Presenting Case Studies of Construction Projects to the Construction Industry Audience

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Abstract:
Case study has been regarded an important research strategy in many fields. In investigating complex situations, such as construction projects, case study approach has been proven reliable to capture the rich information for the purpose of the investigation. Case study method has been regarded allowing investigators to retain the holistic and meaningful characteristics of real-life events. However, subsequently to the data capture and analysis, the presentation of the case study has been considered potentially problematic. The presentation of case study has been regarded prone in signifying an egocentric perspective of the analyst. Thus the presentation of the case study should be based on an understanding of the intended audience and their specific needs. This paper intends to explore the appropriateness of case study presentation, particularly of construction projects, for the construction industry audience. Two main presentation formats, namely textual and pictorial diagram forms, are discussed. Conclusions are drawn based on the discussion, indicating further issues to be explored for further research.

Keywords:
Case Study, Construction Industry Audience, Construction Project, Presentation

1. Introduction

Case study has been regarded an important research strategy and yet remain controversial as a research methodology despite their popular use in various fields of studies. Various scholars have expressed their pessimistic views by considering case study as a kind of ‘soft option’ and possibly admissible as an exploratory precursor to ‘more scientific’ experiment or surveys, or merely as a complement to such ‘more scientific’ approaches, but of dubious value as a stand alone strategy (Robson, 2002). However, other scholars have regarded case study as a fully legitimate alternative to experimentation in appropriate circumstances and have considered case study not as a flawed experimental design but as a fundamentally different research strategy with its own design (Cook and
Furthermore, the present antipathy towards the statistical-experimental paradigm has created a ‘boom’ in the use of case study in research (Cohen and Manion, 1996). Further use of case study approach has been found allowing investigators to retain the holistic and meaningful characteristics of real-life events (Yin, 2003). In investigating complex situation, such as construction projects, case study approach has been proven reliable to capture the rich information for the purpose of the study (Sutrisna and Barrett, 2007).

However, subsequent to the data capture and analysis, presenting case study has been regarded potentially problematic. The presentation of case study has been considered prone in signifying an egocentric perspective of the analyst. Thus the presentation of the case study should be based on an understanding of the intended audience and the specific needs of this audience (Yin, 2003). This matter became increasingly important where case study research of construction projects was conducted in the academic context. Various ‘standard structures’ for presenting the case study to academic audience exist. Unfortunately, there is no such standard for presenting to non academic audience. When investigating construction projects, data was mainly provided by the stakeholders of the projects from the construction industry. Many of these investigations were aiming to identify any gaps followed by formulating recommendations for solutions. Thus, inevitably, these practitioners from the construction industry are part of the audience of the research findings, if not the most important audience of the study.

In the light of this, the paper intends to explore the appropriate case study presentation, particularly of construction projects, for the construction industry audience. Two main presentation formats, namely textual and pictorial diagram forms, are discussed. Conclusions are drawn based on the discussion, indicating further issues to be explored for further research.

2. Case Study as a Research Approach

Case study has been used to develop and test research hypothesis in formal settings since the 1800s (Naumes and Naumes, 2006). Case study has been regarded as a strategy, a stance, or an approach rather than a method in research (Robson, 2002). Thus, case study, both with its strengths and weaknesses, must be considered within a broad rather than a narrow framework (Sjoberg et al, 1991). In order to avoid confusion in subsequent discussions, it is important to clarify the differences between research method and research methodology. Research methods can be perceived as the actual technique or procedures used to collate and analyse data (Blaikie, 2000). The research methods chosen are linked to the research question posed and to the source of data collected. Research methodology, on the other hand, refers to the principles and procedures of logical thought processes which are applied to a scientific investigation (Fellows and Liu, 2000).
Thus, research methodology concerns with the discussion of how a particular research should be undertaken and can be understood as the critical study of research methods and their use (Grix, 2001). Research methodology refers to the choice of research strategy taken by a particular researcher. The research strategy applied, however, is always a compromise between options, and the choices are frequently determined by the availability of resources, not least the nature of the problem itself (Gill and Johnson, 1997). The case study approach, as a research strategy, has been perceived as an empirical inquiry that investigates phenomena in their natural settings (Yin, 2003). Case study strategy includes both single and multiple case studies (as in many studies, it has been found more appropriate to study more than a single case). A multiple case study can heighten the ability to generalise the results of the study (Naumes and Naumes, 2006). The use of multiple case studies, however, is not intended to gather a ‘sample’ of cases to make a generalisation to some population as the main concern in the statistical generalisation, but rather to have an ‘analytic or theoretical generalisation’ (Robson, 2002). Analytical or theoretical generalisation in this matter has been regarded as using the data gained from a particular study to provide theoretical insights which contain a sufficient degree of generality or universality to allow their projection to other contexts or situations (Sim, 1998). The multiple case study strategy aims to identify patterns using replication logic within and among cases, which can be either similar (literal replication) or contrary but for predictable reasons (theoretical replication). Another strategy known as pattern matching compares findings across cases or to a theoretical proposition to reveal patterns (Yin, 2003). In a multiple case study strategy, the cases are studied in their real-life contexts with reliance on multiple sources of evidence (Groat and Wang, 2002). In an ongoing research project in the University of Salford, the use of (multiple) case study strategy has been reported successful to investigate the complexity and the rich information collected from construction projects (Barrett et al, 2006). Thus, case studies (including the data gathering and analysis) can be designed and conducted in various ways (Platt, 1992; Stake, 1995).

Upon the completion of data collection from a case study investigation, the data analysis will be performed leading to the finalisation of the findings and conclusion. Whilst the collected data from the case studies are the main source of information for the researcher to perform the analysis and try to ‘make sense’ of what happening in the case studies, the presentation of the case study can easily fall into ‘egocentric perspective’ of the researcher. Thus the presentation of the case study should be based on an understanding of the intended audience and the specific needs of this particular type of audience (Yin, 2003). In academic research, the case study presentation are normally aimed for academic audience in which the presentation format normally follows more ‘standard structures’ for dissemination such as scientific journal structure, comparative structure, theory generating structure, and so on. After all, UK universities maintain pressure on
academics to publish in high quality journals in the hope of high ratings in the Research Assessment Exercise (RAE) in order to attract further funding (Gann, 2001). However, these ‘standard structure’ of presentation may or may not be suitable to non academic audiences.

3. The Construction Industry Audience

Case study approach has been widely used in the research involving construction projects for various different research purposes (e.g. Letza, 1996; Barlow and Jashapara, 1998; Gyi et al, 1998; Moatazed-Keivani et al, 1999; Gibb, 2001; Barrett et al, 2005). When investigating construction projects, data was mainly provided by the stakeholders of the projects from the construction industry, either directly via interview and/or survey or indirectly by providing access to relevant documents or even observations of the projects. Inevitably, these practitioners from the construction industry are part of the audience of the research findings, if not one of the most important audience of the research findings. After all, the investigations of the construction projects are normally aimed to identify any gaps and improve current practises in the construction industry.

However, previous study suggested that there is a problem for the UK construction industry practitioners to absorb and act directly upon the results of academic research in the UK (Gann, 2001) whilst the main route of dissemination of the findings is mainly facilitated through the publication of articles in refereed academic journals. Even though there has not been any satisfactory explanation and/or solution to this matter. An ethnographic study on the construction culture may give an insight on this matter. A study by Rooke and Seymour (2002) indicated that among the construction industry practitioners (engineers), site experience is highly valued. Thus the ‘practical knowledge’ is somehow considered ‘more important’ than the ‘engineering knowledge’. Whilst the ‘engineering knowledge’ is validated by the possession of academic and professional qualification, the ‘practical knowledge’ is validated only by the demonstrated ability to perform task successfully. So, it seems that once a practitioner completed the necessary training to obtain the ‘engineering knowledge’ (mainly within the academic context), their next focus will be to gain the ‘practical knowledge’. However, this matter is a subject of further research. Meanwhile, it will be important for academics to also consider presenting their research findings to enable appropriate dissemination to the practitioners in the construction industry. Thus, the presentation of the research findings should contribute to the ‘practical knowledge’ as well as to the ‘engineering knowledge’.
4. Presenting Case Study of Construction Projects

In light of the ongoing discussion, the subsequent discussion intends to explore two main presentation formats, namely textual and pictorial diagram formats, are discussed as follows.

4.1 Textual Format

Textual format is the most common format in presenting case study. From the researcher’s point of view, writing has been argued to provide a way of knowing and understanding better the topic being written and letting the author the discover new aspects of the topic and the relationship within the topics by writing the topic in different ways. It is by writing, erasing, and re-writing over and over again, the author continuously attempts to ‘reword’ the world (in the context of the topic being discussed). Although this ‘worded’ world may never accurately or completely capture the studied world, the process of continuous persistence in trying has been considered the major element of the research inquiry (Richardson, 2003). Thus writing has been considered an appropriate way to discover what the writer is thinking as well as to discover any gaps in the thinking (Wolcott, 1990). Presenting information in the textual format, in some cases however, have been regarded potential to ‘bore’ the readers (Richardson, 2003) or resulting in an overwhelming level of details for the researchers to manage (Barrett et al., 2006).

Whilst the writing case studies is considered a purposeful act closely linked to the goal of the study, it was also claimed that the forms in which case study research can be written is a rather neglected issue in many case study accounts as well as in much case study methodology literature (Van Der Blonk, 2003). For instance, many case studies have been reported in a cultivated style of writing that values limited metaphor, simplicity and a formal precision (Stake, 1995; Van Maanen, 1995). A Typology of writing case studies have been proposed based on the complexity and mono/multivocality dimension leading to the establishment of four forms of writing case studies (Van Der Blonk, 2003). The typology and the four forms are presented in the figure 1 and table 1 respectively.

Figure 1. Typology of writing case studies (Adapted from Van Der Blonk, 2003)
Table 1. Four forms of writing case studies (Adapted from Van Der Blonk, 2003)

<table>
<thead>
<tr>
<th>Representation of the case</th>
<th>Chronology</th>
<th>Play</th>
<th>Biography</th>
<th>Voices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature of the case</td>
<td>Logical sequence</td>
<td>Drama story</td>
<td>Portrait of life</td>
<td>Produced in interactive complexity</td>
</tr>
<tr>
<td>Role of the researcher</td>
<td>Analyst</td>
<td>Director of the play</td>
<td>Selective writer</td>
<td>Facilitator</td>
</tr>
<tr>
<td>Position of the author</td>
<td>Absent and separated</td>
<td>Absent and separated</td>
<td>Present and not separated</td>
<td>Present and not separated</td>
</tr>
<tr>
<td>Format</td>
<td>Linear</td>
<td>Multi-linear to one outcome</td>
<td>Multiple formats</td>
<td>Non-linear, interactive and decentralised</td>
</tr>
<tr>
<td>Time flow</td>
<td>Uni-linear</td>
<td>Multiple lines to one end point</td>
<td>Linear thematic</td>
<td>Multiple constructions</td>
</tr>
</tbody>
</table>

It is not yet clear, however, which of the forms of the textual format or whether the textual format is an appropriate format to present case study of construction projects to the audience from the construction industry. However, several practices in the construction industry regarding the textual format and the style of reporting can provide some initial insights in this matter. Robson (2002) provided some practicalities in writing for non-academic audience such as technical reports. These practicalities include the provision of ‘executive summary’, minimal use of jargons, and the inclusion of detail materials as much as possible into the appendices. This has indicated the practical nature of such presentation style into summarised form (which is more simple, concise, and straightforward) instead of full details. When dealing with external and non academic audience, it has been found in another study that the audience may not read the report linearly from cover to cover, but will instead refer to sections of the report that are pertinent to their interests (Miller et al, 1998). This explains the practical necessity to provide ‘summaries’ at various points in the textual form presentation. Miller et al (1998) also argued that reports should satisfy three different types of audience, namely the audience who consults only graphics, audience who consults only the written text, and audience who use both integrally. Thus, it is evident that graphical representation is as important as the textual representation when dealing with non academic audience, such as the construction industry audience.

4.2 Pictorial Diagram Format

The use of a pictorial diagram (rich picture diagram) has been reported in an ongoing research project to present the case studies of construction projects in order to offer an alternative format to the textual storylines and to provide holistic views of the construction projects to enable thorough cross-case analysis based on the
Grounded Theory Methodology (Barrett et al., 2006; Sutrisna and Barrett, 2007). In developing the pictorial diagram, the construction process is considered as the socially constructed phenomenon (by the stakeholders) being researched (observed and interpreted) and not the physical product of such a process. The main ingredients of a process (according to Grounded Theory Methodology) are defined as the actors, the situation or contexts, the action/interaction, and the outcome of such action/interaction, time and space. As the context is construction projects, the construction project is considered the ‘space’ itself. Therefore researching/studying the construction process is seen as the mapping of the situations or context, actors (project stakeholders), their action/interaction and the results/outcomes over time. In order to include the progressive nature of construction projects, this mapping activity is done chronologically over the construction projects’ life cycle using certain frameworks; for instance RIBA’s plan of work (Philips, 2000). Thus the development of the pictorial diagram was based upon the timeline provided by of the framework to provide a more ‘universal’ timeline. However, as different construction projects may experience these phases (of the frameworks) differently, the timeline used in the pictorial diagram should be driven only by the collected data, acknowledging the complexity and specific characteristics of each construction project to congregate evidences in telling the storyline of the construction project being studied. Pictorial representations have been widely considered as lacking in universal standards (Coyle and Alexander, 1997; Monk and Howard, 1998). Thus, there is no formal technique or classic form in the production of rich picture diagrams for instance (Checkland, 1981). However, for the purpose of comparison among the pictorial diagrams developed from different case studies (of construction projects) within the multiple case study strategy, it was considered important to standardise the symbols to a certain degree of consistency, especially when involving multiple researchers in the analysis.

Lines (with or without arrow heads) were used to present the interrelationship among the stakeholders, their actions/concerns and the outcome of the actions, and also various events/situations. The lines used vary in terms of width, type (solid, dashed, or dotted), colour, shading, or pattern according to the what they represent and the arrow heads are generally used to indicate the direction of the flow in diagrammatic representations such as in flow charts (Harris, 1999). Thus in the pictorial diagram developed to present a case study’s storyline, thick and solid red lines with arrow heads, for instance, were used to represent the major flow of the diagram. Other items, such as person figures, were used to represent the stakeholders and can be sized differently according to their roles/powers/influences in the construction projects at various points in time. Even though the presence of some textual forms was inevitable for the purpose of clarity, the texts can be minimised to avoid ‘overcrowding’ the pictorial diagram. An example of a fully developed pictorial diagram is presented in the Figure 2.
Various recurring major themes were identified from the data collected from each case study. One pictorial diagram was developed for each case study (i.e. each construction project) in which the major themes were identified according to the data relevant to the case study. Different major themes may be identified for different case studies. The identification of the major themes is not intended to impose a structure that limits the richness of the findings or that allows preconceived ideas to colour judgement (Glaser, 1978; Patching, 1990); but rather to better arrange the data and emergent categories to support the holistic view and cross-case analysis. Thus, the major themes should always correspond with the collected data and should continuously be adapted in the advent of new relevant information to the point of saturation. Data from the case project was collected by interviewing the stakeholders. After analysing several interview transcripts, the storyline of the project started to emerge encompassing various actors, situations or contexts, actions/interactions, the outcome of such action/interaction, and time. These elements were then iteratively and continuously ‘arranged’ to compile a meaningful storyline for the case study. When doing so, it gradually became obvious that the elements could be grouped into general themes, namely: the Market and external condition, Funding and financial, Vision for the building, and Distinguishing Characteristics. It was eventually found that all of the general themes are applicable in grouping information from the other case project as well. The grouping of the various elements into emerging general themes, so supporting holistic views of the case studies, was also found to be very useful in the subsequent cross case analysis, providing visual tool to identify the similarities and differences among case studies. Further, the temporal groupings of activities horizontally along the timeline differ between the cases due to differences among the construction projects in the key stages identified from the data. These differences reinforce the importance of seeking the benefits of creating shared major themes, but not imposing a structure that limits the richness of the developed theory or that allows preconceived ideas to colour judgement. It is crucial that the grouping of data into general categories is driven by data relevant to each case study.

5. Conclusion and Further Research

Case study has been regarded an important research strategy in many fields. In investigating complex situation, such as construction projects, case study approach has been proven reliable to capture the rich information for the purpose of the study. Following the data collection phase, the data analysis phase commences in which the researchers try to ‘make sense’ of what happening in the case studies. Consequently, the presentation of the case study can easily fall into ‘egocentric perspective’ of the researcher. The presentation of the case study should be based on a sound understanding of the intended audience and the
specific needs of this audience. In the case study of construction projects, the practitioners from the construction industry, due to their level of involvement, should also be considered as one of the audience of the research findings. When the investigation of the construction projects is conducted in the academic context, the ‘egocentric perspective’ may be extended to academic context, in which the presentation of the case studies may not be appropriate for non academic audience, i.e. the construction industry audience. This is exacerbated by an indication of the failures of UK construction industry to absorb and act directly upon the results of academic research in the UK. Further research is needed to investigate the appropriateness of various presentation formats to accommodate the needs and capabilities of the construction industry in using the case studies (particularly the ones involving construction projects) to their advantage. The findings from this further research would be important for researcher, particularly academic researchers, to better suit the presentation of their construction projects case studies to the needs and capabilities of the construction industry audience.

Two main presentation formats have been discussed here, namely the textual and pictorial diagram formats. The pictorial diagram format has been demonstrated potential in presenting case studies of construction projects for the construction industry audience. An example given here was the use of rich picture diagram as the pictorial diagram to present the case studies of construction projects based on the Grounded Theory Methodology. The more common textual formats, however, can still be used to present case studies subject to improvements. For instance, following some ‘hints’ from practices in the construction industry, it has been identified the need of the construction industry audience to have ‘more summarised’ format and presented in the format to better support the development of ‘practical knowledge’ rather than the that of ‘engineering knowledge’. However, further research is also needed to investigate the actual meaning of ‘better support’ in different context of the intended audience, such as the construction industry context. Following the further research and investigations on the actual needs and capabilities of the construction industry audience, necessary ‘adaptations’ of the different presentation formats can be implemented to better suit the needs and capabilities of the construction industry audience in order to mutually optimise the benefit of the case study approach for academic and the construction industry sides.
Figure 2. An example of pictorial diagram format for presenting case study of a construction project case
References:


