

Integrated Management in the Building Industry: An Interpretative Perspective of Integrated Project Delivery

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In most practice situations within the architecture, engineering, and construction (AEC) professions, specific technical management and technical design positions are two different disciplines. The combination of the two sometimes create an overall management conflict due to designers managing certain parts of their own work and project managers managing the whole of the project. With the advent of integrated project delivery (IPD), and the need for multidiscipline team members to operate under one contract, an advanced way of managing traditional projects can be more complex at times (Jackson, 2003; Krippendorff, 2007). With such a dilemma, it is imperative for integrated project teams to not only be aware of the hard (technical) factors associated with integrated management, but also the human (psycho-sociological) factors (Johnson, 2014, 2015). Comprehension of this topic is facilitated by first understanding three definitions of the inner-workings of the issue.

(1) What is Integrated Management (IM)? There are various public definitions: As surmised in combination by this researcher, they focus on a collective undertaking where diverse processes link as one comprehensive management system garnering a deliverable more effective with greater optimization and results. (2) What is Integrated Project Delivery (IPD)? As defined by the American Institute of Architects (2007b): "Integrated Project Delivery (IPD) is a project delivery approach that integrates people, systems, business structures and practices into a process that collaboratively harnesses the talents and insights of all participants to reduce waste

and optimize efficiency through all phases of design, fabrication and construction." (3) What is Interpretative Phenomenological Analysis (IPA)? As a type of qualitative research methodology (Smith & Osborn, 2007), this approach explores and details how participants are making sense of their personal and social world. "The main currency for an IPA study is the meanings particular experiences, events, and states hold for participants." (Smith & Osborn, 2007, p. 1). It takes a further step in phenomenology by giving the researcher a more dynamic role with an 'insider's perspective' on the personal world of the research participant.

It involves the philosophies of hermeneutics and idiographic psychology (Smith & Osborn, 2007). These three defined elements outline the essentials of the purpose of this article.

Due to the expanded processes within integrated project delivery, there is an inherent management gap in the body of knowledge. In order to monitor and control these processes successfully, a more innovative degree of program management and project management seems to be suggested (American Institute of Architects, 2007a; 2013a, 2013b; Project Management Institute, 2007). The literature has yet to sufficiently define this level of management, or strategy as it relates to IPD managerial issues. Consequently, the theoretical position taken by the researcher was that synergy is present between program and project management, integrated project delivery, and the apex integration mechanism known as management cybernetics (Johnson, 2014). Because of these three practice-oriented disciplines, the study went well beyond a theoretical perspective: it incorporated participants' perceptions of the practicality of IPD.

In regards to primary research literature in program and project management theory (PPM), Crawford (2006) mentions conceptions of project management involving tools, techniques, and discipline practices emerging from socially constructed conversations and deliberate efforts of interdisciplinary practitioners. In terms of management cybernetics theory (MC), Jackson (2003) and Krippendorff (2007) describe it as a theory that includes the varied aspects of systems science where systems thinking and systems psychology are incorporated. As defined by Anthony Stafford Beer, it is "the science of effective organization" (American Society for Cybernetics, n.d.). Management is about optimizing resources and minimizing waste as much as possible. IPD seeks to optimize operations and value (Kryzhanovskyy & Popov, 2009), which is part of the traditional function of management. There are many

professional authorities developing literature on this topic such as the American Institute of Architects who published the main guideline called Integrated Project Delivery: A Guide as well as Integrated Project Delivery: A Working Definition. Other associations such as the Design-Build Institute of America and the Construction Specifications Institute, among others, provide additional literature on the subject of IPD as well.

Where problems reside, opportunities are looked at that have the potential for resolution. In terms of integrated management, the IPD workflow offers a noteworthy prospect for complete project teams to generate major interactions with all levels of the stakeholder network. It offers suggested integrated methods and processes that facilitate overall coordination (American Institute of Architects, 2007b). The study's main purpose was to identify the independent and collective lived experiences of select practitioners within the building industry. These research participants' shared their personal opinions, perceptions, and concerns relevant to the utility of integrated project delivery within their respective practice areas. Additionally; it was to cultivate an improved understanding of how this approach to practice impacts the technical management and technical design areas of the profession and overall industry (Johnson, 2015). Understanding this purpose was commingled with the investigator developing a central research question and subsequently asking a set of interview questions of each research participant. The overarching research question was: "What are the lived experiences of project managers and design professionals in architecture, engineering, or construction firms who practice integrated project delivery (IPD), and is there a need for new or advanced management strategies due to IPD?" (Johnson, 2014). In order to arrive at this question, a qualitative proposition was also generated and stated: The proposition of the study was that "project management practitioners may require advanced knowledge of integrated management strategies related to IPD." (Johnson, 2014, p. 7). This advanced knowledge may be necessary due to changes in AEC practice as a result of the implementation of integrated project delivery demands." (Johnson, 2014).

The rationale of the study was that these issues apply to practice today, which required this research to expand beyond theoretical dimensions (Johnson, 2014). Approaching the issue through an interpretative phenomenological lens was vital in gaining adequate insight into what makes IPD a benefit or a disadvantage. Participants of the study offered varied views which compared to certain elements described in the literature. Contrasting prospective was also shared contrary to other ideals. Many answers to interview questions asked of the participants ultimately pointed to evidence of advantages of integrated management needs. Designing the study from a phenomenological stance was supported methodologically as a logical choice in order to substantiate scientific merit. More of this is explained in the following methodology section but traditional phenomenological research can involve a wide scope of human interaction. The study undertaken by this investigator furthered this scope by taking a more psychological interpretative stance where the analysis of data included the researcher's unbiased interpretation of the sense-making logic conveyed by each research participant over the course of the study.

RESEARCH METHODOLOGY

As alluded to, interpretative phenomenological analysis (IPA) was used as the qualitative approach in the study with factors relevant to this topic's emergent practice. As delineated by Pietkiewicz and Pietkiewicz (2014), IPA assumes that people have self-interpreting characteristics allowing for active engagement in events and objects within their personal and public lives. This approach to qualitative research draws on principles fundamental to phenomenology, but also hermeneutics and idiographic beliefs (Pietkiewicz & Pietkiewicz, 2014, p. 2). Edmund Husserl, a German philosopher, developed phenomenology.

As the basis for interpretative analysis, psychological variants are present when people perceive and discuss events and objects in ideographic forms (Pietkiewicz & Pietkiewicz, 2014). The staple of IPA is the detailed exploration of participants' experiential thoughts in order to make informed sense of the social and personal aspects of their life-world as particular to unique perceptual accounts (Edmondson & McManus, 2007; Pietkiewicz & Pietkiewicz, 2014; Smith, 2011) (Johnson, 2014, 2015).

INTEGRATED INTERPRETATION

Using a phenomenological framework, IPA takes both the participants' and the researcher's interpretations of the phenomenon into account during the analysis process. Hermeneutics are applied along with existential philosophy as further denoted by Martin Heidegger. This is part of the notion that IPA includes the views of qualitative psychology (Pietkiewicz & Pietkiewicz, 2014). Its application was originally used for problems in health and psychology and eventually became usable in management and other social-science areas (Pietkiewicz & Pietkiewicz, 2014). In IPA participants are trying to make sense of their personal world, while the researcher attempts to make further sense of those things the participants are making sense of. Thus psychologism is in action as a dynamic process takes place in the active role that the investigator undertakes in conjunction with non-psychological elements of the topic (Pietkiewicz & Pietkiewicz, 2014). This is different from grounded theory but in some ways similar to case study and ethnography, which are three of the other types of qualitative methodologies. Even action research is becoming more recognized as a standard qualitative research approach (Bryman & Bell, 2011; Creswell, 2014) (Johnson, 2015).

TARGET POPULATION AND LOCALE

Participating individuals in the AEC industry, both domestic and foreign, made up the scale of the greater population of this research. However, for the

purposes of the study, more specific characteristics of the participants include architects, designers, engineers, and project managers working in architectural and engineering design firms with direct construction experience working on and managing building projects inside the United States. In the U.S. there are approximately 17,500 AEC firms (American Institute of Architects, 2012) (Johnson, 2015).

In narrowing this population down to an even more representative sample, this research was conducted on individuals from the Eastern region of the United States. The particular locale where the study took place was the metropolitan area of Detroit, Michigan. Individuals were selected based on their capabilities inherent with large and small design projects that carries the need for integrated project delivery services as well as the need to include specialty management innovations (American Institute of Architects, 2007). Participants were limited to this regional geographic location as a way of delimiting research boundaries (Creswell, 2014). The sample expressed below is purposive and does not necessitate traditional random sampling. Therefore it is not considered a sample selection of convenience. The professionals involved were among the most qualified for the study and deemed adequate for offering the best data-collection opportunity due to their subject-matter expertise (Bryman & Bell, 2011; Creswell, 2009, 2014; Smith & Osborn, 2007) (Johnson, 2015).

SAMPLING

Within the identified population there were 10 AEC professionals selected who practice on all types of building facilities whether locally, nationally, or internationally. From this group of 10, a final eight participants were purposefully chosen for their particular experience (Creswell, 2014). Two of the initial

10 were utilized as pilot subjects who answered the research and interview questions in confidentiality from one another (Bryman & Bell, 2011; Creswell, 2014). This process was used to determine if the planned interview questions were sufficient and practical enough to remain in the study for the official eight participants (Bryman & Bell, 2011; Creswell, 2014). This step also promoted validity and reliability in the interview questions at an early stage (Creswell, 2014). Because of the very detailed individual transcripts that generally take longer periods of time to analyze in an IPA compared to standard phenomenological studies, the use of smaller sample sizes is more efficient (Pietkiewicz & Pietkiewicz, 2014). Additionally, eight samples provide a sufficient opportunity to attain similarities and differences in an IPA study (Pietkiewicz & Pietkiewicz, 2014). In standard practice, this concentrated size allows for reduced general perceptions and understandings of the particular group. This approach removes generalization and maintains a view of specificity in the qualitative observation or interview associated with the investigation (Pietkiewicz & Pietkiewicz, 2014; Smith, Flowers, & Larkin, 2009; Smith & Osborn, 2007) (Johnson, 2015).

In categorizing this sample of eight individuals, at least four of them had current project management experience, and four of them had project designer experience. All participants were experienced as architects, engineers, or contractors as well as any combination of design-practitioner experience within this group of professional disciplines. According to Creswell (2014) and Pietkiewicz and Pietkiewicz (2014), this sample size was more than sufficient and reliable for gathering a richness of data as needed for this type of analysis (Smith et al., 2009). In interpretative phenomenological analysis, sample sizes as small as three can be used and still assure that thick, rich data are assembled for the data analysis (Bryman & Bell, 2011; Creswell, 2014; Pietkiewicz & Pietkiewicz, 2014; Smith et al., 2009) (Johnson, 2015).

DATA COLLECTION AND ANALYSIS PROCEDURES

Data collection for the study included semi-structured interview questions. This format allowed participants to be able to elaborate on their responses where they felt it was necessary (Creswell, 2014). All interviews took place in select locations as agreed to by each participant such that it would not impact their wellbeing negatively either in the work environment, personally, or publicly.

Analysis of data occurred with the use of both hand-coding and computerized-coding. There were two coders present during the study. These coders were trained on how to code the collected data so that it could be properly organized and utilized during the data analysis process.

FINDINGS

As a precursor to the findings, it is important to provide a brief overview of the demographics of the select research participants of the study.

PARTICIPANT DEMOGRAPHICS

Participation in this research required a certain set of skills, experience, and exposure to integrated projects as found in contemporary practice. As stated, the sample was selected from the metropolitan Detroit, Michigan region of the U.S. Tables 2.0 and 2.1 identify various demographic elements required for research participants who voluntarily took part in the study. In these tables the first column from left to right identifies each research participant (or RP) with a two-digit number. Next comes the Type of Practitioner (i.e., architect or engineer with or without PM experience); the Gender of each; Ethnicity; Location of Practitioner; Age Group; Number of Years in the AEC Industry; and Level of Experience with IPD (Johnson, 2015).

All participants were within the ages of 21 to 62, but specifically, RP01, RP03, and RP07 were in the age group of 21 to 41, while RP02, RP04, RP05, RP06, and RP08 were 42 to 62. Additionally, participants' experience in the building industry ranged from 12 to 38 years. RP01, RP03, and RP07 had 12 years of industry experience versus RP02, RP04, RP05, RP06, and RP08, who had 22 years of practice or more. Lastly, the level of experience column provides each participant's level of interaction with IPD on a scale of 1 to 5, with 1 the least experienced and 5 the most. Seven participants (RP01, RP02, RP03, RP05, RP06, RP07, and RP08) out of eight ranked at level 3 (87.5%). Only one (RP04) ranked at a level 4 in this category. This shows that all participants had IPD experience above the 50% level (Johnson, 2015).

Table 2.0
Study Participant Demographics (A)

| | Type of Practitioner | Gender | Ethnicity | Location of Practitioner |
|---|----------------------|--------|-------------------|--------------------------|
| 1 | Architect PM | Male | White American | USA: Detroit, MI |
| 2 | Engineer PM | Male | White American | USA: Ann Arbor, MI |
| 3 | Architect PM | Male | European American | USA: Troy, MI |
| 4 | Engineer | Male | White American | USA: Southfield, MI |
| 5 | Architect PM | Male | White American | USA: Southfield, MI |
| 6 | Architect | Female | African American | USA: Troy, MI |
| 7 | Constructor PM | Female | African American | USA: Detroit, MI |
| 8 | Executive | Female | African American | USA: Detroit, MI |

Note. The numbers 1 through 8 in the far left column represent participants 1 to 8.

Table 2.1
Study Participant Demographics (B)

| | Age Group | Number of Years in AEC Industry | Level of Experience with IPD |
|---|-----------|---------------------------------|------------------------------|
| 1 | 21-41 | 12 | 3 |
| 2 | 42-62 | 23 | 3 |
| 3 | 21-41 | 12 | 3 |
| 4 | 42-62 | 30 | 4 |
| 5 | 42-62 | 38 | 3 |
| 6 | 42-62 | 22 | 3 |
| 7 | 21-41 | 12 | 3 |
| 8 | 42-62 | 23 | 3 |

Note. The numbers 1 through 8 in the far left column represent participants 1 to 8.

DATA ANALYSIS RESULTS

Interview data were analyzed in search of patterns of words or phrases by allowing unaltered information to emerge as portrayed by participants (Bryman & Bell, 2011). The direct review of this data led to the development of four construct themes which arose as the overarching major theme categories. Within the four constructs, there were eight sub-themes that emerged and were categorized within the 4 major construct themes. Each theme resulted from the answers provided by the research participants based on the 10 interview questions. In summary, below are the theme categories that emerged from the data:

Construct theme 1: The benefit and potential for change. Sub-themes include Leadership and Management Practice and Universal Language in Project Integration.

Construct theme 2: The benefit and potential for second-order project integration management. Sub-themes include The Project Management of Integration and Integrated Design Technology Impacts.

Construct theme 3: The benefit and potential for sustainable organizational responsibility. Sub-themes include Trust and Responsibility Factors and IPD Consequences.

Construct theme 4: The benefit and potential for collaborative metrics. Sub-themes include Project Collaboration Forces and IPD Measurement.



DISCUSSION

The following section includes a select presentation of the data as representative of prime data found during the study. This is only a grouping of data provided to convey some of the views of certain participants during the interviewing stage. It is not intended to provide all data findings as they were too lengthy to provide in this article. However, they do represent the bulk of what the study's intent and purpose set out to accomplish.

SELECT INTERVIEW QUESTION FINDINGS

Interview Question IQ1 stated: As it relates to your current understanding of integrated project delivery (IPD), please recount your experience of the benefits of integrating multiple firms, and or, teams of professionals on contemporary design and construction projects? RP07 commented that "team work is the best way to complete a construction project" (Johnson, 2015). RP08 mentions that "there is an improvement of the quality of the project." whereas RP06 says "there appears to be less chance of having to redo parts or entire areas of the project." (Johnson, 2015).

Interview Question IQ2 stated: What are your personal beliefs on the disadvantages of executing an IPD project? RP04 talks about "a tendency not to embrace the project with the same sense of ownership as would have been found in a traditional comprehensive project award." (Johnson, 2015). In contrast to RP07's response to question number one, RP05 mentioned that "if a strong party such as a General Contractor, for instance, dominates the team, a potential outcome could be low first-cost to the detriment of best life-cycle cost." (Johnson, 2015). RP06 made reference to dealing with resistance...especially when smaller organizations are involved.

Interview Question IQ3 stated: Based on your lived experience, what factors do you feel may deter senior management from agreeing to execute IPD contracts for projects that may otherwise be beneficial to accept? (a) Are there risks or liability concerns involved in those factors? (b) Are there dilemmas with roles, responsibilities, or scope of services? RP01 stated

that “people are reluctant to take on the risks” in terms of senior management’s adoption of IPD: regardless of its positive claims (Johnson, 2015). RP03 comments on the difficulty of trusting others as they become part of the project.

Interview Question IQ6 stated: What type of standards, processes, or procedures would you recommend to merge better BIM; project management; and traditional practice phasing and execution from a systems perspective? Please think of this within the context of the overall IPD approach as a collective process [in a firm or industry]. RP07 and RP08 made comments that denote an edict from upper-management to require the effective implementation of integration (Johnson, 2015). RP04 suggests that most firms allow traditional practice approaches to remain in place if the organization feels there is no real need for the change (Johnson, 2015).

Interview Question IQ8 stated: What types of project management issues have you experienced that infiltrate the organizational or project levels when elements of IPD exists within regular practice? Participants’ relayed feelings that a number of things infiltrate as project management issues. It seems that communication is one that appears often. Second to this is scope, followed by time management issues and getting all stakeholders to accept and trust the potential of the IPD system (Johnson, 2015). RP06 feels that “resistance to try new things is the biggest problem” (Johnson, 2015). In support of the literature, this researcher interprets this as an issue stemming from performance, quality, and turnkey expectations by clients’ and the unrealistic deliverables projected at times. Clients seem to require very fast deliverables once they make the decision to move forward on a project, and it seems to be a universal issue in many cases (Johnson, 2015).

Interview Question IQ9 stated: What are your feelings as to whether practice requires a new type of management approach or leadership structure to be efficient at executing IPD projects more successfully? RP02 feels that the construction manager should be in a leading role (Johnson, 2015). This feeling may not be very mutual amongst other design professionals. In industry, the architect is traditionally trained to take the lead role on building projects (Johnson, 2015).

Applicability of the research question to findings. As declared, the research question asked: What are the lived experiences of project managers and design professionals in architecture, engineering, or construction firms who practice integrated project delivery (IPD), and is there a need for new or advanced management strategies due to IPD? While comparing and contrasting various components of the literature, interview data, and document data, synergy is formed through linkages of representative data within the overall study and condensed within the four emerged themes (Johnson, 2015). All eight participants provided highly relevant responses associated with the research question’s purpose. These responses apply to the research question cooperatively (Johnson, 2015). Results found over the life-cycle of the analysis stage came through deep thought and critical perceptions on the part of study participants as well as the unbiased interpretation of the researcher during all evaluation of data (Johnson, 2015).

CONCLUSION AND FUTURE STUDY

Study Implications

The findings have mostly indicated that IPD is a well-respected change in practice. Participants have shared many experiences that point to greater possibilities for the delivery approach to grow in the future. This integrated approach has more work ahead when it comes to identifying the full benefits predicted in practice (American Institute of Architects, 2007a, 2007b). The commingling of design consulting with construction contracting must be further analyzed if true integration is merged as one (Taylor, 2000). The use of a newer type of design technology — such as building information modeling (BIM) — has created

a disruption in practice requiring more integration of teams and services...even without a fully implemented IPD contract (American Institute of Architects, 2003; American Institute of Architects, 2007a; Design-Build Institute of America, n.d.). This research denotes the significance of how these types of issues impact the quality of individual and group thinking. If culture, leadership, communication, and management are not in harmony with IPD processes, negative worker mentality and unspoken expectations could result in problematic outcomes (Northouse, 2013) (Johnson, 2015).

FIELD IMPLICATIONS

Leadership, management, and the expectations of architects, designers, engineers, and builders are rapidly changing: especially from a social perspective (Northouse, 2013). As mentioned in the literature, most current day professional workers do not perform well under the old ways of management: i.e., Fredrick Taylor's scientific management theory (Taylor, 2000). Many younger practitioners are becoming more social [mostly due to technology]. This appears to welcome a more collaborative environment. In this type of atmosphere, there is a cultural shift where workers thrive more when given the opportunity to make professional judgments on work tasks (Taylor, 2000). IPD can offer this type of shift. Workplace socialism, especially when it comes to millennials and their placement of certain work values, is vital for management to understand (Myers & Sadaghiani, 2010). Firm leadership will do well to pay attention to these mindsets because with IPD, team environments and mentalities must be managed with a clear understanding of what is expected by subordinates (Mintzberg, 2011). This research has both academia and industry application in complexity management (Johnson, 2015).

PRACTICE IMPLICATIONS

For practice purposes, the study may help firm executives better understand the depth of the business, social, and individual necessities that may prevent successful conclusion of IPD projects. This research impacts practice in areas where executive management may use its findings for assistance in business decision-making processes as well as program and project management concerns on current day projects. Current practitioners can use this research as a building block for continued investigation with a phenomenological scientific approach that may produce other ideas about future integrated managerial needs. This may also help when using other basic research findings and applying theoretical concepts to industry realities. Grounded data of IPD, through prior evidence, facilitates future empiricism for practitioners and scholars. The study can act as a starting point for practice cases experiencing road blocks during the IPD decision-making process as well as the planning and execution stages (Johnson, 2015).

“RESISTANCE TO TRY NEW THINGS IS THE BIGGEST problem”

-Dr. Rick Johnson

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