennett et al, (1996) suggest that culture can be actively changed quite quickly through the use of various techniques and tools.

The following reports demonstrate existing studies related to the hypothesis:

- ‘Integrated Delivery: Forget About the Contract, Focus on the Process’ Derek Cunz, Director of Project Development, Mortenson Construction in Design Intelligence, July 2009.

This report demonstrates how ideas from IPD have been implemented and disseminated within an organisation and concludes that IPD affected the organizational culture. As a result of IPD involvement, the organization had revised its internal structure and business practices in order to maximise IPD’s potential.

- ‘IPD: What the Heck is it’, Erika Manno, 2011, Workspace Design Magazine, March 2011, Page | 36

This article documents evidence that suggests IPD involvement can impact the organisations involved. It concludes that there were changes experienced in the way employees worked on other projects following IPD involvement, including refining procedures and attitudes and improvements in internal communication.

HYPOTHESIS

The hypothesis examined in this research was identified as follows:

If organisations are involved in the implementation of Integrated Project Delivery then this can result in cultural change within participating organisations and consequently benefits to the organisation.

The key variables associated with testing of the hypothesis were:

- The challenges of IPD implementation
- Changes brought about by IPD implementation.
- Changes in Organisational Culture in participating organisations

- Benefits to these organisations

These variables were addressed through the research process discussed below.

RESEARCH DESIGN

Due to time constraints for this study, a deductive approach was utilised. The study therefore began with general principles and assumptions as stated in the hypothesis and utilised primary and secondary qualitative data to test this.

Due to limited published research and documentation regarding the success and failure of IPD projects, professional opinions from those that have had experience in using IPD on construction projects was critical for this research. The information required to investigate the hypothesis was obtained from professionals within Architectural, Engineering and Contractor (AEC) organisations. Questions were asked through interviews, regarding their experiences in the implementation and use of IPD on current or previous projects and the impact of the involvement on their organisations.

In order to meet the objectives of the study, the data collected focused on changes both within the organisation, for example procedures and processes and change in employees, such as employee attitude and behaviour. Participants were also asked about the associated benefits of any of these changes on the organization.

The one-to-one interview method chosen to collect the qualitative data was intended to give participants a certain degree of freedom and allow an element of spontaneity in answers rather than forcing participants to choose from a set of pre-determined responses in for example, a questionnaire.

PRIMARY DATA

Data Sources

The method of primary data collection used for this study was one to one interviews conducted either in person or over the phone. This method had the potential to lead to greater interaction and sharing of information in order to gather sufficient data to evaluate the hypothesis. Recording of interviews was utilised in order to facilitate transcription and analysis of the data

Purposeful sampling was utilised in order to ensure that the most productive sample of primary data sources would be selected. It would not have been practical to select a sample at random due to the experience required by the interviewees, the limited number of companies with IPD experience and the fact that some interviewees possess richer information than others.

The primary data sources consisted of Architectural, Engineering and Contractor organisations selected from three IPD case studies, all within the Californian healthcare sector as this is the sector that has utilised IPD to the greatest extent to date in the U.S. These case studies consisted of,

- Cathedral Hill Hospital, San Francisco, CA
- UCSF Mission Bay Medical Centre, San Francisco, CA.
- Sutter Medical Centre, Castro Valley, CA

The sample pool consisted of 4 Architects, 2 Contractors and 10 Engineering consultancies which could be contacted for interview. Of the 17 professionals contacted a response rate of approximately 50% was achieved.

Interview Process

The interviews were carried out on a one-to-one basis due to the ease of arranging them and the simplicity of having only one source of opinions and views to consider at a time. The disadvantages of this method however was that opinions and experiences were limited to one person rather than gaining a range of opinions, for example from other employees involved in the IPD projects.

The interviews were based on a semi-structured list of questions in order to elicit relevant information. In a few instances additional questions were asked during the interview in particular to elicit further expanded information on some of the questions.

All participants were emailed the interview questions prior to meeting or talking on the phone in order that they could discuss and get other input from colleagues as necessary as the questions applied to the organisation as a whole.

Data Analysis

The primary data collected through interviews with the selected professionals was transcribed from the recordings made during the interviews. After identifying the code structure and coding each transcript, the transcribed interview data was then analysed using MAXQDA software. This process aided in the sorting of the coded information in order to compare and contrast interview responses and identify common themes.

SECONDARY DATA

Case studies provided the main source of secondary data in order to gather additional information about documented experiences from existing IPD projects to supplement the interview data. The case studies from which the participants were chosen were utilised in order to provide context to the interviews and also provide data on other aspects of the projects which were relevant to the collection of the primary data. For example; IPD implementation, project team selection and cultural aspects, where this information was available and documented. The case study data was obtained from the following documents:

- Cathedral Hill Hospital Project and UCSF Mission Bay Medical Centre, San Francisco, CA - .from IPD Case Studies: AIA CIP, AIA Minnesota, School of Architecture – University of Minnesota, March 2012.

This publication provides information on case studies that have used the IPD methodology including a survey of IPD project team members and documents some examples of collaborative culture within and between the project teams.

- Sutter Medical Centre, Castro Valley, CA. in the whitepaper entitled, 'IPD, Different Outcomes, Different Rules' by Mauck et al, 2009, presented to The 48th Annual Meeting of Invited Attorneys.

This whitepaper provides primary evidence of project team experiences with respect to the Sutter Medical Centre project.

CONCLUSIONS

ORGANISATIONAL CULTURAL CHANGE

The influence of IPD to impact participating organisational culture varied amongst construction professionals. Architects, Engineers and contractors relayed different experiences from the involvement in IPD, however all noted that it had increased knowledge and understanding of the other disciplines involved in the project.

Secondary evidence demonstrated that the process of selection of consultants and participants in IPD projects was sometimes limited to those companies that had a collaborative approach already.

Given that the culture of the participating companies may have initially been in-line with the IPD approach, then it might be expected that there would be fairly minimal cultural change in the process of merging of the cultures once on the project. However, most of the companies said they had experienced challenges in the implementation of IPD and that they had also learnt a lot from the process. With the exception of one organisation, the organisations were either already implementing some of the techniques and processes gleaned from IPD or were considering doing this sometime in the future together with sharing of knowledge of the processes and techniques with fellow colleagues within their offices.

From the evidence, contractors seem to be more advanced in the process of utilising techniques and methodology learnt on such projects, however this could be due to their larger involvement in IPD projects to date as compared to architects and engineers. Both contractor organisations interviewed had already implemented methodologies from the IPD process such as VSM and lean tools such as the last planner system. One contractor noted that lean thinking was 'penetrating deeply into the organisation' perhaps indicating a change in the way of thinking and working within the company already.

Both the architectural companies interviewed responded that they were in the process of sharing knowledge of the IPD concepts including disseminating ideas from IPD and also implementing some of the tools, for example, value stream mapping within in their organisations. One company also noted that 'we are going to have to go back and challenge the way we've done things in the past' suggesting that they were looking to make changes internally with regard to their ways of working.

CHANGING ATTITUDES AND BEHAVIOURS

Although it is usually difficult to assess cultural change, the majority of organisations interviewed considered that it had impacted employees attitudes and behaviours. When these employees returned to their office to work on other non-IPD projects, this could potentially affect the way in which they work on future projects and interact with other professionals in a positive way. However, it was also noted that the transfer of this behaviour to other non-IPD projects may be limited as projects are dictated by the nature of the contract. Therefore approaches and techniques used on IPD projects may not be easily transplanted onto other non-IPD projects due to the contractual limitations.

For those organisations that are involved in their first IPD project, a greater degree of organisational cultural change may result than with those who have been involved in multiple IPD projects.

Some participants interviewed were in the process of instigating changes through the transfer of knowledge. For example, one noted, 'we are talking about those of us who have been on this project going back to our office and setting up a system for people to learn about IPD' while another mentioned that they were, 'trying to take those lessons learned back to the rest of the office'. This indicates potential for the knowledge gained on the IPD project, including new attitudes and behaviours to be transferred back to the organisations rather than limited to those employees involved in the project.

BENEFITS TO PARTICIPATING ORGANISATIONS

The majority of the organisations involved in the primary research concluded that there were benefits from the involvement in IPD. The benefits that were mentioned the most during the interviews were, an increased understanding of other disciplines and increased efficiency. For the two contractors interviewed, IPD involvement had resulted in greater efficiency both on the IPD projects and within the organisation and consequently led to potential financial benefits. For others, such as the architects, the long-term benefits were difficult to determine as for each of them this was their first IPD project and they had not reached the end of it. However, other benefits noted were greater employee satisfaction due to greater project involvement and employee empowerment and an increased understanding of other disciplines. It cannot be generalised however that these effects would have a knock-on effect on the employees who had not been directly involved in the IPD project.

Increased knowledge transfer between professionals due to the element of co-location was considered by many interviewees to increase the ability to relate to and understand other disciplines. The increased understanding of the different disciplines could also potentially be disseminated within the organisations to other employees not involved in the IPD project. This could benefit any future projects and the development of employees in terms of training and education.

LIMITATIONS OF THE METHODOLOGY

A greater quantity of primary data would have further validated some of the conclusions drawn from this research. This study was limited to examining organisations which were currently involved in or had previously been involved in IPD projects. The limited amount of companies that have actually taken part in the IPD process places a further limitation on the quantity of data that could be collected for analysis.

Cultural change within organisations usually develops over the long term rather than the short term. Therefore, an ideal methodology for this research would have been to assess a variety of different organisations over an extended amount of time both before, during and after their involvement in an IPD project.

In order to validate the results of the study further, an assessment of cultural change could be done at the end of the project and possibly again in the longer term.. Employees at the companies that hadn't been involved in the IPD project could have been interviewed or questioned as to what changes they had noticed within the organisation since IPD involvement for increased validation of the conclusions.

Due to the fact that all participating organisations were selected from one geographical region in the U.S. and the majority of projects examined were in the

healthcare sector, the conclusions of the research may not be representative of all organisations involved in IPD projects in the U.S. Although the results can be generalised, there would be benefit in carrying out a larger study across the country as the AIA has done with their case study documents, however with the focus on the individual organisations rather than on a project by project basis.

However, it is noted that cultural change is usually a long term process and the degree of any change is dependent on the initial culture of the organisation. Some companies involved in IPD projects may already have a culture that easily accommodates change and encourages innovation and collaboration as found in IPD.

SUMMARY

This study addressed the causal relationship of IPD and cultural change and benefits within the participating organisations. It is concluded that although the type of companies involved in IPD projects may already have a culture that easily accommodates change and encourages the innovation and collaboration, there appears to be potential for the IPD process to influence the culture of participating organisations. This includes influencing employee behaviour and attitudes, company processes and working practices. These changes and the involvement in IPD may also bring longer term benefits to the organisations, such as a greater understanding and knowledge of other professional disciplines and improved internal efficiency.

Although a more in depth study would validate the findings in this research, it is suggested that organisations encourage a culture of greater awareness, knowledge and understanding of other disciplines and the aspect of continuous improvement in order to start to address the wider issues in the industry. This would therefore seek to reduce the adversarial nature of, and increase productivity in, the construction industry.

RECOMMENDATIONS

Based on the conclusions drawn, recommendations for action to be taken from this research are proposed below.

INCREASED KNOWLEDGE OF OTHER DISCIPLINES

Organisations could encourage increased knowledge of other disciplines within their own organisation in order to generate a more collaborative culture in the industry.

CONTINUOUS IMPROVEMENT – CULTURE OF LEARNING

A culture of learning could be encouraged through the investment in more education and training for staff in order to promote the notion of continuous improvement.

IMPROVED EFFICIENCY

The implementation of lean techniques and tools could help improve efficiency within processes internal to organisations through the review of work processes. This is reiterated and demonstrated in practice in the article ‘Integrated Delivery: Forget About the Contract, Focus on the Process’ Cunz, D (2009).

RECOMMENDATIONS FOR FURTHER WORK

The following recommendations identify further work that could be done if the research investigation were to be extended.

- Increase the quantity of primary interview data gathered in order to further validate the conclusions reached.
- Examine one particular profession at a time, for example, architects, engineers or contractors rather than assessing them all together.
- Utilise questionnaires or group interview to assess the impact on how the process affected individuals involved in IPD., for example, their work and their attitudes towards others in their organisation and other professions.
- Expand the geographical area of data collection to include other areas of the USA and international experience.

ADDITIONAL AREAS OF POTENTIAL RESEARCH

The following identifies other areas of potential related research which came to light during this study:

- Investigate the point at which IPD becomes financially feasible and determine what size of project justifies the use of IPD as it appears that it may not be practical for smaller projects.
- Since co-location was cited as one of the most influential factors in the changes in behaviour, the question could be asked, could co-location be utilised on non-IPD projects in order to achieve similar benefits?

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