Best Practices in Project Management Through a Grounded Theory Lens

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Abstract: Grounded Theory is still regarded with skepticism as a research methodology by many academics so this paper has been specifically constructed using recent research to illustrate the rigour of the Grounded Theory Methodology. An investigation into 'best practice amongst European Project Managers used the Grounded Theory Methodology to analyse interview data. This paper reports on that practical application of the Grounded Theory Methodology and contributes to the growing literature on the use of Grounded Theory as a research methodology. The three individual data analysis methods of Open-Coding, Constant Comparison, and Memorising are shown in operation and can be seen producing the findings. These findings are then operated on with the Grounded Theory method of Theoretical Coding and some deeply influential conclusions come out of this data analysis. The whole Grounded Theory methodology can be seen in operation and the concepts and categories can be seen emerging from the data. The contribution to the discipline of computing will be published elsewhere in technical journals but the research method is the main aim of this paper in this conference.

Keywords: Grounded theory methodology, open coding, theoretical coding, conceptualization, project management

1. Introduction

Project teams have varying experiences as a result of the skills/lack of skills displayed by their project manager (PM). Evidence is typified in this quote from a Bulgarian project team member who stated that:

> *"In my first job as a Web Developer in a Bulgarian company I had some really bad experiences with my PM. The last project which my team worked on was a failure. My colleagues and I worked without clear specification of the project requirements. As a result we developed software modules and then we had to redo them several times. The project missed its deadline although we worked overtime during the evenings and the weekends. At that time I didn't know much about project management but I knew that things should not happen like that if a project is to succeed (Georgieva, 2007).*

After this practitioner moved to another project with a different PM none of the above problems occurred. She realized that there are good as well as poor PMs. If the PM understands and uses good practices then projects can finish successfully. The result for the customers is delivery on time of the required products that work: the result for practitioners is a much better working experience.

The phrase 'best practice' is used by many professional bodies to encompass those practices that lead to success in that profession. There is not one professional body recognized as representative of all practitioners in USA, Europe, Asia, Australasia or Africa. Nor should there be, when we consider that those differing cultures will have differing needs and ways of thinking. projects in differing cultural backgrounds have to be organized and operated in that cultural setting. However, research in any setting will also be valuable in allied settings. Projects the world over share some commonalities that practitioners and PMs recognize as the processes in project management. These include the processes of requirements gathering and analysis, design, implementation, system integration, going-live and project close-down. The main question addressed in the following research was: *given that a project manager follows the usual processes in a project, what are the 'best practices' used by PMs that result in really successful outcomes*? This paper reports on research in UK and Eastern Europe that investigated this question and attempted to establish the characteristics of best practice.

2. Research methodology

The intellectual considerations involved in the performance of best practice reside inside the minds of good PMs. Therefore data collection had to be by interview in order to bring out the key points inside PMs' minds ready for analysis. Data analysis used Grounded Theory to open-code, conceptualize and categorize by constant comparison and memoing (Glaser and Strauss, 1967; Charmaz, 2001; Urquhart, 2001; Urquhart and Fernández, 2006). The next two sections describe the principles of the data collection and the data analysis in this research.

2.1 Data collection principles

There is a problem embedded in data collection by interviews – that of finding 'good' PMs who embed 'best practice' into their work. There were PMs in three organizations in Bulgaria and 3 in the UK who were known to practise 'good' project management and would therefore yield useful information. The main limitation was in obtaining data from Bulgarian participants. Due to time and financial constraints it was not possible to visit them for face-to-face interviews. Interviews were conducted by Skype. For an interview to be good it is necessary for the interviewer not only to hear the interviewees' responses but also to see reactions. This may have had an effect on the subsequent analysis but it is felt that this was not a major factor at this stage and future research could extend the range of this work.

Initial contact was made to each interviewee explaining the research aim and setting the scene for data collection. This served to explore the willingness of PMs and assess the feasibility of using that company and contact. Data was collected in a subsequent in-depth interview with the possibility of a third short interview to clarify any points of uncertainty.

Six PMs from 3 Bulgarian and 3 UK companies were interviewed. Participants came from TyrusBlu Ltd., Sciant Ltd and Amexis Ltd. in Bulgaria. TyrusBlu is a technology intensive company, delivering software and engineering solutions and services to enterprise customers worldwide. .There were two PMs from Sciant which is the largest outsourcing company in Bulgaria providing complete software solutions international corporate customers. Amexis is a developing company which is specializes in healthcare systems development, business intelligence and data warehouse design and support.

In the UK, interviews were conducted with PMs from Zurich Finance Group, an insurance-based financial services provider with headquarters in Zurich, Switzerland and offices in North America, Europe, Asia Pacific and Latin America (the PM selected for interview was based in London and responsible for developing medium-sized projects to support financial business processes); Zurich Training Centre in southern England responsible for development and maintenance projects on tight time schedules with inadequate resource provision; Portsmouth University where the business focus is on the provision of Services to approximately 15,000 customers requiring to support a wide variety of job functions.

Each interview consists of noise and information (Allan, 2005). It is important to distinguish between noise (which adds nothing to the research) and information (which is important to the research). This important information contains the key points relevant to the research area. The researcher must distinguish between 'noise' and 'key points' in the data and collect only key points relevant to the research area. This is necessary for meaningful analysis.

Nearly all qualitative research methods recommend that interviews be pre-planned to follow a structured or semi-structured framework that facilitates data analysis. However, the selected research method was Grounded Theory (the methodology is explained in the next section) which does not work with predefined or preconceived structured questions (open or closed) as these will tell the interviewee what to think and bias their responses but interviews need to be guided to avoid time-wasting. The following areas of concern were used to facilitate keeping interviews in focus without biasing the responses from interviewees:

- What the PM does when starting a new project including starting the planning process;
- How plans are updated during progress;
- Dealing with customer's requirements and inevitable changes;
- Work task definition and distribution to team members;
- Monitoring and controlling work products;
- Dealing with changes;
- Meeting deadlines.

These areas were used as focus prompts in a way that encouraged interviewees to talk about what they did in the areas and how they did those things. This opens a discourse rich in data without the interviewer biasing the discussion.

With the above principles in mind a series of interviews was arranged for data collection.

2.2 Data analysis principles

Data was/were analyzed using the Grounded Theory Methodology (GTM) of Glaser and Strauss (1967) because, compared to other methods for qualitative data analysis GTM has a number of significant advantages.

1. Grounded Theory is a complete methodology which consists of six different methods for data analysis:

    - Open coding of the data for conceptual understanding.
    - Constant comparison of codes, concepts and categories as they emerge from the data.
    - Memoing for clarity of thought.
    - Discovery of the Core Category which becomes the focus for selective coding.
    - Theoretical coding that investigates the links between categories.

These five methods are applied systematically to the data collected (Allan, 2006). Using them systematically makes the analysis coherent and rigorous leading to holistic conclusions.

2. Grounded Theory does not require a preconceived hypothesis. Traditional research designs usually start with a literature review to form a hypothesis which is then tested by experimentation in the real world (Allan, 2005). On the other hand, in Grounded Theory "the rule for generation of theory is not to have any pre-set hypotheses" (Glaser and Strauss, 1967, p. 194). In this research project, the little evidence about Best Practices in project management found in the literature does not allow a valuable preconceived hypothesis to be developed. Therefore, Grounded Theory is the appropriate method for data analysis in this project.

3. Conceptualization vs. description and explanation:GTM goes beyond the methods for qualitative data analysis described in the previous section because it tries to avoid descriptions and explanations by using conceptualization of the processes underlying the data (Glaser, 1978; Allan, 2006). The emphasis is on the most important property of conceptualization for Grounded Theory – "concepts are abstract of time, place and people" (Glaser, 2001, p. 10). By identifying the relationships between concepts at different levels of abstraction Grounded Theory develops an explanation of why events are happening the way they are.

The explanation of real-world events that emerges from using GTM is grounded in the data and therefore called a grounded theory. What does it mean for a theory to be grounded in the data? Glaser and Strauss (1967) pointed out that a discovered grounded theory combines concepts and hypotheses that have emerged from the data. This means that the emerging theory is valid and reliable and does not require further proving or testing in the real world because it comes directly from the real world data itself.

This paper is structured as follows: section two focuses on the data collection followed by a section on data analysis. When using GTM, concepts and categories emerge from the data analysis, which means that findings and conclusions come directly out of the data and these are presented in a final section.

3. Data collection by interview

It is a fact that GTM does not work with predefined questions but there is a need to save time by keeping each interview within the research focal area. Readers are reminded that the aim was PM best practice and the following serve as area of concern to facilitate each interview: what the PM does when a new project starts, including starting the planning process and how this is updated during progress; dealing with customer's requirements and inevitable changes; work task definition and distribution to team members; monitoring and controlling work products; dealing with deadlines and changes.

The objective of each interview was to search the minds of the PMs for characteristics of good PM practices. Relevant information sorted from the interview 'noise' was labelled, first with the initial letter of the company name (e.g. T, B, S etc.), then with a number representing the interview (e.g. T1), and finally, with a number, representing the data point relevant to PM practice (e.g. T1.1, T1.2, etc.).

There were 19 Key Points that emerged from the first interview; these are listed in the appendix and the end of this paper. The defining characteristics of the Grounded Theory Methodology is that immediately each point is collected it is compared with previous points looking for similarities and connections. Key point T1.2 was compared with T1.1 and straight away we notice that something relating to the customer is emerging.
> T1.1. Establishing good relationship with the customer
> T1.2. Developing and showing the customer something small/a small project

Similarly T1.3 was compared with T1.1 looking for connections
>T1.3. Establishing everyday communication – regular meetings, conference calls, reports

And then compared with T1.2 etc.

Here are the remaining key points but it must be stressed that this is where many GT researchers make a mistake – they analyse their data into a long list of meta-data without constantly comparing each new data item with previous data items to look for connections.

4. Data Analysis using Grounded Theory

The data analysis method was the Grounded Theory Methodology (GTM) as developed as a research method by Glaser and Strauss (1967).

4.1 Emergence of concepts

It can be seen from the characteristics of the above key points that there are commonalities. For example, the following key points refer to establishing, improving and maintaining the relationship with the customer:

>T1.1. Establishing good relationship with the customer
>T1.3. Establishing everyday communication – regular meetings, conference calls, reports
>T1.4a. Establishing very strong everyday communication
>T1.18. Talking with the customer in advance in case you are going to miss a deadline
>T1.19. Being always ready to give an explanation when saying something to the customer

The relationship with the customer is established in the beginning of the project (T1.1). Everyday communication with the customer (T1.3, T1.4a) starts in the beginning of the project and has to continue during the project life. The PM has to talk with the customer many times during the project (T1.18), he should always be ready to give the customer explanations (T1.19). Therefore, the relationship with the customer, once established, has to be developed, improved and maintained during the project life. This can be represented by *Concept 1 – Establishing and developing the relationship with the customer*. 'Developing' was chosen instead of 'improving', because the process of developing includes the process of improving, of making the relationship better. 'Developing' was chosen instead of 'maintaining', because before developing the relationship, its current level has to be maintained.

- Concept 1 – Establishing and developing customer relationship

Other key points were grouped together and the following concepts emerged:

- Concept 2 – Building customer confidence emerged from key points T1.2, T1.3, T1.4, T1.4a, T1.8, T1.18 and T1.19.
- Concept 3 – Communicating with the customer emerged from key points T1.3, T1.4a, T1.10, T1.18 and T1.19.
- Concept 4 – Managing customer requirements emerged from key points T1.10 and T1.11.
- Concept 4 has a necessary property which is *Gathering and assessing customer requirements* emerged from key points T1.5 and T1.6.
- *Concept 5 – Managing the team:* emerged from key points T1.13 and T1.14. and has a property '*Internal communication*' emerged from key points T1.5 and T1.13.

This is how concepts emerge from the data.

4.2 Emergence of categories

Reflecting on the concepts it becomes clear that some of them share common characteristics and can be grouped in higher level groups called categories. For example, the concept of *Establishing and developing customer relationship*; the concept of *Building customer confidence*; the concept of *Communicating with the customer*; the concept of *Gathering and assessing customer requirements* are all related to the customer. Establishing and developing the relationship with the customer, building his confidence, communicating with him, gathering, assessing and managing his requirements can be grouped into the category *Managing the customer*, because all of these processes are important for project success and cannot be left to happen on their own. The project manager is the one who manages these processes, the PM manages the customer. Therefore, the five concepts belong to the category of *Managing the customer*.

The following concepts came from the data analysis: Managing customer requirements; Gathering and assessing customer requirements; Managing the team; Internal communication; Planning; Testing; Monitoring the progress. These are related to the project work. Customer requirements must be gathered, assessed and managed in order to have a clear understanding of what the project work is about. Managing the team is also directly related to the amount and technical difficulties of the project work. Without internal communication, that management is impossible. Planning, testing and monitoring the progress of the project work are some of the main processes used to manage the project work. Therefore, these seven concepts can be grouped together in the Category of Managing the project work:
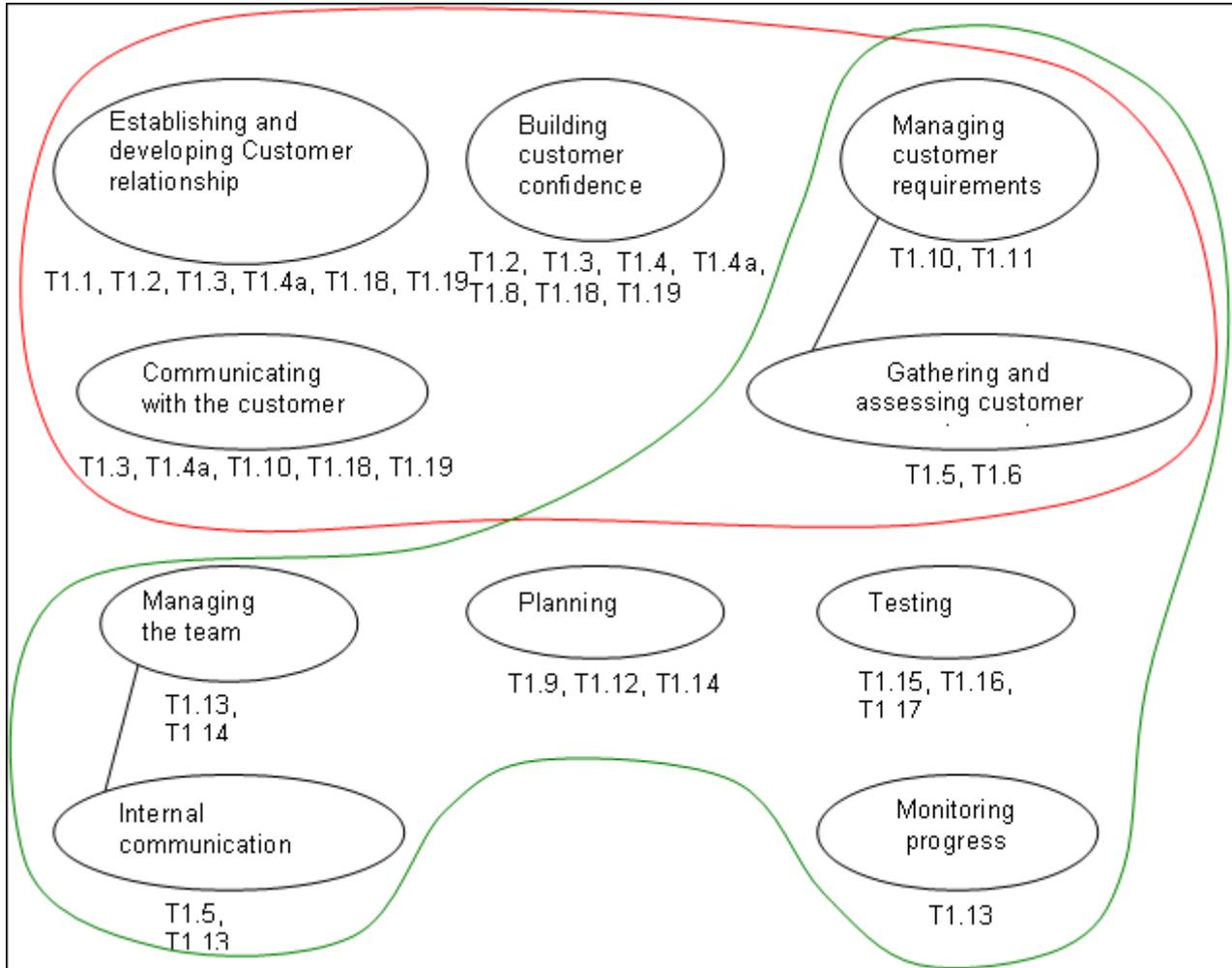
Figure 1: Concepts and categories from the analysis of interview T-1

These emergent codes, concepts and categories were used as a basis for coding the next interview as well as keeping an open mind so that more codes, concepts and categories emerged. There is insufficient space here to include the full data analysis but it is available on request to the lead author. Suffice it to say that the analysis gathered great momentum as the research progressed and existing concepts were confirmed with more and more evidence from subsequent interviews while further concepts emerged. This is typical in GTM and is part of the excitement generated in this research methodology.

The result of analysing the data from six interviews and four follow-up interviews is represented in Figure 2 below. Seven categories emerged: Managing the Customer; Managing the Project Work; Managing Communications; Managing Stakeholders; Awareing (which encapsulates Managing Awareness); Motivating; Knowledge Transfer. These **Categories** are shown in bold in Figure 2. The codes, concepts and categories that emerged from this first interview will form the basis for the next and subsequent interview data analysis.

Figure 2: Concepts and categories from the research data

5. Developing a theory of project management best practice

At this stage in the GTM analysis we look for relationships and connections between the core category and the other categories. This is known in grounded theory as *theoretical coding*, a term coined by Glaser and Strauss (1967). However, the four categories of *Managing the Customer*, *Managing the Project Work*,

Managing Communications and *Managing Stakeholders* are well known and well established in the literature so no further comment will be made in this text other than stating the obvious that they must be included in project management best practice. The three categories of *Awareing*, *Motivating* and *Knowledge Transfer* are interesting and less well documented in connection to project management and this section will focus primarily on these in this research report. A full analysis of the relationships between all the categories is available from the authors.

5.1 Awareing

From Figure 2 it can be seen that all the concepts in **Awareing** also belong in other categories. This ties **Awareing** to all but two of the other categories which shows its interconnectedness and thereby its strong position in project management best practice. However, in practice little notice is taken of making people aware or of the PM being aware. Thus, two types of awareness can be distinguished: the PM's awareness and other people's awareness (more appropriately called Stakeholder's awareness).

The PM's awareness consists of four parts: PM's awareness of herself/himself, PM's awareness of stakeholders, PM's awareness of project issues and the PM's awareness of Stakeholder's awareness. Best practice occurs when the PM considers all four awarenesses.

Project stakeholders include development team members, customers, top management, other PMs on other projects within the organization, suppliers and subcontractors. The concept of **awareing** encapsulates the fact that a good PM has to manage the awareness of all these people. In particular, the PM has to manage the awareness of the customers by appraising them at all times of risks, problems and difficulties, project progress, need for communication and need for clear requirements. It is not enough for the PM to inform customers of these issues, the PM has to make the customer **aware**. This is another factor in project management best practice.

Similarly, the PM has to make the development team **aware** of the project's importance, context and benefits, of the risks, of the need for internal communication, of the customer's changes to requirements, and of the actual project work. All this comes from the analysis and can be seen in Figure 2.

5.2 Motivating

The category of *Motivating* has four concepts regarded now as properties of motivating. These are *Responsibilising Self-motivation*; *Awareing the team* and *Leadership*. *Responsibilising* encapsulates delegating responsibility (as well as project work) and managing how team members handle that responsibility. An ability to do this is regarded as a contribution to project management best practice. Any absence of self-motivation in a PM must have a negative influence in project work and project success, whereas good self-motivation will contribute to project success. This is a subject worthy of future research.

Awareing the project team of difficulties and problems appeared to help the project workers avoid problems rather than having to fix them after they had occurred. Good leadership, good responsibilising and high PM motivation will motivate the development team, whereas poor leadership coupled with poor responsibilising and low PM motivation will inhibit a team's motivation. Therefore good leadership coupled with good responsibilising and high PM motivation are key to project success and therefore elements in best practice. However, the three elements of good leadership, good responsibilising and high PM motivation are tough concepts and difficult to achieve in practice.

There emerged a strong connection between motivation and being aware of motivation. The relationship between these two parts defines the connection between motivation and managing awareness. The two parts are absorbed by each other, their concepts transfer by osmosis.

5.3 Knowledge transfer

The PM has an important role in knowledge transfer (KT) because it is the PM who has to make KT happen. When KT does take place the PM has to be aware of the possible difficulties in the actual process of the transfer as well as the accuracy of the knowledge itself. When KT does not happen, the PM has to be aware of the lack of transfer and the need for KT to happen.

Knowledge transfer can be informal in the work place between team members or between the PM and technical staff or higher management. Alternatively, KT can be formal in the form of minutes of meetings and

official documents. From this research came the concept of unused knowledge, that is where KT did not take place for undisclosed reasons. Therefore KT has properties of informal, formal, and unused. The area of KT and its properties would make interesting future research projects.

The main findings form this section are that there is unused KT and that KT is often informal.

6. Conclusions

From this research with practicing PMs, seven categories emerged that encapsulate their best practices: Managing the Customer, Managing the Project Work, Managing Communications, Managing Stakeholders, Awareing (which encapsulates Managing Awareness), Motivating, and Knowledge Transfer. Focusing on the last three and the connections between them a number of conclusions can be drawn as contributing elements of best practice in project management.

1. Being aware of individual stakeholder's awareness is necessary for the PM to be able to manage projects well. When a PM manages the customer's awareness, this increases the probability of success and reduces risk.

2. The more diligently a PM manages the development team's awareness, the more successful will be the project work and the higher the probability of project success. Good communications play a vital role here because communications help awareness.

3. The PM's awareness of motivation is key to motivating everyone else including the customer. It is not enough for a PM to motivate the team, the PM has to monitor and manage the state of the team's motivation. Good leadership combined with good responsibilising and high PM motivation will increase everyone else's motivation and lead to reduced risk of project failure. However, good leadership, good responsibilising and high motivation are all tough concepts which do not occur naturally and need to be developed.

4. When the process of knowledge transfer is managed well, knowledge will flow, accumulate and build up and this will promote better management in the team, the project work, the customer, other stakeholders and every aspect of project management. Knowledge transfer increases motivation and is an essential element in good leadership.

5. Motivation, knowledge transfer and managing awareness are inextricably linked together. They and their properties (Figure 2) constitute elements of project management best practice as a result of this research. Future research should build on this to clarify their interlinked roles and discover other properties of project management best practice.

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Appendix

List of Key Points from Interview 1

T1.1. Establishing good relationship with the customer

T1.2. Developing and showing the customer something small/a small project

T1.3. Establishing everyday communication – regular meetings, conference calls, reports

T1.4. Building the customer's confidence

T1.4a. Establishing very strong everyday communication

T1.5. Discussing and assessing the functional requirements with the team of developers

T1.6. Developing detailed Software Requirements Specification

T1.7. Researching about the new things in the project – new technologies, techniques, methods

T1.8. Implementing the most important parts of the new application first

T1.9. Tightly defined deliverables – every 2 or 3 weeks

T1.10. Saying 'no' to the customer instead of always agreeing with him

T1.11. Managing and changing the customer's wishes, ideas and requirements

T1.12. Changing project plan mechanism

T1.13. Going personally to each developer to see at what stage of the task he/she is at the moment

T1.14. Defining tasks according to the developer's skills set

T1.15. Developing and using a Test Plan

T1.16. Testing before each deliverable and at the end of the project

T1.17. Using a bug-tracking system

T1.18. Talking with the customer in advance in case you are going to miss a deadline

T1.19. Being always ready to give an explanation when saying something to the customer

52