

## EXPLORING THE NATURE OF COMMITMENT TO SOFTWARE QUALITY INITIATIVES: A POLITICAL PERSPECTIVE

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**ABSTRACT:** Software Quality is a popular topic in Software Engineering and IS research. The need for commitment to software quality initiatives has been established in both academic and practitioner literature. Commitment has been studied since the early 1950s, but it remains a poorly understood concept. This paper attempts to explore the nature of commitment to software quality initiatives. The research method and approach are presented and the paper briefly describes a preliminary conceptual model that explores the dimensions of commitment.

### INTRODUCTION

The need for commitment to software quality initiatives has been established in academic and practitioner literature [SM98]. Since the late 1990s studies on commitment and software quality have increased. Problems such as the lack of cohesive theory and the lack of attention to group and organisational commitment factors have been consistently pointed to in the literature [MA94]. This paper details current Honours research into commitment to software quality initiatives that tries to explore these factors. The research question posed is "What is the nature of commitment to software quality initiatives within the context of an IT organisation?"

The first section of this paper details the background literature showing the significance of the research question. The Research Method section describes the definition of posed research questions, assumptions and approach. An overview of the frameworks that will be used to guide this research is provided in the Frameworks section, and a discussion of appropriate research sites is then provided. The expected outcomes of this research are detailed, and this paper is concluded with a discussion of the next stages in this research.

### BACKGROUND LITERATURE

Software Quality is a popular topic in Software Engineering and IS research. This can be seen to have developed from the realisation that organisations are reliant on quality software to improve their competitive advantage [SE95]. The process of software systems development continues to be a problematic task [Abr02]. In order to address this, IT organisations in general are initiating some form of software quality improvement programme [Abr02].

In academic and practitioner literature, commitment is widely recognised as essential to the success of software quality initiatives [SM98]. However the software community has only recently begun to examine the conceptual base of commitment, how it is developed and maintained [Alm94].

Commitment has been studied since the early 1950s [Abr02], and until the late 1980s there was a proliferation of different definitions [MA94]. For this study, commitment is defined as "a state of mind that holds people and organisations in a line of behaviour" [NS96, p. 23]. This reflects the two common schools of thought: attitudinal and behavioural, which have been reconciled through recent studies showing the cyclic nature of affects of attitude upon behaviour and vice versa [Cam00; NS96]. Nielsen [NS00] synthesised the literature to identify the following dimensions of commitment: determinants, form, basis, salience of the influence, tactics/methods of influence, object, timing, duration, strength, and desirability/appropriateness. Timing, duration and strength are only appropriate to investigate when a study is of a longitudinal nature, therefore this study will exclude these dimensions. The dimensions to be studied have been conceptualised into a model to aid this investigation, and to provide a basis for exploring the relationships between them, provided in the Frameworks section.

Although there is an accepted assumption that a high level of commitment leads to positive outcomes, Abrahamsson [Abr02] has argued that some forms of strong commitment can lead to negative behaviour. Although information systems development and implementation is recognised as a highly political process [SM97], the politics of software quality initiatives have been recognised but only briefly mentioned or implied in studies of commitment [Abr02; SE95; SM98]. This is considered to be a major gap, as political factors relating to dimensions of influence are integral to understanding the development and maintenance of commitment [MA94].

While a significant body of literature exists on each dimension of commitment, there is a lack of research on combinations of the dimensions, which has led to a call to fill this gap [Abr02; Nie00; MA94]. As commitment is time consuming and often expensive to build, there needs to be a consideration of the most appropriate and desirable form of commitment (Nie00). It is important to understand how commitment can be developed and maintained to ensure that participants in software quality initiatives make the efforts required for success.

## RESEARCH METHOD

### Research Questions

The aim of this research is to gain an understanding of the role that commitment plays in software quality initiatives. Importantly, this research will also look at how commitment can be developed and maintained. Hence this research explores the question:

What is the nature of commitment to software quality initiatives within the context of an IT organisation?

The following set of research sub-questions have been developed to explore the overall research question:

- What is the influence interpersonal politics exerts upon commitment to software quality initiatives?
- What is the influence organisational politics exerts upon commitment to software quality initiatives?
- What is the influence determinants of commitment have upon the basis and form of commitment to software quality initiatives?
- What is the object of commitment to software quality initiatives?

An important question identified in the literature will also be explored:

- What is the desirability or appropriateness of the identified commitment within the particular context of software quality initiatives within an IT organisation?

A conceptual model of commitment is proposed to aid the investigation of the nature of commitment. This model will be used in conjunction with a power and politics theoretical framework to explore group and organisational factors affecting the development and maintenance of commitment.

### Research Assumptions

For this research a software quality initiative is defined as any initiative proposed to improve the quality of software processes and/or products [Abr02]. Features of any software quality initiative may not only vary widely both across an organisation and between organisations, but be implemented differently. Therefore this will be an exploratory study in which no specific software quality initiative is the focus. Software quality initiatives are a human-centred activity, and they must be explored within the organisational context in order to identify political issues, which may influence commitment. The research questions focus on the perception of individuals and the way they view the software quality initiatives proposed through out that project. Focusing on the perceptions of individuals leads to the view that there is no single reality, only different perceptions about it [HK89]. Therefore this study will be conducted in the social relativist (interpretive) paradigm, which seeks explanation within individual

consciousness and subjectivity, and within the frame of reference of the social actors, as opposed to the observer of the action [HK89].

This research shall use the framework for paradigmatic analysis proposed in livari and Hirschheim [IH92] to define the ontological assumptions. Information/data are viewed as constitutive meanings as the influence of power on commitment to software quality initiatives can be seen as socially constructed. The view of an organisational/social system has been adopted, as software quality initiatives are a human centred activity. Human beings are viewed as voluntaristic as humans can be seen as choosing to exert power or to commit to an object. Technology is viewed as human choice as humans can be seen as controlling their use, responsibility and consequences of software quality initiatives through social interaction and the exertion of power. Power, commitment and their influence upon software quality initiatives are viewed as subjective constructs and therefore a product of the human mind. Organisations and society are viewed as nominalistic.

The antipositivist epistemological assumption has been adopted, as the intent of this study is to increase the understanding of the nature of commitment within the contextual situation from the perspective of the individuals directly involved. This assumption is consistent with the view that "human interpretation and understanding are the constituents of scientific knowledge" [IH92, p. 120].

### Research Approach

A case study methodology has been selected and the approach will be that of an interpretive case study of a single site [Yin94]. The case study method is established within literature addressing commitment and information systems [Abr02; Cam02; Nie00; SE95].

A case study within an IT organisation will be used to investigate the nature of commitment to software quality initiatives and the influence that interpersonal and organisational politics has on that commitment. The case study will investigate patterns in the lives, actions and words of individuals in the context of the case as a whole. Several sources of data will be collected: documentation, archival records, interviews, and direct observations. The data collected will be analysed and interpreted through the conceptual model and theoretical framework.

Interviews will consist of a set of semi-structured, open-ended questions designed to probe individual perceptions of software quality initiatives, interpersonal and organisational politics. Interviews will be conducted within two distinct groups, those directly involved in implementing and maintaining the software quality initiatives and managers involved in those initiatives. Politics can be observed in manifestations, such as organisational settings [Goo99], therefore organisational and office settings shall be observed. Organisational and project documentation will be gathered in order to provide contextualisation, and general perceptions of the software quality initiatives and politics of individuals, groups and the organisation.

Two principal data analysis methods will be employed to assist in analysis and validation of the research findings. NVivo will be used to manage and structure all data collected from interviews and observations. Two structures, one representing the theoretical framework and one representing the conceptual model will be constructed in NVivo. Triangulation will be performed within method, that is, upon the data collected from the different data collection techniques, interviews, documentary analysis, and observations [Jic79].

### FRAMEWORKS

There is no commonly accepted framework of commitment. To aid the conceptualisation of the concept of commitment and therefore understanding of the nature of commitment, a conceptual model has been developed during this research. This model combines the dimensions of commitment that will be investigated. To strengthen the conceptual model a theoretical framework of power and politics will be used to address group and organisational factors affecting commitment. This theoretical framework will highlight the political environment of the organisational and group setting.

#### Conceptual Model of Commitment

The conceptual model as shown below will be developed further and used within the study to explore the research questions.

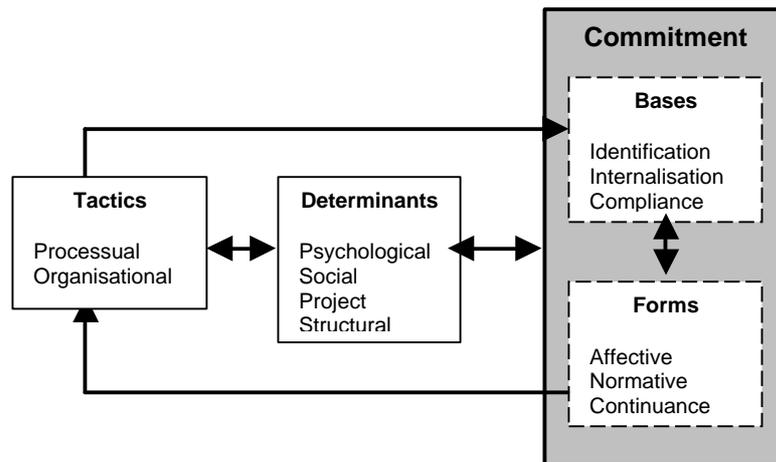


Figure 1. Model of Commitment to an Object

Tactics refer to actions taken to influence commitment. Tactics taken at the processual or organisational level as defined in the theoretical framework will cause changes in certain determinants of commitment [MA94]. The determinants directly influence the bases of commitment [NS96]. Psychological determinants focus on the key individuals participating in the influencing process including emotional attachment and perceived competence [SE95]. Social determinants originate from the group surrounding the individual including social norms and public alignment with the group [SE95]. Structural determinants represent the organisational context including management support and possible administrative inertia [SE95]. Project determinants are the objective attributes of the project or task concerned, reflecting its costs and benefits [SE95]. The bases of commitment are considered to be the motivation for the form of commitment [Nie00]. The form of commitment is the attitude of commitment leading to commitment behaviour, which is the visible evidence of commitment [MA94]. This evidence of commitment will influence the tactics used to develop and maintain that commitment [ER97]. The object of commitment refers to the object to which an individual is attached [Nie00].

#### Theoretical Framework of Power and Politics

The Model of Political Perspectives framework was adapted from the work of Sillince and Mouakket [SM97] by Goodwin [Goo99]. A comprehensive explanation of the concepts within the framework can be found in Sillince and Mouakket [SM97].

The adapted theoretical framework investigates power at the processual (individual and group), organisational, structurally constrained (industry) and socially shaped (technological) levels. The conceptualisation was formed into a series of circles such that each level has a broader focus than the previous, thus placing it in context. Structurally constrained and socially shaped power are considered to be outside of the scope of this research.

Processual power focuses upon power as a social relationship, created when demands are generated and support is mobilised for these demands [SM97]. This relationship involves an exchange of a reward, punishment, right, identity or expertise. This view is investigated, as employees in organisations are often not dealt with individually but within the groups they work.

Organisational power focuses on the software quality initiative program as a form of social organisation with important social and institutional properties [SM97]. The power relations are focused at the organisational level, in which established distributions of power are confirmed or disturbed by

the design of the program. This view will aid investigation of the organisational political context and power structure supporting the legitimate use of power to gain commitment.

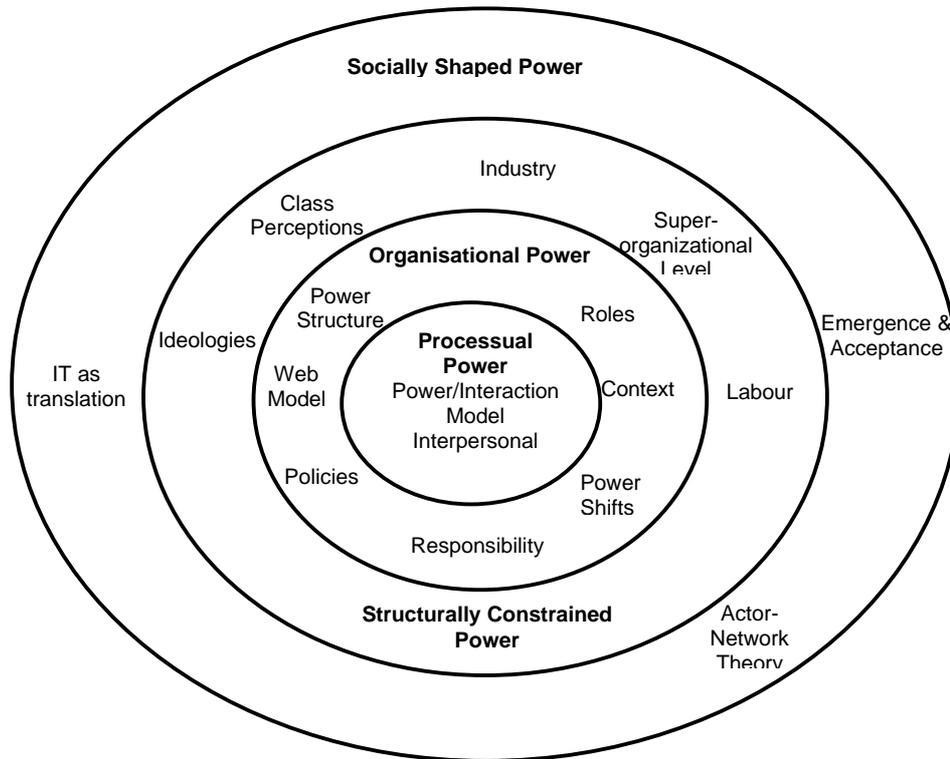


Figure 2. Model of Political Perspectives [Goo99 (adaptation from Sillince and Mouakket [SM97])]

## RESEARCH SITE

A suitable case organisation requires at least one software quality initiative proposed either recently or in the present. The site currently under investigation is an organisation providing services and training for IT companies in Australia. One long running project has been selected as the focus of investigation in which several software quality initiatives have been proposed and implemented. Software quality is of particular interest to this company as they pride themselves in their reputation as a quality-focused organisation.

## EXPECTED OUTCOMES

This research endeavours to build on the limited body of literature on commitment to software quality initiatives, and the implication of tactics used to build and maintain commitment. The conceptual model of commitment to an object may in part be validated through this research contributing to the current understanding of the nature of commitment, through documenting only previously implied relations between the dimensions of commitment. Further understanding of the role commitment plays in software quality initiatives and how it can be developed and maintained may be provided. The findings from this research may be useful in providing preliminary guidelines for practitioners in fostering commitment to software quality initiatives.

## CONCLUSION

Software quality is important [Alm94], and commitment to software quality initiatives is regarded as important in the literature [Abr02]. However commitment is not clearly understood, and has a limited body of work [MA94]. This research focuses on several dimensions of commitment: determinants,

form, basis, salience of the influence, tactics/methods of influence and object. The relationships between these dimensions is also poorly understood [MA94]. This research proposes to extend the knowledge in these areas.

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