An Exploratory Study of Organisational Adaptation to Agile Project Management

An Investigation of IT Industry in China

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Dedication

To my family, thank you for all your support during the past 16 months!

To my dearest parents in China-Wenqing Zhang and Zhengrong Liu! Thanks for all your encouragement and support during my study and always believing in me! I miss you so much for being away for 16 month and wish you healthy forever!

Ying Zhang

To my family, thank you especially for your unconditional love and support in the past 16 months, which have been an incredible and the most exciting journey in my life.

To mommy & daddy: The only good thing about being away from two of you for 16 months, is to make me want to stay closer to you and take good care of you for the rest of my life.

To my beloved sister: Now I know how it feels like to be alone far away from home, I’ll be much nicer to you in the future.

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To our beloved parents, thank you so much for your support both mentally and financially, without which we would not be able to come this far to meet wonderful people and be strong enough to overcome all the challenges in front of us along the way. You give us the opportunity to experience the world and we are truly grateful for your unconditional love and devotion.

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Last but not least, this thesis would not be possible without those who have participated in our research and data collection process. Thank you very much for your time and effort in sharing your experiences and opinions with us. We really enjoyed having the conversations with you.

Thank you, to all the future readers of this thesis paper. We are delighted that you have chosen to read our paper among all those wonderful literatures regarding agile project management. We hope you will find our paper useful and interesting to read.

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Abstract

Given the volatile and dynamic nature of IT industry, practitioners have found classical project management methods were unable to cope with complex business environment, project uncertainty and increasing customer demands on product specification flexibility. Agile project management showed the new management direction after the born of “The Agile Manifesto” on February 2001. Software development companies in the developed world started to implement agile project management method. Successful stories have attracted attention from scholars and practitioners to look into what is agile project management and why it is successful. Yet, little is known about how agile project management method can be implemented in practice in China. Therefore, this paper aims to explore how IT companies in China can adapt and embrace agile approaches at the organisational level.

The research explores, describes and analyse the perceived practices of organisational adaptation to agile project management method and develop a conceptual framework to guide the agile adaptation from a holistic perspective. The study focuses on the IT industry in China to empirically collect data to verify the propositions derived from literatures. The conceptual model examines four organisational elements: culture, infrastructure, people and strategy which are deduced from classical organisational models and propositions are brought forward covering these organisational factors and their interrelationships.

The research result shows that to adapt from traditional project management (TPM) to agile project management, organisation should make desirable cultural change and establish project operational infrastructure including processes, facilities and management practices. Regard people factor, at the individual level, agile method also requires people to be equipped with stronger competences to ensure a smooth adaptation. At the group level, project team should develop collaboration skills and ensure effective communication. The strategic adaptation of the organisation received discrepancy in practitioners’ view, thus the importance and necessity of it needs further research from bigger sample size. Among the organisational elements being examined, people factor is definitely the dominant one, followed by culture. Though infrastructural adaptation seems to be the quickest and easiest to make, it is also an indispensable part to supplement the other adaptations. The relevant importance implies the effort that should be devoted to these different organisational factors. Thus, people and culture factors should receive most attention as they have higher priorities in early adaptation phase. Due to the interrelationship among those organisational elements, the enhancement of each area will in turn create synergy and thus contribute to the efficiency of the entire adaptation process. Besides, the research also finds that the original organisational culture, the size of the company, the adaptation phase and the nature of business can all have influence in the adaptation processes. In practice, an organisation should take into contextual factors into account to tailor the detailed
measures to ensure a smooth adaptation. Based on the findings, it is recommended that effort should be balanced in different organisational elements according to their relative importance at different stage, so as to maximise the overall effect with support and resources constraints considered.

Keywords: Agile project management, traditional project management, organisational adaptation.
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Chapter 1: General introduction

1.1 Background introduction

Modern project management theories which have been developed for approximately 60 years are based on the scientific management theories where universe is assumed to be deterministic. Historically, the greater proportions of the project management literatures focus on planning in the prescriptive mode (Maylor, 2001). However the last two decades witnessed a shift towards a more behavioural and improvisational style (Leybourne, 2009) and the complexity paradigm based on the chaos and complex adaptive system theories emerged as a contender paradigm (Camci & Kotnour, 2006). The mature classic project management method has been proved to work in diverse project contexts. However, the trend that business processes will be more complex, interconnected, interdependent and interrelated than ever before is irreversible (Hass, 2007). When it comes to new scenarios to deal with highly uncertain, complex and multifaceted project, classic project management becomes less effective. The fringe areas of classic project management platform are where agile method comes to play (Chin, 2004). Agile project management method has been discussed a lot by both academic scholars and practitioners in recent years (Little, 2005; Dyba & Dinsoyr, 2008). It roots back in the IT where adapting to changing conditions is vital. In the IT industry, client requirements are normally volatile and evolving as customers and development teams together explore the unknown (Highsmith, 2002). Therefore, practitioners have been contiguously striving to find suitable methodologies for software development projects with February, 2001 being a milestone when “The Agile Manifesto” (See appendix 1) was created. At the beginning, doubts still remained on whether agile method will work until the agile community provided hands-on answers exemplified by success of voluminous pilot projects. The empirical researches also show that embracing agile practices has yielded benefits including early return on investment, short time to market, improved quality and customer satisfaction, enhanced client relationship and better team morale (Sidky, 2007).

Despite growing emphasis on the need for agile project management, little is known about how this method is implemented in practice. Instead, research shows that organisations found it difficult to adopt and implement agile approaches psychologically or technically in a short period of time (Qumer & Henderson-Sellers, 2008a). Current researches mostly focus on discussing what agile method is and what are the success factors and failure factors. There are also specific researches at a more
detailed level to examine one aspect of agile project management methods. However, there is an absence of a holistic view on how an organisation can adapt to agile project management approach to embrace successful adoption. As projects are described as complex systems to deal with the wider organizational factors largely beyond the project manager’s control (Whitty & Malyor, 2009), this study is set at an organisational level. Therefore, this research will address the current absence by exploring and analysing theories and practices concerning organisational adaptation to agile project management approach as a foundation to develop a holistic and structured approach to guide agile method adoption.

1.2 Research objective

The prime research objective is to explore, describe and analyse the perceived practices of organisational adaptation to agile project management method and develop a conceptual framework to guide the agile adaptation from a holistic perspective.

The prime research objective has been broken down into three minor objectives. The three research sub-objectives are:

i. To examine traditional project management and agile project management theories and practices, organisational adaptation and change theories and literatures connecting organisational adaption in agile project context

ii. To develop a conceptual integrative framework and propositions to illustrate how an organisation can adapt smoothly from traditional project management to agile project management based on the assimilation and reflection of the literatures.

iii. To verify the conceptual framework from project management practitioners’ perceptions by interviews.

iv. To analyse the empirical results and provide theoretical and practical implications.

1.3 Research questions

To achieve the above research objectives, one main research question was developed. The main research question is:

How can an organisation adapt from traditional project management to the agile project management?
The main research question is further decomposed into three specific research questions. The three sub-questions are:

i. What are traditional project management and agile project management and the key differences between them?

ii. What are the key elements that influence the organisational adaptation process?

iii. How can the framework of organisational adaptation be applied in the context of adopting agile project management methods and what are the practices practitioners implement in the real world? How effective are they?

1.4 Significance of the research

This research will contribute to the development of agile project management both academically and practically. Firstly, research on the project management theories and software development theories will provide an integrated and complete theoretical view of agile project management, reinforcing the theoretical. Besides, this research aims to bridge a research gap by linking the agile method adoption with the organisational adaptation. Different organisational elements and their interrelationship will be examined to provide a ground for both further academic research and practical improvement. Besides, this research will also contribute to the application and promotion of agile project management to China by providing practical guidelines to ease the transition process while implementing agile project management method. Empirical data will be collected focusing on companies in IT industry in China, thus the research conclusions and implications will be beneficial to companies in this sector. Lastly, so far there is a lack of study both on agile project management theories and practices in China. This research will be a good reference to explore the unknown area in China and provide specific insights and knowledge in this context.

1.5 Limitation of the study

This research explores and analyses the organisational adaptation to agile project management method, focusing the empirical part on the IT industry in China. Thus, it does not cover the companies located outside china and companies outside IT industry. The research result will consequently be of most relevance to the companies in similar contexts and should be referred with caution to apply to other industries and countries. Besides, this study is cross-sectional rather than longitudinal. The research employs the methodology of case study and analyses data based on perceptions of agile project
management practitioners gathered from semi-structured interviews. This method trades off the generalisation of the results to the get in-depth exploration into the research questions.

1.6 Organisation of the study

After this chapter, Chapter 2 will review relevant literatures with focus on traditional project management and agile project management related theories, organisational adaptation theories and organisational adaptation to agile methods. A conceptual model and propositions will be derived from the extensive literature review and our reflections. Chapter 3 will explain firstly the philosophical and methodological considerations that guide the study with sound justification of the every choice made concerning the method. Chapter 4 focuses on the research design for the study, outlining the underlying assumptions and rationales of the various decisions. The conceptual model deduced from literature review and propositions that will be tested by the empirical data will also be included in this chapter. Chapter 5 presents the data acquired during the semi-structured interviews. Chapter 6 analyses the empirical data collected from the semi-structured interviews in order to answer the research questions. The test results of the propositions will be elaborated and relevant findings will be discussed. The comparison of the empirical findings to literatures will also be included throughout the analysis. Chapter 7 arrives at the conclusions and implications of the study and then gives recommendations. This chapter ends by identifying possible direction for future research.
Chapter 2: Literature review

2.1 Introduction

This chapter aims to examine and summarise relevant literatures of agile project management and organisational adaptation. We draw literature from diverse fields of study, including studies on organisational behaviour, strategy, and project management. The review starts with the examination of traditional project management method, by reviewing its definition, assumptions and approaches, project life cycle and classical models and main features to serve as a basis for comparison. A close examination of agile project management is followed to illustrate definition, origin of agile project management, agile project management environment, underlying values and practices. A synthesizing comparison of traditional project management and agile project management is made to summarise the key differences. After this insight into project management theories, organisational adaptation and change theories are reviewed to develop a framework to identify key elements to ensure a successful adaptation. Finally, according to the organisational adaptation framework identified, literatures on how an organisation should adapt to agile project management method in terms of key elements in the framework are covered. Towards the end of the literature review, we pull the various strands from different conceptual frameworks covered in the literature to develop our own research model that guides the rest of the study.

As this topic is closely related to practice, there are some also practitioners’ sources included when we reviewing the literatures. However, the major development of this literature review is built on academic sources. The practitioners’ literatures and publications serve as a good source to inspire ideas and to enable us to have an ideas about the implementation of agile method in practices.

In order to provide a rich background of information and relevant theories to answer the research question and generate research model and propositions, books, numerous academic and practitioners’ journals, as well as proceedings of conferences papers were employed in this research. To identify the most relevant articles, key words were used to filter out the most relevant data; they include agile project management, traditional project management, agile methodologies, traditional methodologies, organisational adaptation, organisational change, etc. Academic journals were mainly extracted from management journals like Emerald Fulltext, Science Direct, ProQuest
and EBSCOhost. As the agile project management stems from software industry, most of current research publications are associated to software development projects published in some IT journals such as IEEE Software and IEEE Computer. By including practitioners’ view, it could increase the comprehensiveness of our data base, and thus enhancing the reliability of the research findings.

2.2 Traditional project management

2.2.1 Definition of traditional project management
Project Management Institute (PMI, 2004, p.8) defines traditional project management as “the application of knowledge, skills, tools, and techniques to project activities to meet project requirements”. Mathur (2006) comprehends PMI’s definition by taking into consideration the expectations of stakeholders for a project and he defines project as “a temporary endeavour undertaken to produce a unique product or service”. Though various definitions and comprehension exist, scholars have summarised key features by assimilation the commonalities. Cooke-Davis (2001) perceives “a set of objectives”, “breakdown of complex activities which require governance” and “a clear definition of start and finish time scale” as key characteristics of traditional project management. Hass (2007) and Thomsett (2002) understand the key features from project unfolding process and claim that traditional project management is characterised by well-organised and premeditated planning and control methods that may give rise to distinctive stages of the project life cycle.

2.2.2 Assumptions and approaches behind traditional project management
Literatures and practices on project management advocate partially conflicting approaches (Pich et al., 2002). Some focuses on project planning. Thus extensive efforts have been devoted to understand project task scheduling and control. Some empirical researches suggest an “iterative, experimental” project management approach” to excel in a fast-changing and highly uncertain environment (Lynn et al., 1996). Another school proposes that multiple solutions should be pursued “in parallel” and select the best one upon the observation of their outcomes (Sobek et al., 1999). By comparing and summarising different approaches Pich et al. (2002) identify three fundamental project management strategies: instructionism, learning, and selectionism. “Instructionism” stresses the need to execute planned tasks. “Learning” focuses on triggering contingencies based on unfolding events and experiment whereas “selectionism” recommends trying out multiple solutions simultaneously. The distinction of these three approaches stems from the complexity and uncertainty.
Appropriate strategy should be chosen by evaluating the type of uncertainty present and the complexity of the project payoff function. The table below summarises the different focuses on project planning, coordination and incentives, and monitoring of these three approaches.

Table 1. Fundamental project management strategies and project infrastructure

<table>
<thead>
<tr>
<th></th>
<th>Planning Systems</th>
<th>Coordination Incentives</th>
<th>Monitoring Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Instructionism</strong></td>
<td>Critical Path Planning</td>
<td>Critical Path Planning</td>
<td>Critical Path Planning</td>
</tr>
<tr>
<td></td>
<td>■ Task scheduling</td>
<td>■ Target setting</td>
<td>■ Target achievement</td>
</tr>
<tr>
<td></td>
<td>■ Buffers (e.g., budget or schedule “contingencies”)</td>
<td>■ Work structure, responsibilities</td>
<td>■ Progress tracking (e.g., % complete)</td>
</tr>
<tr>
<td></td>
<td>■ Simulation</td>
<td>■ Coordination in hierarchy</td>
<td>Risk Management</td>
</tr>
<tr>
<td>Risk Management</td>
<td>■ Risk lists</td>
<td>■ Contingent targets and contracts</td>
<td>■ Contingent target achievement (per tree branch)</td>
</tr>
<tr>
<td></td>
<td>■ Preventive actions</td>
<td>■ Mutual adjustment according to events</td>
<td>■ Monitor risk realization</td>
</tr>
<tr>
<td></td>
<td>■ Contingency plan (dynamic programming, decision tree)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Learning</strong></td>
<td>Overall vision</td>
<td>Long-term relationships with stakeholders, flexible and lateral coordination in mutual interest</td>
<td>Scan for new events</td>
</tr>
<tr>
<td></td>
<td>■ Detailed plan only for next tasks, then high level logic based on hypotheses</td>
<td>■ Upward incentives (no punishment for failure due to uncontrollable events)</td>
<td>■ Track assured achievements</td>
</tr>
<tr>
<td></td>
<td>■ Plan learning actions</td>
<td>■ Incentives for good process</td>
<td>■ Track quality of process used in addition to outcomes</td>
</tr>
<tr>
<td></td>
<td>■ Provide capacity for re-planning</td>
<td></td>
<td>■ Explicitly evaluate what has been learned</td>
</tr>
<tr>
<td><strong>Selectionism</strong></td>
<td>Plan multiple trial projects</td>
<td>“Winner” shares upside with “Losers” (all contribute, as winner cannot be predicted)</td>
<td>Sharing of intermediate results among projects (learning)</td>
</tr>
<tr>
<td></td>
<td>Plan performance hurdle for the “winner”</td>
<td></td>
<td>■ Performance of trial projects versus hurdle</td>
</tr>
</tbody>
</table>

Source: Pich et al. (2002, p. 1018)
Traditional project management is typically instructionism, presuming adequate information (Pich et al., 2002). Two overall approaches for traditional project management are identified to be either a plan approach or a process approach (Turner, 1999; Boehm, 2002). The assumptions behind traditional project management are that events affecting the project are predictable and tools used to handle them are also foreseeable and can be well understood (Hallgren & Wilson, 2008; Hass, 2007; Aguanno, 2004; Yusuf et al., 1999). In addition, it also assumes that once a project phase is accomplished, it will not be revisited in the future. These assumptions have been increasingly criticised by scholars such as Atkinson et al. (2006) that risks and uncertainties are in reality not predictable. As project details are often unpredictable, and thus the foundation of many process-driven approaches (the goal of repeatable processes) is unattainable. So it calls for other approaches to manage in a volatile environment (Highsmith, 2002). Organisations are currently facing the pressures of unprecedented change, global competition and time-to-market compression, projects will undoubtedly become more complex (Hass, 2007). In the context where scope is well defined with little uncertainties and complexities, traditional approach is proved to be effective (Chin, 2004), agile method comes to play in scenarios bearing uncertainties and complexities. Comparatively, agile project management is more “learning” oriented, addressing flexibilities in planning and allowing capacity for re-planning as the project unfolds. Agile project management approach will be examined in detail in later section.

### 2.2.3 Traditional project life cycle and the waterfall model

Traditional project management involves very disciplined and deliberate planning and control methods. With this approach, distinct project life cycle phases are easily recognisable. Project Management Institute (2004) suggests a generalised traditional project management lifecycle consists of a progression of initiating processes, planning processes, executing processes, controlling processes and closing processes.

The traditional project management approach employs a linear execution, attempting to get all activities done following detailed planning at once upfront (Augustine et al. 2005; Weinstein, 2009). And this is perceived as the heart of heart of the difference between agile and traditional project management (Hass, 2007). Though there are slight arguments that traditional project management approach also encompasses iterations, they are only within each stage and not between different stages due to rigid planning and control (Cadle & Yeates, 2008; Collyer & Warren, 2009). One classical and popular model that follows traditional project management principle in software
engineering project is the waterfall model, describing a development method that is linear and sequential. Waterfall development has distinct goals for each phase of development, allowing for departmentalisation and managerial control (Hass, 2007).

![The waterfall model](image)

**Figure 1. The waterfall model**
Source: Hass (2007, p.1)

As its name suggests, the waterfall model shows how a project cascades into a sequential flow. Thus, the beginning of subsequent stage is upon the completion of the previous one. Hass (2007) and Cadle & Yeates (2008) perceive it as a typical traditional project management approach due to its distinctive classification of project stage and its emphasises on viewing each stage as a stand-alone activity. The strength of this model is that it lays out clear steps for project development which will simplify planning and scheduling processes (Hass, 2007). Besides, it can also enable a structured quality management mechanism through its verification and validation processes (Cadle & Yeates, 2008). The prescriptive sequences of scheduled activities require clear and fixed client specification and requirements at early project phases. However, in reality projects rarely follow the sequential flow and clients usually have difficulties clarifying requirements clearly and completely early in the project (Hass, 2007; Collyer & Warren, 2009). Similarly this model is criticised by Thomseet (2002, p.137) as it is “poorly suited to the chaotic and client-driven business environment” because of its rigidity and flaw in assumptions.

### 2.2.4 Traditional project management features in this study

With 60 years evolution and maturity of traditional project management theories and practices, there seems to be no disagreement to what constitutes traditional project
management. Project Management Body of Knowledge (PMBOK) serves as basic guidelines for traditional project management as it outlines key knowledge areas (Papke-Shields et al., 2009; Adjei & Rwakatiwana, 2009). However, there might be different interpretation in practice when this method is customised to suit different contexts (Alleman, 2008). Thus, to clarify what is referred to as traditional project management in this study, this section will summarise the key elements of it to serve as a basis to examine the adaptation processes.

Project Management Body of Knowledge (PMBOK) identifies nine knowledge areas of project management, including integration management, scope management, time management, cost management, quality management, human resource management, communication management, risk management and project procurement (PMI, 2004). Though agile project management does not have a mature knowledge system as traditional project management, some of these knowledge areas may also apply to agile project management (Frye, 2009). The major distinction of traditional project management and agile project management that are observed and thus will be discussed in this study will mainly focus on integration management, time management, scope management, communications management, human resource management, quality management and risk management.

Adjei & Rwakatiwana (2009) identify some basic elements of traditional project management based on literature review from the perspective of project life cycle, including detailed planning and control mechanism, tasks breakdown and allocation, employee replacement rate, predetermined stakeholder expectations, relatively more rigid leadership style, etc. They note that traditional project management is not confined by the above elements. In this study, we follow this identification, regarding projects with some or all of these elements as ones employing traditional project management method.

2.3 Agile project management

2.3.1 Origin and development of agile project management
The agile project method is believed to root back in IT industry, though the notion of agility can be traced back in manufacturing industry in early 1980s, known as a lightweight method (Aguanno, 2004). As in the IT industry, projects need to accommodate frequent changes in client requirements; agile method under some circumstance is a “must” (Highsmith, 2002). With the continuous effort of IT project
practitioners to seek an effective model to address this need, “The Agile Manifesto” was generated by seventeen professionals in the IT industry in the February of 2001. Believing in the unpredictability and increasing demand for flexibility in software development projects, agile approaches systematically proposed by them re-examine areas where traditional plan-driven software development processes fail to add value to the projects, attempting to improve the odds of success (Misra et al., 2010; Highsmith 2002). Following the successful stories of agile project management in the IT industry, nowadays, agile project management approach gains increasing popularity across different businesses (Chin, 2004). The trend of business to be multifaceted and ever-changing pressures on projects flexibility to deliver desired products/services faster and satisfy customer requirements (Hass, 2007; Macheridis, 2009; Weinstein, 2009; Shenhar, 2004). As traditional approaches found to be insufficient to address the crux in changing environments, agile project management shows the light and blossom as a result (Augustine & Woodcock, 2008).

2.3.2 Definition of agility and agile project management
In light of the insufficiency of traditional project management method in managing a changing environment, agile project management emerges to play at extended project platforms (Chin, 2004; Fernandez & Fernandez 2009). However, as agile project management is still at its infancy, there is no unique definition of agile project management as different scholars have proposed different definitions for this concept (Adjei & Rwakatiwana, 2009). As a basis to understand agile project management, the definition of agility has been examined firstly. Likewise, there is no agreement on what the concept of “agility” refers to (Abrahamsson et al., 2002), the Table 2 below summarises some definition of agility proposed by scholars from late 1990’s to 2006.

<table>
<thead>
<tr>
<th>Author</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gunasekaran (1998)</td>
<td>In response to growing customer-designed products and services demands, agility refers to the capability for an organisation to survive and prosper in a competitive environment, which is signified by unpredictable and continuous changes, by reacting quickly and effectively to changing markets.</td>
</tr>
<tr>
<td>Katayama &amp; Bennett (1999)</td>
<td>Agility is the ability to satisfy volatile demand and various customer requirements in an economically viable and timely manner.</td>
</tr>
<tr>
<td>Sharifi &amp; Zhang (1999)</td>
<td>Agility is the ability to master unexpected changes and to take advantage of changes as opportunities.</td>
</tr>
</tbody>
</table>
Yusuf et al. (1999) | Agility is the ability to explore the competitive bases (speed, flexibility, innovation proactively, quality and profitability) by integrating reconfigurable resources and best practices in a knowledge-rich environment to provide customer-driven products and services in a fast changing market environments.

Conboy & Fitzgerald (2004) | Agility refers to the continual readiness of an entity to rapidly or inherently, proactively or reactively, embraces change, through high quality, simplistic, economical components and relationships with its environment.

Tang et al. (2004) | Ability to be inherently adaptable to changing conditions without having to change.

James (2005) | Ability to master change, uncertainty and unpredictability regardless of its source, i.e. customers, competitors, new technologies, suppliers or governmental policies.

Ericksson et al. (2005) | Agility means to strip away as much of the heaviness, commonly associated with the traditional software-development methodologies as possible to promote quick response to changing environments, changes in user requirements, accelerated project deadlines and the like.

Owen et al. (2006) | Agility is the ability to act proactively in a dynamic, unpredictable and continuously changing environment.

Source: summarised by authors

From the evolvement and comparison of the definitions for agility, it can be seen that some of the definitions are more general and abstract whereas some are specific at a certain industrial environment. However, there is commonness among those definitions. All of them address the dynamic, changing and unpredictable environment which calls for agility. And consequently, agility is the ability to react or adapt to cope with them effectively and proactively.

Applying agility to the context of project management, agile project management is defined generally by Highsmith (2004, p.16) as “a set of values, principles and practices that assist project teams in coming to grips with this challenging environment”. To be more specific, agile project management is to manage uncertainty and complexity by achieving project agility through the use of iterative and incremental approach, in which its success depends on the corporation between and involvement of developers and project stakeholders, to jointly understand the domain, to identify what to build, and to prioritise desirable functionalities (Hass, 2007). Agile
project management follows the essence of adaptive project management, which is defined as a structured and systematic process for continual improvement of decisions, management policies, and practices by learning from the outcomes of decisions previously taken (Intaver, 2008). Thus, it can be seen that different from traditional project management which applies instructionism as explained in former section, agile project management is applying the “learning” strategy, assuming the unpredictability and entropy in the environment and system.

2.3.3 Agile project management environment
This section will examine literatures the project environment that favours agile method. Chin (2004, p.3) defines the agile project management with the following equation:

\[
\text{Agile Project Management Environment} = [\text{Uncertainty} + \text{Unique Expertise}] \times \text{Speed}
\]

Project uncertainty is the primary factor that entails agile project management method. Chin (2004,p.4) discusses two types of uncertainty: internal uncertainty and external uncertainty. Internal uncertainty “involves things under the project umbrella that can be more or less controlled by the project manager, including scope, schedule and cost” whereas external uncertainty “involves those factors not under the project umbrella, such as industry’s business environment, the competition and high-level business strategy decisions”. The following chart outlines different examples of uncertainties lying in different areas.

![Chart: Internal and external components for project uncertainties](image)

Figure 2: Internal and external components for project uncertainties
Source: Chin (2004, p.7)

Unique expertise is often required especially for project that roots in innovation. Differing from traditional project management, where resources within a pool are
interchangeable, unique expertise are non-substitutable in agile method. Thus making full use of them is essential. Speed, more exactly quickness, is defined as a multiplying factor of agile project management as being agile does not solely equate to being fast. However, urgency for innovations and the need for improving competitive advantages create pressure for project managers to move fast.

Some researchers have proposed systematic ways to evaluate project suitability by providing criteria and filters. Chin (2004) developed a two dimensional criteria to assess whether traditional or agile method should be applied shown in the table below. The first dimension is concerning different types of project environment which are categorised into operational project environment and technology development environment. In the operational project environment, projects are normally implemented in similar ways with a regular frequency. Thus there is low level of uncertainty in such environment and traditional methods are sufficient and efficient enough to follow. Another type is technology development environment which implies a high uncertainty and little spaces for planning. Then agile methods will be beneficial. The last type of project environment is product/process development environment where high level of uncertainty exist, however there is still possibility to apply traditional methods. So this environment favours a mix of classic and agile approaches.

### Table 3. Applicability of agile project management method

<table>
<thead>
<tr>
<th>Project Environment</th>
<th>Multiple, External Stakeholders</th>
<th>Multiple, Internal Stakeholders</th>
<th>Single Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational Projects</td>
<td>Classic</td>
<td>Classic</td>
<td>Classic</td>
</tr>
<tr>
<td>Product/Process Development Projects</td>
<td>Classic / Agile</td>
<td>Classic / Agile</td>
<td>Agile</td>
</tr>
<tr>
<td>Technology/Platform Development Projects</td>
<td>Classic / Agile</td>
<td>Agile</td>
<td>Agile</td>
</tr>
</tbody>
</table>

Source: Chin (2004, p.20)

The second project dimension that helps to determine the applicability of agile methods is the type of organisational stakeholders. The first type is Single organisation with little need to collaborate with external parties exemplified by internal research and development project. Such projects will benefit most from agile method due to the greater freedom and flexibility. On the contrary, the project spanning multiple organisations cannot be easily managed by agile methods whereas traditional practices will work. The third type of stakeholder structure is in between with multiple but internal stakeholders. Under such circumstance, the applicability of agile project
management is contextual sensitive, depending on the motives of those stakeholders. Based on the experience with various software practices and processes, Little (2005) developed quantitative method to evaluate the project environment for the suitability of agile method by mainly assessing attributes characterising complexity and uncertainty. Complexity attribute drivers are team size, mission criticality, team location, team maturity, domain knowledge gaps and dependencies. And the primary indicators of project uncertainty are market uncertainty, technical uncertainty, project duration and dependencies and scope flexibility.

To sum up, generally agile method works in the environment featured by uncertainty and complexity. To be more specific into the project context, as summarised by Hass (2007), agile method outperform traditional project management way when project value is clear; client actively participates throughout the project; client and project team are co-located; incremental feature-driven development is possible; and visual documentation is acceptable.

2.3.4 The underlying values of agile project management

To understand the difference between traditional project management and agile project management, the underlying principles show the fundamental difference, in which the left hand side represents agile management and TPM on the right hand side (Fowler & Highsmith, 2001).

- Individuals are more important that processes and tools;
- Working software is more important than comprehensive documentation;
- Customer collaboration is more important than contract negotiation;
- Responding to change is more important than following a plan.

These value propositions originate from software development projects and represent a culmination of agile principles in IT industry (Fitsilis, 2008; Chin, 2004). Proved by the success of agile project management method in software projects, this approach has been adopted by companies in other industries (Intaver 2008; Owen et al., 2006; Griffiths, 2007). Thus, with the evolvement of agile methodology and its wider application, the underlying values evolve simultaneously. In Table 4, Adjei & Rwakatiwana (2009) summarise and compare the values of agile project management employed by The Agile Manifesto, Alleman (2005), and Conforto & Amaral (2008), in order to reveal its evolution. (See appendix 1 for the twelve principles of The Agile Manifesto)
Table 4. Comparison of agile project management values

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Individuals and interactions over processes and tools</td>
<td>Feedback (i.e. Continuous feedback is essential for sustenance)</td>
<td>Encourage exploration</td>
<td></td>
</tr>
<tr>
<td>Working software over comprehensive documentation</td>
<td></td>
<td></td>
<td>Deliver customer value</td>
</tr>
<tr>
<td>Customer collaboration over contract negotiation</td>
<td></td>
<td>Employ iterative feature delivery</td>
<td></td>
</tr>
<tr>
<td>Responding to change over following a plan</td>
<td></td>
<td>Build adaptive teams</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Simplify</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Champion technical excellence</td>
<td></td>
</tr>
</tbody>
</table>

Source: Adjei & Rwakatiwana (2009, p.15)

The comparison above serves as a good basis to generalise the agile project management value for a universe context, which share common principles of adaptive management as follows (Intaver, 2008):

- Regular adaptation to changing circumstances, including changing requirements
- Constant collaboration in project teams and with clients
- Iterative development processes

Intaver (2008) also claims that the adoption of agile methods should focus on the adaptation process in the organisational aspects. Thus, the agile underlying values upgraded to the organisational level can be embodied by iterative decision-making process based on learning from the outcomes of previous decisions and strategic flexibility or avoidance of irreversible decisions.

2.3.5 Agile project management practices

As explained before, the major differences of traditional project management and agile project management in practice that will be focused and discussed in this study are integration management, scope management, time management, communications management and human resource management. Thus, agile project management practices proposed from various authors will be categorised into the knowledge areas shown in the table and then be discussed briefly. It must be noted that some of the agile
project management practices may span across several knowledge areas and the categorisation here is according to the main area these practices may exert influence. The term used for agile project management practices is adopted from Adjei & Rwakatiwana (2009), where they summarised different terminologies, such as so called “elements” (Hass.2007; Cadle & Yeates, 2008), “practices” (Alleman, 2005; Elliot, 2008), and “characteristics” (Owen et al., 2006; Hewson, 2006) into the terms used below. These practices are interrelated with each other to underpin the underlying value of agile project management.

Table 5. Knowledge areas and agile project management practices

<table>
<thead>
<tr>
<th>Knowledge areas to be addressed</th>
<th>Agile project management practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integration management</td>
<td>Customer involvement</td>
</tr>
<tr>
<td>Time management</td>
<td>Nature of planning</td>
</tr>
<tr>
<td>Scope management</td>
<td>Variable scope</td>
</tr>
<tr>
<td>Human resource management/communications manage</td>
<td>Attitude to change</td>
</tr>
<tr>
<td></td>
<td>Management style</td>
</tr>
<tr>
<td></td>
<td>Team dynamics</td>
</tr>
<tr>
<td></td>
<td>Attitude to learning</td>
</tr>
<tr>
<td>Quality management,</td>
<td>Quality approach</td>
</tr>
<tr>
<td>Risk management</td>
<td>Approach to risk</td>
</tr>
</tbody>
</table>

Source: summarised by authors

**Customer involvement**

According to Chaos Report by Standish group to trace the IT project implementation results, the top success factor perceived by practitioners across ten years is user involvement (Standish Group, 1995, 2004). One most important of agile underlying value is collaboration with customer to revise the specifications continuously to improve client satisfaction (Highsmith, 2002; Schuh, 2005; Larman, 2004).

**Value delivery**

The integration of all the activities in a project is to ensure the value delivery, thus this practices is under the knowledge area of integration management. Hass (2007) put forward that agile project management practices shift the focus from cost/revenue to the prioritisation of features based on value. This can be seen as a further embodiment of the principle of customer focus; the value is delivered to customers on an incremental basis (Cadle & Yeates, 2008).
**Nature of planning**

Agile project management opposes the rigorous planning employed by traditional project management and advocates “just enough” planning and frequent re-planning based on current reality (Hass, 2007; Highsmith, 2002). Iteratively reviewing and developing an adaptive plan can enable better risk mitigation during the processes and better customer involvement (Owen et al., 2006; Larman, 2004).

**Development approach**

The development of agile project possesses the features of iterative delivery accompanied by continuous learning (Sauer & Reich, 2009). It is also feature driven by focusing on limited feature at a time to reduce complexity and collaboration through effective and timely communications and feedbacks (Hass, 2007). The agile lifecycle, consisting of highly interactive stages such as initiating, planning iteration, developing product increment, reviewing iteration, adapting to change and delivering product increments.

**Variable scope**

Different from the iron triangle for traditional project management (Atkinson, 1999, p.338), which emphasise on rigid project scope with time and resources being variable, agile project management embraces flexibility in scope while fixing project resources and time as shown in the chart below.

![Iron triangle for traditional and agile project management](chart.png)

**Figure 3.** Iron triangle for traditional and agile project management

Source: Owen et al., (2006, p. 57)

The different prioritisation on constraints results in contrasting strengths and weaknesses of these two approaches. And the iterative delivery of agile method enables the ability to accommodate change in scope within constraints in time and budget.
Attitude to change
Unlike traditional project management stressing the plan and control, agile project management actually actively encourages changes (Highsmith, 2002). The agile assumptions indicate its acknowledgement of the importance and un-avoidance of changes. Viewing changes as a reversible and inseparable process of learning, change is incorporated as part of project to deliver customer value. (Cadle & Yeates, 2008; Alleman, 2005).

Management style
The project manager’s leadership style influences project success (Muller & Turner, 2006; Munns & Bjeirmi, 1996). The success of agile method highly associates with people and it specified higher requirement for project managers (Elliot, 2008). An adaptive visionary leader instead of taskmaster, skilled to inspires the team and promote collaboration is desired (Augustine & Woodcock, 2008).

Under traditional project management, team members are instructed specifically and the main tasks for them are to follow the orders. So a good leader should be skilled at allocating right people to do the right thing and controlling the process. On the contrary, under agile method, the role of a project manager is more supportive. Thus creating a friendly and interactive working environment becomes their major responsibilities.

Team dynamics
Self disciplined and organising project team is perceived as a critical success factor of agile implementation (Highsmith, 2002; Hewson, 2006). To be more specific, small and multi-skilled team with free oral communication and effective governance to share accountability is desired (Hass, 2007, Owen et al., 2006). Only with a high calibre team is it possible for project managers to empower freely and trust decisions made by team members without explicit approval (Cadle & Yeates, 2008)

Attitude to learning
The process of implementing an agile project is the process of learning through iterations. The chart below demonstrated the learning loop of agile project. In practice, knowledge sharing and lesson learnt sessions are “must” in every learning loop (Highsmith, 2000), which may in turn enhance the project members’ knowledge and skills (Schuh, 2005).
Quality approach

Constant review and feedback from client is the main quality approach employed by agile method instead of conforming to fixed specifications (Cadle & Yeates, 2008). Thus, the unfolding of the project is test-driven (Hass, 2007). As agile method is more client-focused, the perception of quality by customers is the essential criteria to evaluate the quality.

Approach to risk

Unlike traditional project management which assumes risks for the whole project beforehand, agile project management deals with risks when they arise. Thus no effort and time is wasted on planning. However, there exists disagreement on this approach, contending that dealing with risks blindly is not a wise move (Saladis & Kerzner, 2009). The advocates of agile risk approach criticise the traditional risk approach by arguing that the cognition of risks that are under control is not the reality (Schuh, 2005). Neither customer nor the project team is able to recognise risks and plan them at an early stage (Perminova et al., 2008).

2.3.6 Traditional project management versus agile project management

Upon the previous reviews on traditional project management and agile project management separately, this part will summarise the key differences between them by comparing and synthesizing various views. Instead of arguing for the superiority of either approach, the main purpose of this comparison is to address the differences which are the basis for the adaptation process. Thus, this research does not advocate viewing these two methods as antagonistic (Alleman, 2005), but regarding them as not mutually exclusive and complementary (Frye, 2009; Cicmil et al., 2006; Gerald, 2008), depending on the project context and requirement. This is also the reason that in the previous literature, an agile project environment is addressed to clarify the precondition.
or context for its application.

Comparisons on traditional project management and agile project management methods are abundant at different levels and perspectives. Instead of going in detail of every research, a table is generated summarising all the ideas on the major differences in assumptions, underpinning theories, origin, project management strategy and approach, focus, major characteristics, project management environment, strength and weakness.
<table>
<thead>
<tr>
<th><strong>Assumption</strong></th>
<th><strong>Traditional Project Management</strong></th>
<th><strong>Agile Project Management</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Events affecting the project are predictable</td>
<td>Unpredictability and uncertainties</td>
</tr>
<tr>
<td></td>
<td>Tools and activities are well understood</td>
<td>Increasing demand for flexibility (Misra et al., 2010; Highsmith 2002; Cicmil et al., 2006; Alleman, 2005).</td>
</tr>
<tr>
<td></td>
<td>No revision once a phase is complete (Hass, 2007; Hallgren &amp; Wilson, 2008; Aguanno, 2004; Yusuf et al., 1999)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Underpinning theories</strong></th>
<th><strong>Traditional Project Management</strong></th>
<th><strong>Agile Project Management</strong></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Origin</strong></th>
<th><strong>Traditional Project Management</strong></th>
<th><strong>Agile Project Management</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Emerged from the construction, engineering and defence industries</td>
<td>Prominent in software engineering domains - 21st century (Camci &amp; Kotnour, 2006)</td>
</tr>
<tr>
<td></td>
<td>Dates back to the 1950s (Camci &amp; Kotnour, 2006)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>PM strategy/ Approach</strong></th>
<th><strong>Traditional Project Management</strong></th>
<th><strong>Agile Project Management</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Instructionnism (Pich et al., 2002)</td>
<td>Learning (Pich et al.,2002)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Focus</strong></th>
<th><strong>Traditional Project Management</strong></th>
<th><strong>Agile Project Management</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cost/revenue (Hass, 2007)</td>
<td>Focus on people (Woodcock, 2008; Hoda et al., 2008)</td>
</tr>
<tr>
<td></td>
<td>Issues surrounding resources such as labour, time, and budget (Othman et al.,2010; Perminova et al., 2008)</td>
<td>Focus on adding value (Hass, 2007)</td>
</tr>
<tr>
<td></td>
<td>Focus on planning (Chin, 2004)</td>
<td>Focus on execution (Chin, 2004)</td>
</tr>
</tbody>
</table>
## Traditional Project Management

- Involves very disciplined and deliberate planning and control methods
- Procedures, tasks breakdown and allocation
- Religious adherences to milestones
- Employees can be changed easily
- Predetermined stakeholder requirements
- Command and control leadership style
- Distinct project phases
  
  (Hass, 2007; Thomsett, 2002; Adjei & Rwakatiwana, 2009)

## Agile Project Management

- “Just enough” planning up-front (Hass, 2007)
- Frequent re-planning based on current reality
- Short iterations
- Continuous testing
- Self-organising teams
- Constant collaboration (Highsmith, 2002)

## Project Management Environment

- Stable technology and fixed requirements
- Formal methods must be employed for safety reasons
- Large projects which overwhelm informal communication mechanisms
- Have complex products which continue beyond the project scope to require frequent and significant alterations (Othman et al., 2010)

- Uncertainty and complexity exist (Chin, 2004)
- Project value is clear
- Client actively participates throughout the project
- Client and project team are co-located
- Incremental feature-driven development is possible
- Visual documentation is acceptable (Hass, 2007)
### Traditional Project Management

**Strength**
- Highly effective for projects that are well understood with fixed requirement (Bechtold, 1999)
- Lays out the steps for development and stresses the importance of requirements (Hass, 2007; Bechtold, 1999)

**Weakness**
- Poorly suited to the chaotic and client-driven business environment (Hass, 2007; Cicmil et al., 2006)
- Any design changes adopted have the potential to cause chaos (Aguanno, 2004)
- Late project changes are expensive (PMI, 2004; Eden et al., 2005 & Cui & Olsson, 2009)

### Agile Project Management

**Strength**
- Embrace change (Highsmith, 2002)
- Better risk mitigation (Schuh, 2005)
- Short time to market (Chin, 2004)
- Improved and customer satisfaction and client relationship
- Improved managerial and personnel skills
- Better team morale (Owen et al., 2006)

**Weakness**
- Vague plan (Fitsilis, 2008)
- Over demanding because of too much client involvement
- Potential loss of privacy (Highsmith, 2002)

Source: summarised by authors

The above comparison reveals dramatic difference in traditional project management and agile project management, deeply rooted in difference in assumptions and embodied by difference in methodologies and practices. Due to this radical differences, adaptation process of organisations are necessary to ensure a smooth and success adoption of agile method. The table above outlines the key characteristics of traditional and agile way of project management. Adjei & Rwakatiwana (2009) noted that not all the features need to be present for the type of project management to be regarded as traditional or agile. In this study, we regard projects with some or all of these elements as ones employing traditional or agile project management method. However, the more characteristics there are, the more typical the method is traditional or agile. In the empirical part, we will take into the typicality into consideration to selection the most suitable cases for analysis and comparisons.
2.4 Organisational adaptation

2.4.1 Definition of adaptation and organisational adaptation
Scholssberg (1981) defines adaptation as a process where an individual moves from being preoccupied with transition to integrating the transition into his life. Parkes (1971) perceived adaptation as an internal progression of firstly abandoning one set of assumptions and then developing a fresh set to enable the person to cope with their newly altered situation. Similarly, Moos (1976) and Lewin (1947) suggest human adaptation to change consists of leaving the current equilibrium (status-quo) to re-gaining a new equilibrium where desired end change results are achieved.

Organizational adaptation is the renewal at the organizational level. This concept closely corresponds to the idea that “an organisation develops its characteristics and behaviour patterns as a response to changes in its stakeholder environment” (Tikka, 2010, p.19). Edmonson & Moingeon (2004) defines organisational adaptation as a change by an organisation in response to external changes. Successful organisational adaptation may result in a more effective organisational structure and process, replacement of outmoded and a better fit with emerging environmental conditions (Marks, 2003). Adaptation can be categorized into “discontinuous” transition and “continuous” change process. Continuous change signifies moving to a known state in an orderly, incremental and continuous manner whereas discontinuous transition represents moving to an unknown state, where simultaneous and interactive changes result in new ways of thinking, organising or conducting activities (Bridge, 1991)

2.4.2 Organisational adaptation framework
Grobler et al. (2006) outlined three ways of organisational adaptation-“Adapting explicitly.” “Adapting implicitly “and “Mixture of implicit and explicit adaptation”. Explicit adaptation means internal guiding principles such as strategic goals and missions are adjusted to move the system towards a desired status whereas implicit adaptation relies on some built-in flexibility of the system to react autonomously by relieving the management function. When these built-in agility and spontaneously created adaptive process does not lead to a complete absorption of the increase complexity, a mixture of implicit and explicit adaptation has to be utilised. This research aims to examine how an organisation take proactive actions to adapt to agile project method, Thus, it is the type “Adapting explicitly” that applies in the following research.

Organisational adaptation can be regarded as a change, which is defined as the movement away from a present state toward a future state (George & Jones, 1995). Adaptation starts from change in assumptions, leading to corresponding changes in expectation, behaviours and relationships (Schlossberg, 1981; Marks, 2003). Various organisational models or frameworks exist, but most of them are descriptive and do not addresses organizational change (Burke, 2008). Among various models, some classical ones are selected to be explored and compared to provide guidelines for organizational adaptations and changes. There are mainly two streams of organisational adaptation models. One stream develops phase models to describe organisational change process, represented by the most influential scholar in change theories Kurt Lewin(1947), who generalised that the change processes are three steps, namely unfreezing, changing and refreezing. Another stream focuses on the organisational key elements which react to
each other and should be changed simultaneously to complete an adaptation process.

As this study is cross-sectional not longitudinal, correspondingly we focus on the “element” in organisational models instead of “organisational phase models” which describe the adaptation in a chronological way.

Leavitt (1965) developed a diamond model to describe organisation as independent multivariate systems. This model represents a foundation for the following researchers as many current models are based on it (Burke, 2008).

![Figure 5. The Leavitt “Diamond”: components of the organisation](Source: Leavitt (1965))

In this model, “Task” refers to the organization’s purpose; “People” refers to those who carry out the tasks; “Technology” refers to the tools and infrastructures to facilitate the realization of the task and “Structure” refers to work flows, processes and governance. The key contribution of this model is that it addresses the interrelated and mutually adjusting relationship among these elements, implying the dynamics of change. Similar to the notion of unfreezing the status-quo (Lewin, 1947; Zand & Sorenson, 1975), the change of each element will incur the adjustment of other component to damp out the impact (Keen, 1981; Burke, 2008).

Another wide spread framework for organizational change is 7S model developed by Pascale & Athos (1981) and further honed by Peters & Watertnan (1982). The model examines seven areas of a company and the interrelationship among them. Seven elements can be divided into three “hard” (strategy, structure and system) and four “soft” (skills, staff, culture and share-values) elements (Kaplan, 2005). These 7S are “Strategy”, referring to the positioning and action taken by an enterprise in response to external environmental changes; “Structure”, referring to the organizational hierarchy, authority distribution, reporting and controlling mechanisms; “System”, referring to formal and informal procedures used to manage the organization, i.e. management control systems, performance measurement and reward systems, etc; “Staff”, referring to the recruiting, training and promotion of people within an organization “Skills” referring to the distinctive competencies of the organization; “Style”, referring to the leadership style and lastly “Shared value”, referring to the fundamental set of values shared in the organization and serve as guiding principles of what is important. The main strengths of the 7S model include its identification of crucial organisational variables during the change process and its recognition interaction among all of these (Kaplan, 2005; Burke, 2008), though it lacks explanation of how this entire system interact with external environment.
The third model that possesses equivalent importance is Burke-Litwin Causal Model (Burke & Litwin, 1992) which provides a more integrative framework to assess organisational and environmental dimensions that are crucial to implement organisational adaptation. It revolves around twelve organisational dimensions including external environment, mission and strategy, leadership, organizational culture, structure, management practices, systems, work unit climate, task and individual skills, individual needs and values, motivation and individual and organizational performance and demonstrates the linkages and causal relationship among them. The model also distinguishes between transformational and transactional organisational factors. Transformational change will occur in response to external environment and directly affects organisational mission and strategy, leadership and culture, which are thus labelled as transformational change factors. Comparatively, transactional factors are more internal oriented, such as structure systems, management practices, and climate. Thus, comparing to the previous two models, this model takes into account both internal and external factors and their effects on different organisational dimensions.

Source: Burke & Litwin (1992, p.530)

Figure 6. The 7S framework

Source: Pascale & Athos (1981)
The table below summarises various different organisational adaptation theories and organizational change models, addressing the key elements they mutually emphasise.

Table 7. Summary of various organizational adaptation theories models

<table>
<thead>
<tr>
<th>Model</th>
<th>7-S Framework</th>
<th>Burke-Litwin Model</th>
<th>Leavitt's Diamond Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy</td>
<td>Strategy</td>
<td>Mission and strategy</td>
<td>Task</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Structure System</td>
<td>Structure Systems Management practices</td>
<td>Structure Technology</td>
</tr>
<tr>
<td>People</td>
<td>Staff Skills</td>
<td>Individual needs and values</td>
<td>People</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Task requirements and individual skills</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Individual and organizational performance</td>
<td></td>
</tr>
<tr>
<td>Culture</td>
<td>Share values Style</td>
<td>Culture Climate Leadership Motivation</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td>External environment</td>
<td></td>
</tr>
</tbody>
</table>

Source: summarised by authors

Based on these three models, the crucial organisational adaptation variables are generalised as “Strategy”, which refers to an organisation’s mission and strategic directions in the marketplace; “Infrastructure”, which refers to systems, structure,
governance, process, IT facilitation and some established management practices that support the daily operation; “People”, which refers to individual skills, abilities and attitude and “Culture”, refers to “collection of overt and covert rules, values, and principles that are enduring and guide organisational behaviour” (Burke & Litwin, 1992, p.532).

The reason for extracting critical organisational dimensions in the process of adaptation from these classic models instead of solely basing on one framework is to synergize the merits of all models. Besides, as 7S models has been further modified and employed by McKinsey & Company, it is believed that these components are highly valid and do not convey so-called ivory towering thinking as they have been proved by practice (Burke & Litwin, 1992). Therefore, the proceeding examination of the organisational adaptation process and practices will centre on culture, infrastructure, people and strategy. The exploration will encompass both single element and their interaction, attempting to provide not only organisational dimensions that are key to successful change and but also how these dimensions should be linked causally to achieve the change goals.

2.5 Organisational adaptation to agile project management

This section will examine the literatures on organisational adaptations to agile project management in terms of culture, infrastructure, people and strategy.

2.5.1 Culture

Agile methodologies is about values and culture (Othman, et al., 2010). Culture is the way people do things around (Deal & Kennedy, 1982). The culture of an organisation is inseparable from its operations and developments. Though elusive, corporate culture can have a huge impact on an organization's work environment and output. Siakas & Siakas (2007) claimed that agile approach should be regarded as a culture itself. Research shows that the adoption of agile project management is not necessarily unproblematic. Incompatibility between agile method and organisational culture has been identified as one of the most encountered difficulties (Qumer & Henderson-Sellers, 2008a). The research on culture and agile method adoption can be mainly categorised into two groups: (1) Researches verifying the significant impact of cultural issue on the adaptation process; (2) Researches on which kind of culture is desirable for a smooth adaptation. Thus, the following section will demonstrate firstly research results proving the criticality of culture and then culture typology that agile adaptation favours.

Lindvall et al. (2002) claimed that corporate culture is perceived by agile experts as a necessary factor to determine the introduction of agile practices. With a favourable culture, the status-quo can be easier to break. Dyba & Dingsoyr (2008) carried out an empirical research of agile software development by conducting a systematic review. The research result shows that organisation culture affects the implementation of agile methods with respect to behaviour, beliefs, attitude and values, organisational structure as well as physical and temporal setting.
Qumer & Henderson-Sellers (2008) develop a four-dimensional analysis tool to evaluate the agility. In one of the dimensions, business culture, which is categorised into collaborative, cooperative or non-collaborative culture is one of the criteria, indicating that different cultural orientation may influence the agility of an organisation. Among different categories, collaborative and cooperative culture exerts positive effect on the agile implementation. The failure and success factors of agile software project can be summarized into main categories of organizational, people, process, technical and project factors. In the category of organisational factors, too traditional and too political corporate cultures attribute to the failure, whereas cooperative organisational culture instead of hierarchical and oral culture which place high value on face-to-face communication are perceived as success factors. The empirical research result shows that an agile-friendly organisational environment is one of the significant success factors.

Figure 9. Competing value culture frameworks
Source: Denison & Spreitzer (1991, p.4)

Denison & Spreitzer (1991) introduce competing values framework based on the originally meta-theory developed to explain differences in values underlying organisational effectiveness. The model places its primary emphasis on conflict between stability and change and the conflict between in internal organisation and the external environment. As shown in Figure 9, change is characterised by flexibility and spontaneity whereas stability emphasises on order and predictability. Internal focus refers to integration and maintenance of the socio-technical system while external focus underlines competition, interaction and dynamics with the environment. Four types of organizational cultures which are hierarchical culture, group culture, development culture and traditional culture are identified according to these two distinctions.
Table 8. Four types of culture orientation and focuses

<table>
<thead>
<tr>
<th>Culture Orientation</th>
<th>Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchical culture</td>
<td>Control stability and efficiency through following rules and regulations</td>
</tr>
<tr>
<td>Group culture</td>
<td>Development of human potential and member commitment</td>
</tr>
<tr>
<td>Development culture</td>
<td>Growth, recourse, creativity and adaptation to the external environment</td>
</tr>
<tr>
<td>Traditional culture</td>
<td>Productivity, efficiency and goal achievement</td>
</tr>
</tbody>
</table>

Source: Denison & Spreitzer (1991)

Thus, applying this typology together with underlying agile values, it is obvious that a development culture which addresses both change and external focus is desirable whereas hierarchical culture is the least favourable.

As two important values of agile methods are individuals and interaction over processes and tool and customer collaboration over contract negotiation (Fowler & Highsmith, 2001), a culture emphasising customer collaboration and feedback is desirable for agile method. It should also be supportive of working in a collaborative environment and adaptive to changes (Misra et al., 2010). Agile project management method will be extremely suitable for a fast changing and dynamic organisation (Abrahamsson et al., 2002) while not feasible and proper in bureaucratic organisations (Lindvall et al., 2002).

2.5.2 Infrastructure

As identified before, organisational infrastructure here refers to systems, structure, governance, process, IT facilitation and some established management practices that support the daily operation. As this definition is generalised for organisations in all scenario, it has been re-examined and defined in the context of project management. Chin (2004) defines project management infrastructure as an organised set of tools and processes that can facilitate the project management process from start to finish.

![Overall Project Management Infrastructure](image-url)

**Figure 10.** Overall project management infrastructure

Source: Chin (2004, p.153)

As shown in the figure above, the overall project management infrastructure consists of planning infrastructure and operational infrastructure. As the adoption of agile method means shifting focus from planning to execution, for agile adaptation, the
Establishment of operation infrastructure is more important to elicit agile benefits. The term “operational infrastructure” refers to facilities, tools, processes and systems that deal with day-to-day project management activities instead of those tasks that generally take place on a more periodic basis. A good operational infrastructure should integrate status of unplanned action items with original project plan and also help to deftly management the frequent change to that plan. It can provide efficient way to disclose critical project information to various stakeholders via report mechanisms (Chin, 2004) and facilitate information and knowledge sharing, especially tacit knowledge for software development project (Qumer, 2007).

Another important organisational infrastructure is governance. Research shows that a better IT governance mechanism can earn a 20% higher return on assets than an normal one (Weill & Ross, 2004). Governance in an agile environment should identify and implement the initiatives to systematically determine the personnel in empowered agile teams to be given the right of decision making and corresponding responsibilities to achieve business values (Qumer & Henderson-Sellers, 2008). Qumer (2007) defines an integrated agile governance to include lightweight, collaborative, communication-oriented, economical and evolving effective accountability framework, controls, and processes, structures to maximize agile business value by the strategic alignment of business-agile goals, performance and risk management. This proposed definition highlights the five key perspectives of governance for agile processes: lightweight, collaborative, communication-oriented, and economical and evolving (Qumer & Henderson-Sellers, 2008) and also provides a guideline for the governance structure design and development.
2.5.3 People

“There is only one living species in the world that often actively resists adaptation -humans” (Intaver, 2008). “What is new about agile method is not the practices they use, but their recognition of people as the primary drivers of project success, coupled with an intense focus on effectiveness and manoeuvrability” (Highsmith & Cockburn, 2001, p122). Thus, as addressed by the underlying value of agile project management, individuals are more important that processes and tools (McAvoy & Butler, 2009). This attaches great importance to people factor, which is one of the most significant difference between traditional method and agile method(Chan & Thong, 2009). Traditional project management advocates insurrectionism (Pich et al., 2002), emphasizing adequate information, extensive planning and codified process and rigorous control to stick to the plan (Boehm, 2002). On the contrary, agile project management addresses dependence on people and their creativity rather than on processes to cope with the unpredictable and ambiguous environmental changes (Dyba, 2000). Thus, a lot of authors have discussed people factors to smoothly adapt to agile methods. These literatures and findings can be categorised into two main areas: individual adaptation and team adaptation, which will be explained as follows.

McManus (2003) examines the people issues in agile methods, finding that agile requires higher level of individual competences, compatibility between skills and tasks, good communication skills and experience in software development. The research of Lindvall et al. (2002) revealed similar findings that agile methods entail good interpersonal and communication skills of individuals. Success factors concerning people summarised by Chow & Chao (2008) include high competence and expertise, great motivation, knowledgeable managers with light-touch or adaptive management style. In conspicuous comparison, a failure factor includes lack of competences and resistance from group or individuals. Misra et al. (2009) identify some important people related factors such as competencies, personal characteristics, communication and negotiation, societal culture, and training and learning.

At the level of team, Chin (2003, p. 87) argued that “a cohesive team is, very possibly, the difference between success and failure in the agile environment”. Chow & Cao (2008) support this view by agreeing coherent and self-organising team to be a success.
factor whereas the absence of teamwork will probably lead to failure. Having centralised teams is likely to be a positive factor affecting the success of projects. Co-located teams are often perceived to be important vehicles for successful communication, which in turn, is one of the most critical success factors of agile project management (Misra et al., 2010). Derby (2007) outlines key collaboration skills that help teams maintain productive relationships, avoid destructive conflicts, and benefit from everyone’s best ideas, addressing the team ability to reach collective decision.

2.5.4 Strategy

Strategic adaptation is the factors this research will not emphasise as it may not necessarily apply to all the agile adaptation contexts. Especially when agile adoption is still at its infancy, organisations are unlikely to transform thoroughly. Huczynski & Buchanan (2007) describe the depth and scale of organisational change with “Fine tuning” being the shallowest and “Paradigm shift” being the deepest. In between, there are “Restructure”, “Reallocation of resources”, “Improve business planning”, “Change leadership”, “Change definition of success” with an increasing degree in depth. The adoption of agile project management can be as deep as a “Paradigm shift” if the entire organisation intends to change from head to toe or can be as shallow as “Fine tuning” if it is only to be applied within specific project team or divisions as an alternative method. Thus, as explained by Grobler et al., (2006), not every adaptation to external complexity is driven by strategic intent. Changes and adaptations can also take place without ever being formalised and articulated in the form of strategic goal patterns just as action can occur without commitment to act (Langley et al., 1995). To which extent an organisation will adapt to agile project is contextual sensitive and may vary from case to case, thus the strategic adaptation may apply to some but not all. So despite the importance of this organisational factor at a general level, it will not be the focus of this study.

2.6 Conceptual models and propositions

A conceptual organisation adaptation framework is built upon the previous literature review and some propositions are brought forward afterwards. By reviewing the organisational adaptation models, as well as synthesising and tailoring them to fit our study, four organisational elements (culture, people, infrastructure and strategy) are identified as main areas to explore in details. Thus, after constructing this conceptual model, literatures concerning these four areas are extensively reviewed, with proposition 1, 2, 3, 4 being brought forward about these four areas. Proposition 5 is derived from the intrinsic nature of organisation models to address the interaction of these elements. Therefore, the research question has been scientifically cascaded into these sub-areas and the interviews are designed to probe practitioners’ views on these four areas to test the propositions.
Proposition 1
To adapt to agile project management method, organisation should make desirable cultural change.

Proposition 2
a. To adapt to agile project management method, organisation should establish project operational infrastructure including processes, facilities and management practices.
b. Integrated agile governance is necessary to facilitate the organisational adaptation.

Proposition 3
a. To adapt to agile project management method, individual should be equipped with stronger competences
b. To adapt to agile project management method, project team should develop collaboration skills and ensure effective communication.

Proposition 4
Organisational adaptation to agile project management does not necessarily include strategic adaption.

Proposition 5
The adaptation of different organisational elements is interrelated.
Chapter 3: Research methodology

After the research question has been explored through an extensive review on literatures from multiple sources, research methods are chosen basing on what information is needed and how the information can be collected for future analysis. Prior to deciding which research methodologies to follow, an underlying research philosophy of this paper will be explained to clarify some important assumptions which underpin the research strategy adopted in this paper. In order to ensure the knowledge of this research is developed in a systematic and logical manner, the research ‘onion’ (Figure 13) proposed by Saunders et al. (2009) acts as the foundation for our methodology development.

Following the research “onion”, in this chapter, research philosophy, approaches, strategy, and research choice, time horizons etc specific to this study will be discussed and justified.

![Figure 14. Research ‘onion’](source)  
Source: Saunders et al. (2009, p.138)

3.1 Research philosophy

Research philosophy is about the development of knowledge and the nature of that knowledge (Saunders et al., 2009). A philosophical stance could be a pre-determinant of the research approaches and strategies chosen at the later stages of research. In order to provide a full picture of how we arrived at adopting qualitative strategy and using semi-structured interview as our data collection method, important assumptions underlying our research philosophy will be explained in detail. Moreover, as different authors categorise research philosophy, approaches and strategies in different ways, we
cantered around explanations provided by Saunders et al. (2009), Bryman (2008), and Yin (1989) to ensure the consistence and relevance for this paper.

Saunders et al. (2009) present three research philosophies: epistemology, ontology and axiology. Epistemology concerns what is (or should be) the acceptable knowledge in a field of study (Bryman, 2008; Saunders et al., 2009). It is about how knowledge is generated. Ontology concerns the nature of reality. There are two aspects of ontology (objectivism and subjectivism) regarding the relationship between social entities and social actors. Axiology on the other hand studies judgements about value. Researcher’s own value throughout the research process is essential for a credible research result (Saunders et al., 2009). In this research, as we explore how IT companies in China can adapt to agile project management, we would like to gather opinions from practitioners within the IT industry regarding the current adaptation process and challenges encountered at the organisational level. Thus epistemological and ontological concerns are more relevant in this paper than axiological issues. Therefore epistemology and ontology are explained in the following sections.

Saunders et al. (2009) and Bryman (2008) raise three epistemological concerns: positivism, realism and interpretivism. Positivism is normally the philosophical stance for a natural scientist, in which the purpose of the research is to have law-like generalisations and research should be conducted in a value-free way at the best effort (Saunders et al., 2009). Bryman (2008) described “the role of research is to test theories and to provide materials for the development of laws” (Bryman, 2008, p.14). Interpretivism is opposite to positivism, which takes into consideration the complexity of the world and emphasises the necessity for researchers to understand differences between humans in our role as social actors (Saunders et al., 2009). The last epistemology is realism. There are two types of realism: direct realism and critical realism. Realism holds the stance that “what the senses show us as reality is the truth; that objects have an existence independent of the human mind” (Saunders et al., 2009, p.114). Direct realism presumes that what you see and feel is how the world is, whereas critical realism is different by arguing that what people see and feel can be deceiving (Saunders et al., 2009). For direct realist, the world is perceived as relatively unchanging so the study at one level (the individual, the group or the organisation) is sufficient to draw conclusion. While critical realist sees the world is constantly changing, and multi-levels study (the individual, the group and the organization) is important (Saunders, 2009).

This research attempts to examine at the organisational level and develop an understanding on common practices that an organisation can implement to adapt to agile project management. To accurately address the question how an organisation can adapt to agile project management method, understanding the social reality from practitioners’ perception and feelings are crucial. Therefore, interpretivism and realism could be possible for this research. However, even though subjective opinions are collected from practitioners, realism stands is taken instead of interpretivism. It is because the purpose of this research is not to understand the difference between the parties involved in the context that drives the need for adopting agile project management methods. On the other hand, as we believe how IT practitioners describe the agile project management adaptation process is how the world is, this study takes the stance of realism.
Specifically, direct realism stance is taken, as it enables the researchers to understand the social reality from practitioners’ perception and feelings. Furthermore, this research only emphasis on the organisational level, instead of multi-level of study as suggested by critical realism; and we believe how practitioners describe the world is how the world is, we are not deceived in any sense, therefore, direct realism stance is deemed to be most appropriate.

Ontology is about the nature of reality. “Ontology to a greater extent than epistemological considerations raises questions of the assumptions researchers have about the way the world operates and the commitment held to particular views” (Saunders et al, 2009 p.108). Saunders et al. (2009) identify two types of ontology: objectivism and subjectivism. Objectivism suggests social entities exist in the world external to social actors concerned with their existence; while subjectivism suggests social phenomena are the results from perceptions and consequent actions of those social actors concerned with their existence (Saunders et al., 2009). As we believe the adaptation process of agile project management depends on the actions of social actors, like IT practitioners in China, their knowledge and experience on agile methods can shape the development and transformation of agile project management methods in China, therefore, this paper leans towards subjectivism. And we explore answers to research question by probing practitioners’ perceptions, assuming that their perceptions and actions are how it exists.

3.2 Research approaches

After identifying the research philosophies, research approach is chosen so as to link the theories from literatures review with subsequent research. As shown in the research ‘onion’, there are two types of research approaches, deductive and inductive approach. Deduction is “the process by which we arrive at a reasoned conclusion by logical generalisation of a known fact” (Sekaran, 2003, p.27). It normally uses quantitative data and associates with structured methodology to ensure the replication of the study (Saunders et al., 2009). The other way is induction, which is usually employed to understand what and why things happen from respondents’ perception. The research processes are that a certain social phenomena are observed by researchers, then data will be collected and analysed, based on which a theory will be developed (Saunders et al., 2009). Though there are great distinctions between these two approaches, it is highlighted that they are not totally mutually exclusive (Bryman, 2008). Many social research lies within the continuum between then and our study is also the same case.

This study leans more towards inductive approach due to its exploratory nature. The initial idea of the research comes from the observation of one of the authors during the internship with one IT company employing agile method in China. However, we also adopt hypothetic-deductive steps. Extensive literatures are reviewed to yield a conceptual framework and propositions so as to cascade research questions and focus on the crux. As the research question is a “how” question and the exploratory nature of this study implies the preference of in-depth qualitative data to big-sample quantitative data, this research does not include any statistical analysis to focus on the replicability of the study. The propositions serve more as a broad guideline to direct the research and proceed with empirical data collection rather than some hypothesis that await quantitative data to be statistically proved of falsified. Subsequently, this
research will employ case study strategy and semi-structured interview to gather in-depth data. The research result will explain more on how things happen and why they are so from the examination of certain cases. The replicability is not the focus but the depth and width of the research will be. Thus research findings will be more similar to a theory which has been further refined to suit a certain context based on original general theory. All the facts reveal this study adopt a mix of inductive and deductive approach, leaning toward induction.

Figure 15. Relationship between theory and research for deductive and inductive approach
Source: Bryman (2008, p.11)

3.3 Research strategies: case study

In this exploratory study, we seek to grasp the current organisation adaptation to agile project management in IT industry in China and verify the theories we found from literatures. Saunders et al. (2009) suggested three principal ways in conducting exploratory research: 1. a search of the literatures; 2. interviewing ‘experts’ in the subject; and 3. conducting focus group interviews. In light of this, in-depth qualitative data is the best to answer our research question.

Research philosophy influences the way we answer the research question and subsequently determines the choice of research strategies, data collection techniques and analysis procedures, and time horizon over the research period (Saunders et al., 2009). Following direct realism and subjectivism, the reality is what practitioners’ perceive. Among the research strategies suggested in the “research onion”, such as experiment, survey, action research, grounded theory, archival research, etc, case study is deemed to provide the knowledge in answering ‘how’ or ‘why’ in the research question (Yin, 1989).

Yin (1989) suggested three conditions to help deciding which research strategies to use; 1. the type of research question; 2. the extent of control a researcher has over actual behavioural events; and 3. the degree of focus on contemporary as opposed to historical events. Table 9 shows the performance of five research strategies in the three conditions mentioned above. Referring to the needs of this study, our research question is a ‘how’. We do not require control over our respondents’ behaviour and we focus on the
contemporary situation in the IT industry in China. Therefore, case study is the best-fit for this study.

Table 9. Relevant situations for different research strategies

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Form of research question</th>
<th>Requires control over behavioural events?</th>
<th>Focuses on contemporary events?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>How, why</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Survey</td>
<td>Who, what, where, how many, how much</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Archival analysis</td>
<td>Who, what, where, how many, how much</td>
<td>No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>History</td>
<td>How, why</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Case study</td>
<td>How, why</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Source: Yin (1989, p.17)

There are two types of case study, single-case study and multiple-case study. Single-case study should be adopted only when the case is critical or unique in nature while multiple-case approach should yield replicable purpose, and each case needs to be selected carefully so that it either predicts similar results (a literal replication) or produces contrary results but for predictable reasons (a theoretical replication) (Yin, 1989). As we aim to understand the general organisational adaptation to agile method throughout the IT industry in China, single-case study would be less able to oversee the general agile method adaptation process in China than multiple-case study can provide. Furthermore, multiple-case is adopted to look for similarities or differences among companies and thereby testing the propositions. Details for the unit(s) of analysis, criteria for judging the quality of case studies will be discussed in the following chapter.

3.4 Research choices and data collection techniques

Mono-method instead of mixed-methods or multi-methods is used as our research choices and in-depth interviews are regarded as the best way to collect qualitative data to answer our research questions. Bryman & Bell (2003) define semi-structured interviews to typically refer to a context in which the interviewer has a series of questions that are in the general form of an interview schedule but is able to vary the sequence of questions. By interviewing several agile practitioners in IT companies in China, a more detailed and descriptive agile adaptation situation in China can be obtained. Some extra information such as insight into key challenges that organisations have encountered in adopting agile method, interesting experience etc can also be gathered to enrich the answers to the research question.

3.5 Research time horizons

Depending on the time horizon for a research, research approach can be broadly divided into two categories, cross-sectional studies and longitudinal studies. Cross-sectional
refers to the study of a specific phenomenon (or phenomena) at a particular time while longitudinal approach requires much more resource and time to study and observe changes and development of variables over a long period of time (Saunders et al., 2009). As the purpose of this research is to understand the current agile adaptation situation in China (a snapshot), cross-sectional study is undertaken in this context.
Chapter 4: Research design

This chapter aims to further explain the research design for this study by outlining the underlying assumptions and rationales of the various decisions that were undertaken, including the selection of the sector to be covered in the research, the selection of cases, conceptual framework and propositions and criteria for judging the quality of research design. In general, the principle of adopting this research design is to better answer the research questions and achieve research objectives.

4.1 Selection of research site

After extensive literature search, we could hardly find any study at the organisational level in China to examine the practices of adaptation, thus we position our study at this gap. Project management prospers firstly in the western world in developed countries and then has been introduced to developing countries. China, being one of the most fast-growing developing countries, is worthy of examination. As there are many differences of managing projects in China compared to that in the West (Vaughan, 2008), this study limits the geographic region to exclude the intervention of factors such as culture, local work habit, project management maturity and market conditions. The IT industry was chosen mainly due to the following reasons. Firstly, agile project management, which is new and novel, originates from IT industry. Though it has been increasing popular and thus has been customised to apply to other industries recently, IT industry is the best for illustration on standard practices both theoretically and practically as it has been adopted in the IT industry for a longer time and to a wider scale. Besides, as it is reasonable to assume that there should be years for the application of agile project management to evolve, stabilise and mature, IT industry is the most suitable one that meets this precondition. Secondly, agile project management method is effective in some contexts while ineffective in others (Coram & Bohner, 2005), it is essential to focus on an industry where the necessity and suitability for using this method is more obvious and general. Our research scope doesn’t emphasise the evaluation of project suitability and thus it is proper not to include other industries to meet the presumption that industry bias is removed from the study. However, our research results can still be beneficial to other industries based on which customisation and refinement can be made to suit a different context.

4.2 Selection of case

Targeted interviewees are spotted by searching the web and contacting practitioners in the industry. Due to the specific requirement imposed to qualify one as a right entity, pre-screening questions are raised to identify them. Pre-screening questions include (1) Do you currently applying agile project management method? Could you please briefly describe the manner that a project is organised? (2) Before applying agile project management, what method do you use? Could you please briefly describe the manner that a project is organised? (3) How long have you been engaged with agile methods? Does the organisation make effort to adapt from traditional method to agile method? Companies that are confirmed to have experienced the adaptation from traditional project management to agile project management are in the sample list.
The above actions are to ensure the literal replication, where we predict similar results can be found from the cases and a theoretical replication, where we expect contrary results but for predictable reasons (Yin, 1989).

### Table 10. Experience of selected companies in agile project management adaptation

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Duration of organisational adaptation to agile project management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company A</td>
<td>3 years</td>
</tr>
<tr>
<td>Company B</td>
<td>1 year</td>
</tr>
<tr>
<td>Company C</td>
<td>4.5 years</td>
</tr>
<tr>
<td>Company D</td>
<td>3 years</td>
</tr>
</tbody>
</table>

We have selected four IT companies that have one to about five years of experience in using agile project management. We would like to observe the major challenges during different adaptation period and the challenges that prevail throughout the time, e.g. initial stage in launching agile project management, intermediate stage of agile project management adaptation and a relatively mature stage of agile project management adaptation.

Furthermore, we targeted IT companies that are located in prosperous cities, such as Beijing, Shanghai, Wuhan and Shenzhen, where the economic situation are more robust and customer demands are more dynamic, therefore creating a favourable environment for IT companies to adopt agile project management. Besides, to ensure the interviewees possess the expert knowledge and experience of the transformation process at the organisational level, interviewees are mainly product directors, programme managers and project managers.

### 4.3 Unit of analysis

Unit of analysis in this study is a “case”, which we define as an organisation, which used to employ traditional project method and now has adopted agile project management method. This specific requirement is imposed to short listing companies that are experiencing changes at various stages of adaptation process. By investigating these companies instead of those that remain using traditional project management methods, interview response are expected to be more able to reflect the reality and thus generate more meaningful findings. In each case, opinions of practitioners from that organisation are gathered to understand the four organisational elements (culture, people, infrastructure and strategy) related to the propositions. Propositions are served to identify the relevant information provided by the interviewees, and help to guide the discussion to the right direction and in a focused manner.

### 4.4 Semi-structured interview design

The semi-structured interview questions were developed mainly based on the literature review. Questions are set in an open and value-free manner, aimed to leave interviewees free from researchers’ own judgement and to encourage interviewees to share as much relevant information as possible. There are two versions of question list: one is for researchers and one for the interviewees. The earlier one is designed as a
question guide, for the purpose of guiding the discussion direction and areas that need special attention, e.g. response similar or contrary to findings from literatures. *(See appendix 2 for the question guide)* Another simplified version covering all the open questions is sent to interviewees prior to scheduled interviews. *(See appendix 3 for interview questions)* Furthermore, due to geographical limitation, conversations are done through telephones with duration varying from one hour to one and a half hour for each interview.

### 4.5 Data processing and analysis

As all the interviewees are Chinese, the interviews conducted are in Chinese. The whole process was recorded. After each interview, one of the authors translated the conversation into English transcript and the other one checked it against the record to ensure all the relevant information is included. The data will be sorted by questions and the answers for each question will be examined in detail to see the similarities and differences. Along the analysis, all the data will be compared with literatures. If there are contradictory results, the reasons behind will be explored later on. Thus, by doing this, we ensure a thorough exploration of all the data obtained.

### 4.6 Construct validity, external validity and reliability of research design

Quality of research design can be tested in four areas: constructive validity, internal validity, external validity and reliability. Yin (1989) identified several case study tactics for dealing with these tests as shown in Table 11. Among the four tests, internal validity is used to test research design for explanatory or causal studies only, and it’s not applicable for exploratory or descriptive studies. Therefore, internal validity will not be discussed in this paper.

<table>
<thead>
<tr>
<th>Tests</th>
<th>Case-study tactic</th>
<th>Phase of research in which tactic occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construct validity</td>
<td>Use multiple sources of evidence</td>
<td>Data collection</td>
</tr>
<tr>
<td></td>
<td>Establish chain of evidence</td>
<td>Data collection</td>
</tr>
<tr>
<td></td>
<td>Have key informants review draft case study report</td>
<td>Composition</td>
</tr>
<tr>
<td>External validity</td>
<td>Use replication logic in multiple case studies</td>
<td>Research design</td>
</tr>
<tr>
<td>Reliability</td>
<td>Use case study protocol</td>
<td>Data collection</td>
</tr>
<tr>
<td></td>
<td>Develop case study data base</td>
<td>Data collection</td>
</tr>
</tbody>
</table>
There are mainly six sources of evidence for case studies: documentations, archival records, interviews, direct observation, participant-observation, and physical artifacts (Yin, 1989). Among the six sources listed above, this research has used multiple sources of evidence: direct observation, interviews and documentation. As one author of this study had worked in one of the IT companies in China that has transformed from using traditional project management to agile project management, she had been working closely with agile practitioners and participated in meetings and involved in daily work flows. Open-ended interviews are the major source of evidence for this research. During the interview process, questions about the facts of the reality and opinions from respondents were raised so as to gather the real situations happening in IT industry in China and insights from experts and practitioners. Furthermore, we documented the literatures and other relevant information either in electronic version or hard copies. Conversations with interviewees were documented in form of transcripts for later data analysis process.

Chain of evidence is achieved by having an external observer to review the case study. As this master thesis is reviewed by professors in Umea University, Politecnico di Milano, Heriot-Watt University and a grading committee, the quality and reliability of this research is thus ensured and increased.

External validity concerns about the generalising ability beyond one case study and whether the research process can be replicated and produce similar results. Multiple-case study is adopted in this research, and four cases were done with the same research process, similarities and differences were identified while testing the propositions. Therefore, analytical generalisation is achieved through a replication logic underlying in the research design.

Reliability of this research is achieved by documenting the research procedures, so that if others conduct the same case study again, the process can be repeated and arrive at the same results as the previous one. To meet the test for reliability, a case study data base is suggested by Yin (1989). In this research, each interview were recorded on tape and translated to transcript for later data analysis purpose. Literatures found which were useful to this research were kept as soft-copies in computer, and can be retrieved as proof upon request.

4.7 Ethical considerations

Throughout the entire research process, ethical issues were considered and handled carefully, especially for the activities of “data collection, data analysis, reporting, and dissemination of information on the internet, if such an activity is undertaken” (Sekaran, 2003, p.18). The research process must ensure that there is no invasion of the intended participants’ privacy, the objectivity and any coercion or deceit (Saunders et al., 1997). To ensure that our study meets the ethical standards, at the design and initial access stage, as indicated by Saunders et al. (1997), we plan to conduct the research in line with the ethical principle by attaining flexibility in research strategy and choice of method. We avoided putting pressure on intended participants to grant access which is one potential area for ethical problem to arise when seeking initial access (Sekaran, 2003). During the data collection processes, the
following measures were taken to not intrude a participant’s privacy and maintain objectivity: (i) the detailed information relating identities of all participants and their respective organisations are not revealed in the thesis, (ii) all the respondents were invited by a formal invitation letter which explicitly addressed their opinions would be kept at straightest confidence (See Appendix 4 for the invitation letter), (iii) all respondents were free to choose not to answer any questions (or free to terminate a conversation at any time), and (iv) the interview transcripts were sent to interviewees to ensure there’s no misunderstanding or misinterpretation. In the analysis and reporting stages, the objectivity becomes even more vital to ensure the proper interpretation of the data collected (Saunders et al., 1997). The principle of avoiding being selective about what data to report and excluding misrepresenting and misinterpreting data is strictly followed. Last but not least, we also made great effort to acknowledge all sources of literature and secondary sources by proper citation and references.
Chapter 5: Empirical data

This chapter focuses on the data acquired during the semi-structured interviews.

5.1 Brief profile of interviewees

A brief profile of the interviewee and organisation will be shown in the table below. The organisations that have been interviewed have started with agile project management from 1 to 5 years, yet they all perceive that they are at the early and tentative stage of the adaptation. For all these four organisations, none of them is now using agile project management across the whole organisation. Agile project management is only partly employed by some project teams or to some larger extent, e.g. 1/3 or 1/2 of the organisation as these organisations have implemented agile project management for a comparatively longer time.

The interviewees are experienced project manager, product manager or programme manager who have been involved in the organisational adaptation processes. Thus, their perceptions, understandings and experiences can be strongly relevant and valid to answer the research questions.

Table 12. Interviewee profile

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Position</th>
<th>Years of experience</th>
<th>Duration of organisational adaptation to agile project management</th>
<th>Agile scale in the Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviewee A</td>
<td>Programme Manager</td>
<td>8 years</td>
<td>3 years</td>
<td>More than half of the organisation</td>
</tr>
<tr>
<td>Interviewee B</td>
<td>Product Director</td>
<td>20 years</td>
<td>1 year</td>
<td>Two project teams</td>
</tr>
<tr>
<td>Interviewee C</td>
<td>Product Manager</td>
<td>6 years</td>
<td>4.5 years</td>
<td>About half of the organisation</td>
</tr>
<tr>
<td>Interviewee D</td>
<td>Project Manager</td>
<td>5 years</td>
<td>3 years</td>
<td>Half of the organisation</td>
</tr>
</tbody>
</table>

5.2 Information acquired during interviews

All of the interviews started with the interviewees briefly introducing their project experience, position in the organisation and understanding about the general application of agile project management in IT industry in China. Then the initiation of the agile project management in their organisation will be discussed and their perception of traditional project management and agile project management will be explored. Following that, interviewees will be asked to share the experience of their organisations’ adaptation to agile project management in terms of the organisational elements identified (culture, people, infrastructure and strategy). Finally, some other interesting experience or findings they perceive worth mentioning will be at the end.
5.2.1 Interviewee A

Interviewee A acknowledged that so far the agile project management method in China is not as widespread as it was in the western world, though the popularity is increasing. Many small IT companies started to use agile project management and big companies started with part of the organisations adopting agile project management as a trial. Company A started to introduce agile project management in 2007 and so far, more than half of the organisation is using agile project management to manage projects. There are both positive improvement and negative effect of agile project management. The expected improvement in ability to respond to changes and in deliver product faster had been achieved, but the speed sacrificed quality somehow. The company now is still trying to optimise and adapt to agile project management to eliminate the negative outcome and maximise the benefits. Interviewee A firmly believed that agile project management will be a future trend and working early on it will bring more obvious advantages in the long term.

The initiation of agile project management in Company A was from some project managers who were engaged in developing some completely new products with no one having experience before. Realising that facing a totally uncertain projects with almost everything unknown and unable to be planned, they proposed using agile project management to the top managers. They also thought that it was vital to adopt agile project management to be more responsive than competitors and to accommodate changes in client requirements. These motives had driven the implementation of agile project management in Company A.

Interviewee A perceived the key features of traditional project management were detailed planning, strict control in the process and formal documentation. Whereas when mentioning agile project management, the key characteristics coming into mind were SCRUM process, much less planning and few documentation, customer involvement and communication and focus on pragmatic issues. The key difference of traditional project management and agile project management in execution mentioned was that agile project management was more pragmatic by responding to the unavoidable changing requirements in the IT industry instead of assuming that all the details can be planned at the very front.

Interviewee A: “Organisational cultural change at a superficial level can be fast, but to make profound changes requires a significant amount of time.”

Interviewee A attached great importance to a desirable cultural change to smoothly adapt to agile project management methods but meanwhile admitted the equivalent difficulty in making cultural change. Company A is a globally leading company which has been engaged with traditional project management for more than 30 years. Thus, though there was doubtless agreement on the importance of fostering an open and non-hierarchical culture, intentional practices such as internal trainings led by professional project managers, encouraging staff to participate in external seminars, breaking the original team into smaller ones to encourage communication, it was not easy to change the traditional culture which had prevailed for 30 year. To enable the staff to be open to new methods and to gain right understanding on it, culture also
played an essential role to eliminate the resistance. However, interviewee A claimed that to make superficial changes could be quick but to make profound changes in culture required time. Those practices carried out by Company A were perceived by him to be far less than enough to accomplish cultural change and the most powerful and effective practices he identified should be top-down. But since the implementation of agile project management was only a trial in company A, top managers needed the results of the trial as a proof to be determined to implement top-down cultural change. Facing the dilemma, the feasible practices for changing the culture started within small teams. This limited the effect of the cultural change. The company had already implemented agile project management for three years, but these 3 years was still too short for the company to complete the cultural adaptation.

In terms of infrastructure, company A had introduced new software, tools and management practices to support the organisational adaptation. It introduced agile management software JIRA to monitor and control the project progresses and some new design and test software to better follow the SCRUM processes. The agile team also used whiteboard for prompt and visualised communication. However, there was no project governance structure specially designed for agile teams to better manage the performance of team members and coordinate with stakeholders and control risk. Project had a loose control and monitoring system and mainly depended on project manager to check closely. The agile teams worked well so far so there was no attempt to change it.

Interviewee A: “Project manager should be more than a leader of a team; he needs to hold all the team members together, to be close to them, instead of having his eyes over their shoulders as a manager high up in the organisation.”

Employing agile project management, there were stricter requirements for both project managers and team members. Project manager was more integrated into the team rather than being on top of the team. The role of project manager was to coordinate and motivate the team, thus project manager needed to be skilful in communication and influencing others. If the project manager had personal charisma, it would be desirable. For project members, apart from original skills required, there were higher requirements on teamwork and communication skills. Company A used waterfall model before, so roles and responsibilities were clearly defined and staffs were used to undertake clear ownership and worked in a strictly planned way by following the commands. As roles and responsibilities were clear, different functions worked quite independently to fulfil different tasks, there was no frequent communication among members, mainly due to little need for communication. However, using agile project management, all these needed to be changed and project members needed to be initiative to take ownership and communicate proactively rather than being instructed. Besides, basic sense of agile project management would be preferred. In the agile team, the team worked more seamlessly and communicated more frequently. Thus, developing collaboration skills and ensuring the effective communication is essential. To support the transition, the company had organised trainings for the existing staffs and had raised recruitment requirements for new members.

The organisation did not consider any strategic adaptation to agile project management due to the following reasons. Firstly, the current agile project
management practices in the company were not mature enough to be horned into competitive advantage strategically. Secondly, to consider the organisational adaption at the strategic level meant a transformational change, which needed a lot of fundamental changes at all levels. So right now, the timing was not right and agile project management method was only considered as a better way of organising projects to optimise the working flows.

Interviewee A recognised the interrelationship among all these organisational factors. Among all the organisational factors, people factor was identified to be the most important whereas infrastructure was the least. Different to our expectation, though company A did not intend to implement any strategic adaptation, interviewee A addressed the necessity and importance of strategic adaptation. The main reason was that a profound change should be top-down. The strategic adaptation would surely enhance the adaptation of other areas. Otherwise, the adaptation would be superficial and slow. Only by considering it at the strategic level could the entire company lay proper emphasis on the issue and be truly involved in the adaptation.

Interviewee A: “When I first tried to promote agile project management method, I faced criticism and pressure from those who advocate traditional waterfall model... it wasn’t an easy time for me...”

Another key challenge apart from the organisational elements mentioned above was corporate politics. As the organisation operated in a rigid way, the organisational structure was not flattened enough to achieve agility and responsiveness. To fully adapt to agile method, there should be corresponding changes in the organisational structure to be less hierarchical. Inevitably, conflict of personal interest aroused since some positions would be streamlined. Thus, there were oppositions from various perspectives and resistance represented a major barrier in the adaptation process. This was also why a strategic-level adaptation is necessary to eliminate these obstructions.

5.2.2 Interviewee B

Interviewee B: “There is no doubt that agile project management will be the future management trend in IT industry.”

Interviewee B commenced the conversation by directly expressing the confidence in agile project management to replace traditional project management in the IT industry in China in the future. Even though company B had started with agile project management for only 1 year and the effect still needed more time to show. Interviewee B was quite optimistic that the current situation would surely improve in the future. The initiation of agile project management in company B was driven by the fact that increasing fierce competition demanded for quicker delivery of products. The flaw in the original project management method was another driver. Lack of formalised and standardised work flows called for some measures to optimise the procedures. Thus, some project managers proposed agile project management to the top managers and upon approval, some project teams began to implement agile project method under the leadership of initiators.

The traditional project management was featured by command way of management and front-loaded planning. Comparing to traditional project management, agile project
management meant making decisions when really need to, more customer communication and iterative delivery. Interviewee B perceived the difference in attitude toward planning as the major difference between agile project management and traditional project management. The different planning methods were the most direct embodiment of difference in assumption proposed by interviewee A. traditional project management emphasised the front-loaded way of planning while in agile project management planning and decisions were somehow properly “delayed” to the point that they became necessary and critical. In a more detailed level, this principle in planning could breakdown in to different practices in requirements analysis, designing and testing. Requirements were collected and analysed during the whole agile process and thus changes were made in designing alongside. Testing activities were not at the end of the project but in every iteration.

Interviewee B recognised the importance of an open organisational culture to adapt to agile project management. Agile project management was only partly adopted by two project teams, so the cultural change was only restricted to a very small scale. To allow a better working environment to make cultural change, Company B had separated working offices for agile teams and gave enough autonomy to the project manager to tailor the culture and working environment to the need. This practice was effective to some extent as after half a year the separated office has established obviously more open culture and relaxing working environment than the original office. Project team members could walk into manager’s office at any time. There were also trainings and internal discussion organised to share the understanding on agile project management. Also posters were hang on the wall the remind everyone of The Agile Manifesto, values and work flow. At the very beginning of the adaptation, the organization also brought in external consultant to show support and to educate staffs. These measures received positive effect to some extent, but there was still much to do to establish a fully supportive culture for agile project management.

*Interviewee B: “A commanding style of working in traditional culture imposed the greatest challenge in the cultural adaptation.”*

Though culture was recognised as one of the most important areas that an organisation should change, the adaptation process still encountered with difficulty. The company had a traditional culture supporting a commanding way of working. Staffs were used to be provided with clear instructions and then followed them. This working style imposed the biggest difficulty in the cultural adaptation. Besides, as only part of the organisation started with adaptation to agile project management, it was likely that the team became less agile when decisions needed to involve staff from different departments in the main office. The independent operation of the agile teams sometimes confronted conflicts with rules and regulations of the main office so that the agility could only be achieved to a certain extent.

Regard infrastructure, apart from arranging a separated new office especially for the agile team, the company also introduced software JIRA to manage the work flow and CONFLUENCE to effectively manage knowledge. White board was also found effective in facilitating the agile processes. Both informal short meetings and regular project meeting were much more frequent than before to ensure smooth communication at the team level. Regular meeting was on a weekly basis while short meetings were organised whenever there was a need. During special times when
update was needed every day, team meeting was organised every morning to ensure any change or unexpected issues could be managed immediately. Though there was no formal governance, the organisation realised the need to implement some regulations to manage the performance and to ensure the fulfilment of responsibility of every staff. It was also crucial to properly involve the related stakeholders into the project. But currently, the responsibility was on the project manager to coordinating meeting for related stakeholders to report the progress and to monitor the performance of the team members. Team members reported weekly the working progress and estimated the working hours for the following tasks in the iteration meeting.

For project managers, to adopt agile project management method, they needed to be prepared to fully devote to bringing in motivation and encouraging the collaboration in the team. They had to be more merged into the project team than in traditional way and to work through the difficulty together with the team members. In company B, the agile project managers were also the agile project management owners and coaches. So they had to bear the pressure of achieving project success as well as agile project management success. Project manager would expect more experienced developers inside the project team. Members should also be more initiative and skilled in communication to ensure the smooth teamwork and knowledge sharing. In the agile teams, communications and interactions were more frequent and open. Thus, a cohesive and efficient team combined with a relaxed and open working atmosphere was essential for the successful adaptation to agile project management method. To satisfy the higher personnel needs, the company made corresponding changes in recruitment. The trainings and seminars were organised by the project managers inside the project teams. The interviewee claimed that there should be more supports at the organisational level to facilitate the adaptation of people.

Company B had considered strategic adaptation but finally decided not to implement this due to the constraints in resources and capability. As the agile project management adaptation in company B was only at its initial phase, it was also too early and risky to shift the strategic direction to embrace agility. Interviewees also agreed that the discussed organisational factors associated with each other closely and some of them were of reciprocal causal relationship. For instance, people adaptation could influence cultural adaptation and vice versa. But among all, people and culture were relatively more important than infrastructure and strategy. The importance of strategy may be prioritised at the later phases of adaptation while infrastructure adaptation was comparative quicker and easier and also fundamental. But so far for company B as the time was too short, the adaptation in all areas did not have obvious effect and still had a long way to go.

Interviewee B: “Culture is the greatest barrier for organisation to adapt to agile methods.”

Apart from the people, culture, infrastructure and strategy, another difficulty encountered by company B associated with customer involvement. The software developed by company B targeted at institutions and companies in the finance industry. So the whole developing processes connected closely with analysing and gathering requirements and feedbacks from potential customers. However, to involve them effectively into the project was difficult. On one hand, customer could only provide useful feedbacks after trial. On the other hand, the company needed to reserve
some confidentiality and privacy about the product to avoid rivalries’ imitation and to sell at a good price when launching it. Due to the nature of the product and its target customers, the client involvement which was an essential feature of agile project management was hard to achieve in practice, though company B was still trying hard to find a feasible solution.

5.2.3 Interviewee C

Interviewee C described the general application of agile project management in company C as a start. Right now, company C had been involved in the agile project management method for almost five years and half of the organisation was agile. Company C associated with internet business and many internet companies were now adopting agile project management. Generally, internet business was featured by the quick change. So to secure a position in this field, responsiveness was very critical. Agile project management was more compatible with the context and the adoption of agile project management in internet related IT companies seemed to be smoother than the other software sectors. The adoption rate is higher as well. The key driver for company C to initiate agile project management 5 years ago was to reduce the delivery time and respond to the market demand more quickly.

The key features of traditional project management identified by interviewee C included clear definition of responsibility, task allocation by functions in the team and sufficient planning. Also under traditional project management, the less change, the better. For agile project management, the key characteristics coming into interviewee’s mind were communication, empowerment and iteration. Interviewee C perceived the iterative feature as the key difference in practice. Iteration meeting was one essential practice under agile principle to break planning process into different iteration and accelerate development speed. Besides this major difference, another two key points elaborated in detail were communication and empowerment, which ensured the smoothness of iteration. As there were neither strict planning and process to follow nor formal documentation, in practice, there were surely and usually issues to be clarified and explained when the team member encountered them. So prompt oral communication and a habit of face-to-face communication to solve problem as quickly as possible should be encouraged and cultivated. Empowerment was another difference from traditional project management. Due to the ambiguities and uncertainties, there could not be a work breakdown structure which was a typical tool in traditional project management to clearly define the job and responsibility. Therefore, the project was less controllable and the project manager should trust and empower the team members to allow autonomy in fulfilling their tasks.

Interviewee C claimed that cultural adaption was essential for adopting agile project management method. Being involved in internet business, the original corporate culture was already open. The desirable culture to adopt agile project management should be simple, non bureaucratic and free of politics. As the company already had a culture compatible with agile project management and regardless of what method to use to manage project, the organisation will strive to move the culture toward the desirable direction continuously and gradually. Thus, at the organisational level, there were no obvious changes in the adaptation. While inside the agile project teams, there were trainings and seminars especially arranged to educate the team members with agile knowledge, including agile culture. And also agile teams worked closely
together in an open environment to ensure good physical facilities to cultivate a favourable culture. Cultural adaptation was definitely necessary and critical, though for company C, it was not that difficult.

*Interviewee C:* “*Infrastructure is the basic to facilitate the agile methods, it’s necessary, but not of the highest priority.*”

Regarding infrastructure, the organisation had introduced software such as SCRUM to manage the project status and other software to change the developing, coding and testing processes. The new software engineering toolkits received instant effect in the achieving agility whereas the management software needed time to show its effect. Apart from that, strategic iteration meeting was another new management practice newly introduced. The project processes followed a typical SCRUM way: short strategic goals were set in each iteration and the progress were monitored and reported in the next iteration until the end of the project. However, there was no formal project governance designed for agile project management and all the monitoring and control was through oral communication. The documentation was avoided during the processes and only the final version was archived in the written form. So the responsibility was on the project manager and the governance was centred on project manager in a loose way. Generally, the infrastructural adaptation had not evolved into a phase which entailed formal governance.

Though cultural and infrastructural adaptation was not a problem for company C, people factor remained to be the most challenging one. Comparing to traditional project management, the ability required by agile project management for project managers would remain apart from stronger communication and interpersonal skills. Besides basic skills and competences, the key was that project manager should have in-depth understanding and knowledge about agile method and could switch from the original way to agile approach. The project team members were expected to be multi-skilled and more capable in soft skills than in a traditional way. They also needed to be initiative to take the reasonability and sometimes to make the decision themselves. To sum up, the individual should have stronger comprehensive ability to operate under agile project management method. At the level of team, the agile project management broke the original team dynamic of interacting among sub teams distinguished by function. Originally, team members did not sit together to solve one problem. Now the team had blurred the boundaries of functions and work closely together. Face-to-face communication and boundless collaboration were essential for the new team dynamics. The team was more integrated and merged to complete a project.

*Interviewee C:* “*Our company sees agile project management essential to the survival of the organisation, therefore achieving agility is one of our strategic goals.*”

Company C is the only company being interviewed that had considered and implemented strategic adaptation to secure a firm position in fierce internet business using agile project management. The organisation was trying to formalise and standardise agile procedures and promote them to the whole organisation to achieve high autonomy and efficiency in the future. To win in the internet business, the speed was the crux. So strategically addressing the importance of agility can bring future competitive advantages and was a potent and viable solution in the long run.
Interviewee C strongly agreed that all the organisational factors were interrelated. Among all, the people factor was recognised as the most critical one, with cultural and strategy of equal importance following by. The infrastructural adaptation was the least important and also the easiest to make. The people were the fundamental factor as adaptation in other areas also depended on people. However, since they were related closely with each other, corresponding adaptation should be changed simultaneously to make the whole organisation moving toward the direction effectively.

5.2.4 Interviewee D

Interviewee D recalled that company D had been developing its own project management methods since 2004, by responding to organisational development needs and market demands for speedy product development. Practicality was the prime concern when company D tried to develop a project management style which was different from traditional project management methods and could best fit the organisations’ needs. Interviewee D perceived “strictly following the prescriptive process” and “not favouring changes” as the major features of traditional project management. Whereas for agile project management, the key features were external customer involvement, internal project team communication, iterative approach and encouragement of changes. Before explicitly announcing the adoption of agile method, Company D had already established some practices which followed the value of agile. By the time when some project managers in company D came to know about agile project management, they then realised the common characteristics between agile project management and their self-initiated project management method, e.g. iteration, emphasis on practicality rather than documentation, etc. In 2008, middle management in company D started to implement agile project management in a systematic way.

Besides meeting organisational development needs and up-beating market demands, interviewee D brought up another reason for adopting agile project management. Iteration could help reduce the project risk and a more flexible project management process could overcome shortage of skilled labour. At the current stage, performance varied across different teams. Some small teams with few people were doing great and had been effectively solving problems using iteration while some teams were struggling with the iteration process. But overall speaking, clients were satisfied with most of the project performance and quality.

Interviewee D stressed the key difference of traditional and an agile method was in communication. He perceived all the activities in a software development project were the vehicles to communicate with clients. As he understood the key nature of projects in his company was to serve the client, all the requirement analysis, overall designing, work breakdown activity, etc, were in turn to realise effective communication with clients. Efficient internal communication was essential to achieve this goal. The interaction meeting was a communication tool which allowed all the stakeholders of the project could monitor the progress of the project closely and plan for the next iteration and reach agreement through communication. Regarding the major difference of agile project management to traditional project management, agile project management practices represented better way to satisfy the communication need by iteration and customer involvement. Therefore, communication was on top of all. Besides, it was also mentioned that by using agile project management, the product development
projects could be better connected to the product launch and sales activities later as requirements and market information were collected in a more comprehensive and precise way in agile project management method.

*Interviewee D: “The organisational culture has profound influence on the adoption of agile project management, without which, the realization of agility is impossible.”*

Interviewee D perceived culture as the ultimate determinant factor in deciding whether agile project management could be realised and maintained in the long term. He mentioned organisational culture posed great challenge in agile project management adaptation process. Some practitioners who advocated traditional waterfall model were reluctant in accepting agile project management. Their behaviour and attitude was a great barrier for organisation to promote agile project management and obtaining buy-in from other team members as well. Corporate politics also existed in the company D and thus agile advocated and practitioners had suffered from great pressure to win over the opponents by attaining the success of agile projects. To make the cultural adaptation easier, company had organised trainings and lectures. However, the effect was far less than adequate. The only feasible way perceived by interviewee D was to promote agile culture within agile teams and to obtain project success to convince the rest.

*Interviewee D: “Some employees who advocate traditional waterfall model strongly reject agile method and are reluctant to immerse in a new culture.”*

Regarding infrastructure, there were new software and tools to help project managers and product managers to monitor the project and control the risk involved in the whole product development process. To minimise negative risk in a project, project and product managers should investigate product demand and monitor product framework design at the early stage of the product development process. And to ensure quality of work, team members should be accountable for their work. Email and ‘bug’ management tools were used to record every conversation taken place in a project. Whenever there were negative customer feedbacks, project managers could trace back to specific personnel who should be responsible for the criticism. Thus, the process and facilitating software helped to govern the project accountabilities and achieve controls.

Superior communication skills were identified as critical quality for agile project managers. As mentioned earlier, interviewee D believed agile project management was all about communication with internal team members and clients, agile project managers should be able to create favourable communication environments and channels, as well as encouraging and motivating team members to communicate effectively and efficiently. Furthermore, it was agile project managers’ responsibility to communicate with clients and try to get them involved in product development process. At the same time, ensuring team members to be aware of the requirements from clients at all times was also essential. And by trusting the team members and holding them accountable for their responsibilities, the need for monitoring and controlling from project managers could be reduced.

*Interviewee D: “Putting the right people in the right place at the right time to reduce the risks caused by internal personnel is essential, thereby reducing the need for monitoring and controlling.”*
Besides communication skills, interviewee D believed agile project managers should be persistent enough to advocate agile project management and know how to overcome stress from corporate politics as some people within the organisation strongly stuck to traditional waterfall method for their personal benefits.

Company D did not perceive adopting agile project management was a mean to achieve competitive advantage in the market right now, thus did not favour strategic adaptation. Interviewee D believed that at the initial implementation stage, agile project management was served just as a mean to solve problems in projects through communication.

Interviewee D: “The organisation is like a football team and these organisational factors are like forward, midfielders and defenders. Only by enhancing all these fields can make a team strong. Any flaws in any factors can incur risks.”

Interviewee D described the five elements discussed above related closely with each other. Change in any of them may bring a chain effect. He believed the benefit of agile project management could only be realised if all five elements received attention in the organisation and were supported and maintained at a appropriate level. If any elements were neglected, the overall performance of agile project management could be lowered significantly.
Chapter 6: Data analysis

This chapter analyses data collected from the semi-structured interviews in order to answer the research questions defined in Chapter 1.

i. What are traditional project management and agile project management and the key differences between them?

ii. What are the key elements that influence the organisational adaptation process?

iii. How the framework of organisational adaptation can be applied in the context of adopting agile project management methods? What are the practices practitioners implement in the real world? How effective are they?

The analysis starts with describing the practitioners’ views on traditional project management versus agile project management and how agile project management was initiated in the organisations. Following that, the propositions under each organisational element listed in the conceptual model will be examined and elaborated by the data collected. Then, the key challenges encountered during organisational adaptation phases will be discussed. In addition to the prescriptive questions in the list, some other meaningful finding will be presented. In the end, the similarities and difference among four cases will be analysed and the reasons behind will be explored. Thus, all the above three questions will be covered and all the propositions will be tested in the process of depicting a complete and clear picture of organisational adaptation to agile project management in IT industry in China.

6.1 Practitioners’ perception on traditional versus agile project management

Before examining the transition from traditional project management to agile project management, practitioners’ perceptions on what constitutes traditional project management and agile project management have been probed at the beginning. Table 13 below summarised the key features found from literatures, so as to ease comparison with practitioners’ views on differences between traditional project management and agile project management.

Table 13. Traditional project management versus agile project management from literature review

<table>
<thead>
<tr>
<th>Traditional project management</th>
<th>Agile project management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress detailed planning (Pich et al., 2002; Turner, 1999; Boehm, 2002)</td>
<td>Stress “just enough” planning (Hass, 2007)</td>
</tr>
<tr>
<td>Emphasis tasks breakdown and allocation (Cooke-Davis, 2001)</td>
<td>Advocate simplicity (i.e. Using the simplest solution to identify the critical success factors) (Alleman, 2005; Conboy &amp; Fitzgerald, 2004)</td>
</tr>
<tr>
<td>Stress on control procedures (Cadle &amp; Yeates, 2008; Collyer &amp; Warren, 2009; Hass, 2007)</td>
<td>Accommodate and embrace changes (Highsmith, 2002)</td>
</tr>
<tr>
<td>Clearly stated predetermined stakeholder requirements (Pich et al., 2002)</td>
<td>Emphasis communication (Highsmith, 2002)</td>
</tr>
<tr>
<td>Manage through commands and strict control (Pich et al., 2002; Cadle &amp; Yeates, 2008)</td>
<td>Acknowledging contribution from client and team members (Fowler &amp; Highsmith, 2001)</td>
</tr>
</tbody>
</table>
The following Table 14 shows the key points elaborated by each interviewee on the major characteristics of traditional project management and agile project management. Due to the specific nature that IT industry requires high responsiveness and the fact that customer requirement are intrinsically ambiguous and uncertain, IT companies rarely follow traditional project management strictly as the way traditional project management has been applied to industries such as engineering and construction (Ericksson et al., 2005; Highsmith, 2002). Thus, the traditional waterfall model remains as theoretical foundations. In practice, interviewed companies actually employ spiral models or customised traditional models. From Table 13 and 14, it can be seen that though the description may vary in wording, practitioners’ view on the major characteristics of traditional project management are somewhat in consensus. Sufficient or front-loaded planning is mentioned by every interviewee. Other perceived characteristics include less flexibility (“does not favour change”, “strictly following the prescriptive process”, “clear responsibility definition and task allocation by functions in the team”) and formal way of management (“manage through commands”, “formal documentation”, “strict control in the process”). These perceptions are similar to the literatures by Pich et al. (2002), Turner (1999) and Boehm (2002).

The major characteristics of agile project management mentioned by all the interviewees are its “iterative feature” and “importance of communication” (Owen et al., 2006; Larman, 2004). Customer involvement is also perceived as a main feature and other mentioned include “empowerment”, “encouraging change” and “make decision only when necessary” (Fowler & Highsmith, 2001; Hass, 2007). Generally speaking, many features of traditional project management and agile project management that are considered as important are consistent with the academic view. Due to the difference in personal experiences and environmental contexts, the relative importance of each feature may vary. The data sorted in the table follows the sequence of interviewee’s answers. Some of them explicitly mentioned that they start with the most important ones.

Table 14. Traditional project management versus agile project management from practitioners’ view

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Traditional project management</th>
<th>Agile project management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviewee A</td>
<td>1. Detailed planning</td>
<td>1. Scrum Process</td>
</tr>
<tr>
<td></td>
<td>2. Strict control in the process</td>
<td>2. Less planning</td>
</tr>
<tr>
<td></td>
<td>3. Formal documentation</td>
<td>3. Customer involvement and communication</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Focus on pragmatic issues</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Few documentation</td>
</tr>
<tr>
<td>Interviewee B</td>
<td>1. Command way of management</td>
<td>1. Make decision only when necessary</td>
</tr>
<tr>
<td></td>
<td>2. Front-loaded planning</td>
<td>2. Customer communication</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Iterative delivery</td>
</tr>
<tr>
<td>Interviewee C</td>
<td>1. Clear responsibility</td>
<td>1. Communication</td>
</tr>
</tbody>
</table>
One key difference of executing traditional project management and agile project management perceived by practitioners is the attitude toward planning. Agile project management accepts requirement changes are unavoidable, and it does not assume that all details can be planned in advance. Therefore it is more pragmatic by its ability in managing change. Iterative feature and emphasis on communication are also mentioned. To summarise, the key features of agile project management and traditional project management and major differences perceived by practitioners are also consistent with the literature.

6.2 The initiation of agile project management in an organisation

Before prompting into the organisational elements identified and the propositions, the initiatives of launching agile project management in these organisations are explored. The major drivers for the introduction of agile project management are the requirement of fast delivery by the market; the need to deal with completely unknown projects; to out-perform competitors by increasing responsiveness and to allow changes to satisfy client requirements (Chin, 2004; Schuh, 2005). Furthermore, initiatives for adopting agile project management in these companies followed the bottom-up instead of top-down manner. This can be explained by the fact that the adoption of agile project management in China is still at a tentative phase. And the positive effect of the agile project management still need time to manifest. Therefore, top management rarely advocate implementing agile project management vigorously, which is considered as an adventurous journey for companies. Project managers or programme managers instead are the forerunners in promoting agile project management, as they are at the front-line of business, knowing what their customers’ need and are involved in project execution. This is similar to what Grobler et al. (2006) suggest as “adapting implicitly”, where project managers are given certain degree of freedom in managing the changing business context so as to get their job done in a better way. They proposed agile project management to the top managers and upon approval, agile project management methods are first implemented at a small scale, and then extend to other teams if agile project management is proved to be beneficial. Thus, agile project management is generally initiated by the leaders at the middle-layer of the organisations’ hierarchy.

Interesting finding in this aspect comes from interviewee D. He mentioned without knowing agile project management in the first place, his company had already unconsciously carried out some practices implying agile project management values,
such as iterative delivery and requirement analysis through intensive customer involvement. Later when project managers were exposed to The Agile Manifesto and some tools and software to facilitate agile project management introduction, they decided to explicitly and systematically adopt agile project management to streamline their existing practices.

Though the effect of applying agile project management vary in different companies, the intrinsic nature of software development has made the adoption of agile project management method a ‘must’ in the long term (Highsmith, 2002). All the interviewees resonate strongly with this point by confidently and consistently claiming that no matter how challenging the adoption of agile project management method will be, agile project management will definitely be a future trend. By using agile project management method, decisions are made in a quicker and more efficient way (Owen et al., 2006; Katayama & Bennett, 1999). The whole product development process is more purposeful by interacting with the clients and market continuously and accommodating changes correspondingly. Agile project management method is also beneficial beyond the scope of project. It paves a better road for the later product launch than traditional methods by simultaneously preparing for the market entry in the product development project as feedbacks and information from the market are collected more intensively. In IT sector, the successful product is never developed at the first time. It needs to incorporate customers’ voice so as to constantly improving and refining the product (Yusuf et al., 1999). Agile project management method provides a better ground for the above industry specific challenges by shortening the product development cycle and responding to market and changes more rapidly.

6.3 The conceptual organisational models

This part will examine the propositions for the conceptual models and the related issues concerning organisation adaptation to agile project management in terms of culture, infrastructure, people and strategy.

6.3.1 Culture

The proposition 1 “To adapt to agile project management method, organisation should make desirable cultural change” is supported by the cases examined. All the interviewees attach great importance to the cultural issue and all the companies interviewed have action to make cultural change, though the scale and degree of cultural change and the effect differ. This view from practitioner resonates well with Othman et al. (2010) who claim that agile methodologies are about values and culture.

*Interviewee D: “The organisational culture has profound influence on the adoption of agile project management, without which, the realisation of agility is impossible.”*

There is also little discrepancy from practitioners on the feature of a desirable culture that an ideal organizational adaptation to agile project management would aim at. The most frequent adjectives used by interviewees to depict an agile project management friendly culture are “non-bureaucratic”, “open” and “customer focused”. This also resonates well with academic view that a developmental culture with little
bureaucracy (Lindvall et al., 2002) and emphasis on customer (Misra et al., 2010) will be most suitable for agile project management methods.

Interviewee A: “Organisational cultural change at a superficial level can be fast, but to make profound changes requires a significant amount of time.”

Interviewee B: “Culture is the greatest barrier for organisation to adapt to agile methods.”

The importance of a desirable culture for agile project management lies in the fact that culture influences the norms, value orientations, the working styles, mentalities and almost everything in an organisation explicitly or implicitly. As described by Dyba & Dingsoyr (2008), culture affects the implementation of agile methods with respect to behaviour, beliefs, attitude and values. The most common practices to implement cultural adaptation include organising internal training and seminars to educate staffs and to exchange experiences, encouraging staffs to attend external forums to be updated with agile project management trend, introducing external consultant to guide the change, establishing role models to push the change, hanging posters and agile manifesto values on the wall, etc. As only part of the companies are trying agile project management, to create at least a favourable culture within the team, some companies give enough autonomy to the project manager to tailor working environment. For instance, company B has a separated working office for agile teams just to ensure traditional way of working and culture in the main office will not affect the agile teams. Though there are measures and practices done to facilitate cultural change, project managers and members all feel the intensity of these measures took time to realise their potential gains, and still, they are far from adequate in promoting agile project management at full scale. Thus, companies interviewed consistently admit that there is still a long way for an organisation’s culture to be mature enough to accommodate the need for adapting to agile project management method.

Interviewee A: “The most powerful and effective practices to facilitate cultural adaptation should be top-down, but bottom-up seems to be the reality.”

The key difficulty encountered by these companies mainly lies in three aspects. Firstly, the cultural change initiated by top management is idealistic, but it’s not happening in the reality. Since the implementation of agile project management is tentative and experimental in the companies, a top-down transformational cultural change would be executed upon successful or positive results realised in adopting agile project management. However, prior to achieving a successful result in adopting agile project management, project managers first need to nurture a favourable culture for agile teams. Therefore, cultural change usually starts in a small team using bottom-up approach, instead of top-down. For company A and D, as they are bigger in size and they are having hierarchical culture suggested by Dension & Spreitzer (1991), top-down management support plays a more important role than other companies which are having a flatter organisational structure. But still, for any organisations, as the team inevitably needs to interact with other functions in the company, the small scale agile culture is somehow exposed and affected by the original culture. The effectiveness of cultural change with bottom-up approach is hampered, thereby in turn affecting the likelihood of positive results in adopting agile project management.
Interviewee B: “A commanding style of working in traditional culture imposed the greatest challenge in the cultural adaptation.”

Another barrier for promoting agile project management adaptation lies in the deep rooted traditional way of working mindset. The inertia and power of the original culture imposes huge difficulty in cultural adaption process, especially for company A, which has 30 years of experience in using traditional waterfall process. Though the original cultures of the companies vary, all of them have been engaging mostly with the traditional culture, which endures instructing work and following procedures. Staffs from different divisions and functions get used to be provided with clear responsibilities in a project and follow the processes or instructions. With clear definition of roles and responsibilities, they rarely communicate with each other. Thus, people feel challenged and uncomfortable when they are required to work with no instructions and asked to plan their own working schedules instead.

Interviewee D: “Some employees who advocate traditional waterfall model strongly reject agile method and are reluctant to immerse in a new culture.”

Thirdly, some staffs influenced by the traditional culture are resistant to changes. This is quite typical in company D, which is a famous private-owned local company with a traditional culture. Some of the old employees think the novel agile project management method is heretical and they resist trying the new ways of working. Similar to the unfreezing stage of change suggested by Lewin (1947), the above resistance becomes a main restraining force in the cultural adaptation. To overcome this barrier, a stronger driving force is needed to let the staff realise the benefit and need for implementing agile method.

6.3.2 Infrastructure

Infrastructural adaptation refers to the measures undertaken to facilitate the adoption of agile project management in terms of the following aspects: supporting operational processes’ and facilities’ needs, supportive practices and governance measures. There is a divergence in perceiving the importance of infrastructure between scholars and practitioners. From literatures, proposition 2a is derived, which states “to adapt to agile project management method, organisation should establish project operational infrastructure including processes, facilities and management practices”. Interviewees generally believed infrastructure is one of the factors in affecting agile project management adaptation. However, it is of the least significant among all other elements.

All interviewed companies have introduced new tools and management practices, but they are viewed as basic adaptation needs, and are not as critical as other factors. Common practices include employing SCRUM processes and new tools such as white board and software. Widely used software is JIRA and SCRUM, which aim to control the progress and monitor the status of the iteration. Other new software to aid the knowledge management, the development and test procedures are also introduced. Iteration meetings are common agile project management practices shared by all interviewed companies. Some companies have regular daily meeting, whereas others are on a weekly basis. Normally, in the iteration meeting, recent progresses will be
reported, and new plans and targets for the next iteration will be discussed and arrived at consensus.

Rate of return on investments in the above infrastructures vary among companies. Some have achieved immediate returns, while others need more time to familiarise with the new infrastructures. Moreover, there are different views on how these facilities could be effectively employed. For instance, for the monitoring and controlling software JIRA, some companies make it a common tool in the agile project team to enable everyone the access to the overall progress of the project. While other interviewee may think it will be more efficient if this is only used by project manager so that team members will not be bothered by new software. It is hard to tell which way is superior, but the variation in the detailed level demonstrates the flexibility in agile execution.

Proposition 2b “integrated agile governance is necessary to facilitate the organisational adaptation” is not fully supported by the experience of these four companies. They revealed an absence of agile governance structure to facilitate the adaptation, mainly due to the superficial organisation adaptation activity during the tentative phase of agile project management implementation. The ideal integrated agile governance defined by Qumer (2007) serves to ensure the control of risk, the effective accountability framework and strategic alignment of business goals. But in practice, these were not achieved by a formal governance structure, but depending on project manager’s personal ability and trust. There were no specially designed and formalised governance to aid the adaptation.

Some companies realise that agile project management is less controllable than traditional project management. Therefore, measures of control are needed. However, effort of control depends solely on project managers to report project progress and communicating with stakeholders, which is the same as what has been done under traditional method. Inside the project team, project manager is the one controlling the risks by involving trust-worthy experienced staffs in the activities inclined to cause risks. Project manager takes the responsibility to track the progress and performance of the team members using a simple reporting and performance appraisal system. The typical procedures among different companies are similar. In each iteration, the team members report status of the work that has been assigned in the last iteration meeting. After new tasks are allocated, they will estimate working hours and working progress will be checked in the next iteration meeting. If there are negative client’s feedbacks, the project manager will try to trace the accountability to individuals, but he cannot do much to prevent that from happening.

Interviewee D: “Putting the right people in the right place at the right time to reduce the risks caused by internal personnel is essential, thereby reducing the need for monitoring and controlling.”

It can be seen the fundamental assumption is that staffs will try to do their best for the team so that project manager can trust that they will fulfil their responsibility with high commitments. This echoes with one of the twelve principles of The Agile Manifesto, “give the staff environment and support their needs and trust them get the job done” (Fowler & Highsmith, 2001). The lack of an integrated governance structure is partly due to the fact that under agile framework, traditional project governance does
not seem to be the inappropriate as so far it seems to work properly. Another factor is that with agile project management being a tentative choice, the effort for restructure integrated agile governance is preserved for the later phases when agile project management become well established in the organisations. One of the interviewees claims that infrastructure plays the fundamental but not critical role. So efforts are prioritised to focus on other areas instead.

*Interviewee C: “Infrastructure is the basic to facilitate the agile methods. It’s necessary, but not of the highest priority.”*

To sum up, simple infrastructural adaptations, for instance, introducing auxiliaries such as white board, employing different knowledge management and status management software, bringing in new work flow and management practices are quick and easy. However, to establish and formalise agile governance system is not perceived as an urgent need at early adaptation stage, though some companies do recognise the necessity in the future.

### 6.3.3 People

The people factor has been laid great emphasis consistently. Proposition 3a, “to adapt to agile project management method, individual should be equipped with stronger competences’’ and proposition 3b, “to adapt to agile project management method, project team should develop collaboration skills and ensure effective communication” have been supported by the practitioners’ experience.

All the interviewees mention that agile project management requires different set of competences for both project manager and project team members. For project manager, the roles under traditional project management and agile project management are different. In China, under the traditional framework, project managers tend to build authority and power distance from members. However, under agile project management, project managers are no longer taskmasters. The focus of the role is shifted from planning and controlling to motivating. Thus, project managers need to work closely with all the team members to ensure the empathy in the team and to bring in motivation continuously. This is in line with the academic view that project manager should be skilled to inspires the team and promote collaboration (Augustine & Woodcock, 2008). The leadership styles may vary personally, but from the data collected, it can be seen that project managers using agile project management method are more approachable and more skilful in communication. The project manager’s charisma plays an important role to lead the team through and to establish trust and promote cooperation.

*Interviewee A: “Project manager should be more than a leader of a team. He needs to hold all the team members together, to be close to them, instead of having his eyes over their shoulders as a manager high up in the organisation.”*

Another interesting finding is that in China, agile project managers sometimes have to play both roles as agile project owner, who initiates the idea of adopting agile project management, and as an agile project management coach, who guide the team through the agile processes. As an owner, the project manager needs to undertake the responsibility to deal with external stakeholders and consequently bear the pressure to
secure the project success to satisfy them. As an agile project management coach, project manager need to work at the frontline of execution and figure out a proper and efficient way of customising agile method to suit specific context through trial-and-error approach. Thus, they apparently work under great pressure.

For project team members, agile project management imposes higher requirement on their comprehensive ability, especially in soft skills such as communication and interpersonal skills (McManus, 2003). As the project team is not divided by functional sub-teams as what it should be under the traditional way of organising, multi-skilled staffs are preferred. More importantly, project manager would like to have more experienced team members. As the project progression is somewhat unpredictable, experienced developers are more likely to make right decisions when dealing with issues that have not happened before. Staffs are also expected to be more proactive to take the initiative and responsibility. These findings correspond well with the literatures that agile project management entails higher requirement on communication skills, experience in software development and interpersonal skills (McManus, 2003; Lindvall et al., 2002; Chow & Chao, 2008).

Interviewee C: “In our company, testers in agile teams are required to be able to undertake the development tasks as well even though it is not their major responsibility.”

Regarding team dynamics under agile project management, it is acknowledged by the practitioners that seamless collaboration and effective communication are critical. It is ideal for team members to keep encouraging each other and a comfortable working atmosphere is created (Chin, 2003; Cao, 2008). In practice, the role of motivating the team is mostly undertaken by the project manager. But some interviewees also mention that it will be better if team members are extrovert and can be self-motivated so that team members can also contribute to encourage collaboration and maintain the team morale. To make sure that desirable competences and skills are met, companies make corresponding changes in the recruitment processes by raising the requirements on technical skills and in addition taking into consideration of candidates’ soft skills, capabilities and personalities.

Interviewee D: “The most essential issue in the team is to maintain the team morale.”

Generally speaking, people factor has been attached with great emphasis and opinions from practitioners are consistent. The behavioural adaptation at the individual level to suit the different and strict set of competences is implemented. At the team level, the team dynamic is different from traditional approach and the necessity to ensure collaboration and communication within teams has been paid attention to and supported by the organisation.

6.3.4 Strategy

Huczynski & Buchanan (2007) suggested strategic adaptation could be at different depth and scale in an organisation. Since agile adoption is still at its infancy in China, organisations are unlikely to transform thoroughly, thus we arrived at the proposition 4 “organisational adaptation to agile project management does not necessarily include strategic adaptation.” However, there are discrepancies in views from practitioners
which could be resulted from difference in nature of companies, level of organisations’ engagement in agile methods and duration of organisational adaptation. Thus this proposition is not fully supported.

Company C has considered agile project management adaptation as a strategic move and right now is actively preparing for the strategic adaptation. Company B has considered it, but the proposal was turned down as this would be a transformational organisational change, which requires intensive effort and input. Thus the decision would only be supported given the solid proof of its necessity and tremendous benefits that the change will bring. However, at the current exploratory phase, the company finally decides to take a more prudent and practical attitude in escalating this to a strategic level. The other two companies only regard agile project management as a better way to cope with the project needs. Therefore all the organisational adaptation measures only stay at the operational level instead of strategic level.

Company C that is currently working actively on strategic adaptation engages in internet business. It has been adopting agile project management for almost 5 years, the longest among all. Apart from being more mature than the other three companies in the adaptation process, being in internet business is another major reason to explain the difference in strategic consideration. Internet business in IT industry is typically featured by speed and volatility. Thus, internet companies specifically stress on the responsiveness to the market changes and competitors’ trends. So being strategically adapted to agile methods can enable the company to gain competitive advantage in the long run. The company believes that agile project management will be a future trend, so being a first mover is a wise decision. The company is currently trying to standardise and formalise some procedures for agile project management to realise the autonomy at greatest extend and promote them to the whole company. The strategic adaptation will accompany the promotion of agile project management to the whole organisation by setting agile as a long-term vision.

Though for the other three companies, strategic adaptation is neither considered nor feasible at the moment, some interviewees did expressed the necessity of stressing the adaptation at the strategic level. Interviewee A claimed that without considering the strategic adaptation, all the other organisational adaptation effort is likely to remain superficial. This is similar to what Langley et al. (1995) suggested, adaptation can take place without commitment to act. Only by escalating the adaptation to the strategic level can an organisation be fully devoted to a thorough adaptation. Action in strategic adaptation is not only showing the determination to change but also demonstrating the level of support from the top. So it will subsequently eliminate barriers in other areas. Thus, strategic adaptation is necessary for a profound and efficient adaptation. This view is opposite to the proposition. Due to the limited sample size and varied view, it is not possible to prove or disprove the proposition. However, the discrepancy is still meaningful and deserves further research.

*Interviewee A:* “Only if the adaptation is at the strategic level can the whole adaptation be smooth.”

### 6.3.5 Interrelationship

Proposition 5, “the adaption of different organizational elements is interrelated” has
been verified from the cases. All the interviewees perceive strong interrelationship among these organisational elements. How these elements exactly relate to each other is intricate, but from practitioners’ view, these factors are reciprocal causal and can influence each other. For instance, strategy will influence the culture; culture may influence people whereas people will also enhance the culture. To support these factors, infrastructure needs to change simultaneously. To optimise the organisational adaptation process, all these areas should be changed at a suitable pace to correspond to each other. The proper adaptation of all areas will enhance each other and create synergy while inappropriate in one area will discount the effect of others.

Interviewee D: “The organisation is like a football team and these organisational factors are like forward, midfielders and defenders. Only by enhancing all these fields can make a team strong. Any flaws in any factors can incur risks.”

Among all these factors, people factor is regarded as the most important, followed by culture. Comparatively, infrastructure is considered to be the least important. This is in line with the agile principle that individuals are more important than processes and tools (Fowler & Highsmith, 2001). This principle is also reflected at the organisational adaption processes. People are the fundamental factor as people is an inseparable part of culture. They formulate strategies and build infrastructure, so they are the basis for all the elements mentioned above.

Cultural adaptation is also essential. As culture is driven by people, it ranks at the second place by practitioners. Cultural adaptation requires tenacious and continuous effort and needs time to make the result manifest. Thus, cultural adaptation is critical but not easy. Comparatively, infrastructural adaptation is much easier and can bring immediate effect. However, to make full use of the infrastructure, people are the key. Strategy is the organisational element that arouses different opinions. The importance of strategic adaptation depends how companies perceive the need to adopt agile method. But it is surely interrelated with other factors and influences the whole adaptation process.

6.4 Other key challenges

One of the key challenges during the organisational adaptation mentioned by practitioners is culture, which is not surprised as we are well informed from literatures. Another key challenge which hasn’t been mentioned much by literature is corporate politics. Chow & Cao (2008) mention a little that political corporate culture could be an attributor to adaptation failure. Corporate politics have been mentioned by half of the interviewees which may possibly be representative in the agile application in China. One last difficulty mentioned by some of the interviewees is the difficulty in client involvement. As cultural issue has been analysed and discussed in the previous sections, this section will focus more on corporate politics and customer involvement.

Corporate politics described by the practitioners refers to the conflict and competition between different interest groups or individual for power. As the adoption of agile project management method may implicitly imply a partial replacement of traditional project management currently or permanently, this may endanger positions that are only needed under traditional project management framework. Thus, there are
oppositions for various reasons, including seemingly justifiable reasons and underlying ones that cannot be uttered. As the adaptation is normally initiated from the mid managers and the initiators are usually the leader in the agile projects, they are actually the focus of tacit corporate politics and have to bear extraordinary pressure to overcome the potential power play and push forward the organisational adaptation. This is also why practitioners would like to have top-down transformation to reduce the potential friction and to eliminate the resistance.

Another difficulty is the involvement of customer in certain cases. Though practitioners recognise the essence of customer involvement, it is not easy to achieve in practice, especially when the software product is targeting at mass customers. The involvement of potential customers from the initial phase of demand analysis to the later phases of user-experience improvement needs deliberate planning and a structured approach. Different from interacting with one client, interacting with potential buyers faces the risks of disclosing the confidentiality and losing the freshness of the product. This difficulty in reality is a good example of one weakness of agile method mentioned by Highsmith (2002) that implementing agile approach may lose the privacy when involving customer. Potential buyers may also obtain the bargaining power when acknowledging the functions of the software and then providers have to trade-off prices when launching the product. Thus, to find an effective and economic way to involve customers throughout the project is practically a tricky problem which calls for further research.

6.5 Similarities and differences in the cases

It can be seen from the analysis above that generally the companies being interviewed follow a similar pattern of adaptation. There are similar perceptions and practices in different organisational elements as expected. But sometimes there are variations due to certain reasons. This section will explain the similarities and differences among these four cases and explore the reasons behind.

6.5.1 Similarities

As issues that have been addressed by previous sections are mostly similarities, this section will not repeat them but only discuss topics that worth further extension and reveal meaningful. We would like to commence the discussion of similarities from initiation of agile method.

The initiation of agile project management in four cases are bottom-up, mainly from mid layer management. This corresponds with the fact that management practices and innovation stem from the fundamental practices. The evolvement and adaptation is the process to generate fit from interaction with the changing environment (Tikka, 2010). Thus, people who work at the frontline of execution are aware of the advantages and necessity of the agile project management trend and they are more connected with the novel knowledge and management practices developed in the western world. They are the initial advocates and promoters of agile project management and also practitioners who put the ideas into action. As the agile project management application in China is at its initial phase, this initiation mode is typical. To unfreeze the status quo and make the change happen, there should be driving forces outweighing restraining forces
(Lewin, 1947). From the cases, it can be seen that the driving forces are mid layer managers. It is reasonable to predict that these people play the key role in the agile project management adoption and organisational adaptation.

Another commonality is that the organisational adaptation process follows the similar pattern and pace. The initiation of the agile methods for all the cases corresponds with an academic term “triggering” which included the process of “scanning” and “selection” (March & Simon, 1958). After clearly identifying the necessity of adopting agile method, every organisation recognises that there should be supportive adaptation in culture, people, and infrastructure to facilitate the agile project management adoption. From their experience, it can be seen that efforts are made immediately in the easiest area such as infrastructure and in the area that may receive instant effect such as people. At the initial adaptation phase, to make superficial and quick change is not difficult. But to make profound changes and to stabilise and formalise these changes needs huge investment in time, money and other resources. Thus the decisions are not easy to make. That is why the cultural and strategic adaptation for these companies encounters with difficulties. So the pragmatic way to push the organisational adaptation process forward and non-stop is to ensure the smooth adaptation within a small scale and establish role models. The small scale success is the best proof to convince top managers to proceed with in-depth organisational adaptation. And then it will be more feasible to promote and duplicate the success to a larger scale by demanding for more top-down support and making fundamental and profound changes in later phases. This circular mode is similar to the iterative adaptation pattern proposed by Barnard (1968). The experiences of the four companies suggest that the process of adaptation is optimised by mixing short-term measures and long-term changes.

So far, all the companies being interviewed are now still in the process of adaptation and practitioners’ perceptions reveal that there is still long way to go. In other word, there will definitely be a long time that an organisation operates with both traditional project management and agile project management. It is also possible in other case that a mixture of traditional project management and agile project management will be the destination of adaptation. Thus, in the time of adaptation, temporary practices to make these two approaches compatible are desirable. Agile and traditional way of project management shouldn’t be considered as polar opposite (Boehm, 2002). In all four cases, companies mix these two methods by creating a good physical environment to support the agile teams with special autonomy and policies made for them while other parts of the companies remaining traditional. Practitioners are aware that potential conflicts or counter effects are inevitable, thus should be properly prepared for.

6.5.2 Differences

Apart from similarities mentioned above, there are some differences worthy of further discussion. From the cases analysed, it can be summarised that the main differences in the practice root in the organisation’s original culture, the adaptation phases, size of the company and the nature of the business, which will be discussed in detail in this section.
6.5.2.1 Original culture

Cultural adaptation is one of the most important and the most difficult to achieve at the same time (Qumer & Henderson-Sellers, 2008). The difficulty depends very much on the original culture. In the four cases, one of the companies is a well-established with long history of traditional culture in the industry. Its deep-rooted traditional culture imposes great difficulty for cultural adaptation. Of conspicuous comparison is company C that engages in internet business, which has been flourishing in the recent decade. Company C’s original culture is flexible and open, thus there are no much needed to be done in terms of culture to adapt to agile project management methods. Therefore, the original culture is the determinant of the intensity and efforts that should be devoted to the cultural adaptation.

6.5.2.2 Adaptation phase

Theoretically, Lewin (1947) explains the organisational change from one static state via a progression shift, to another static state into three stages called “unfreezing”, “changing ” and” re-freezing”. Though this general theory does not specify for how long each phase will last, it implies that as the adaptation process go further, there may be different practices which distinct different phases. Three of the four companies have been involved with agile project management for more than 3 years. Thus, the adaptation has gone further than company B which has started for only 1 year. For the former 3 companies, the infrastructural adaptation is almost complete, with one company starting to formalise the procedures and management practices to prepare for promoting agile project management to the whole company. While company B is still introducing new software and tools. Staffs are at the learning stage and trying to improve the working procedures through practice. So it can be seen that different adaptation phases is major cause for different focus on practices. As the infrastructural adaptation is relatively easy and quick to achieve, difference in the adaptation duration is the reason in explaining the differences in infrastructural adaptation progresses. While this difference in adaptation duration is less significant in explaining cultural adaptation progress which requires longer time to complete. To sum up, from the comparison on adaptation phase, it can be seen that at different adaptation phases, efforts have different focus and thus different practices are implemented and emphasised.

6.5.2.3 The size of company

Company A being analysed is a big multinational company with a hierarchical organisational structure. Formal procedures are established for decision making which may be deemed to be necessary to manage a big company. Thus, the practitioners involved in agile project practice in the company find it difficult to make even a small part of the organisation to be agile. Relevant actions are implemented in all areas, but they seem to be superficial and difficult to penetrate into the core. Practitioners from the two comparatively bigger companies also mention corporate politics as one key difficulty during the adaptation. Thus, in the adaptation process, practitioners from these two companies are more desperate for top-down support to reduce the obstructions.

The other two companies are relatively small with a flatter organisational structure, thus power is more evenly distributed and corporate politics are less likely to happen. This made the adaptation relatively easier as decisions are made more quickly with
less people to convince. Interviewees also mention that from the general situation of agile method adoption in China, small companies tend to adapt to agile method faster and more easily than sizable companies.

6.5.2.4 Nature of business

The nature of the business can be the potential factor to drive different views on the importance of agile project management and thereby influence the adaptation process. Among four cases examined, company C is an internet IT company and the other three are software providers for different industries. More than one interviewee mentioned that inside the IT sector, internet IT companies are the forerunners of adopting agile project management. As internet business is more volatile and dynamic, the agile project management method can better quench their needs. This is the reason why among the four cases, only the internet IT company escalates the organisational adaptation to agile method to the strategic level. From comparison of these four cases, the nature of business can be a crucial factor to determine the need for agility and thus the depth of adaptation.
Chapter 7: Conclusions and recommendations

7.1 Conclusions and implications

Based on the previous analysis, this chapter will discuss further the implications and recommendations. It will firstly conclude the research by summarising the test results of the propositions and answering the research questions from both academic views and practitioners’ views. Then recommendations for organisational adaptation to agile project management in China will follow. Lastly, the future research directions will be pointed out.

7.1.1 Summary of propositions

This section analyses and elaborates the data collected from the interviews to test the propositions. The following table summarises the test results of all the propositions. Unexpectedly, proposition concerning the strategy is not fully supported as some interviewees argue that strategic adaptation is necessary to ensure the real and profound changes in all the other areas and thus should be strongly recommended to include into the adaptation processes if all the conditions permit. Originally, this proposition stems from the view that not every adaptation to external complexity is driven by strategic intent. Changes and adaptations can also take place without ever being formalised and articulated in the form of strategic goal patterns just as action can occur without commitment to act (Langley et al., 1995; Grobler et al., 2006). However, practitioners prefer to include strategic adaptation as a sign of an organisation to be fully devoted to a thorough adaptation. The necessity of strategic adaptation lies in the fact the adaptation in all the other areas is likely to remain superficial without the commitment of change in strategy. Though there are difficulties to convince top managers to consider strategic adaptation at the initial phase, its necessity should not be hampered. From this study, Company C has proactively considered to begin strategic adaptation after 5 years’ initial phase. To strategically adapt to agile method, company C sets achieving agility as its strategic goal and aims to horn it to be its competitive advantage in the long-run. This experience can be a good reference. By doing so, the whole organisation is highly motivated to adapt to agile method and the barriers has been effectively eliminated.

Proposition 2b is partly supported as interviewees recognised the need for agile governance. Yet, organisations do not regard it as a necessity at the current adaptation stage. From all the cases we have examined, during the first 5 years of the adaptation phase, there are no formal agile governance structure established. The project is loosely governed mainly by project manager. The lack of formal agile governance does not appear to be a problem to these companies as the original governance seems to still work. Though some interviewees believe that with formal agile governance structure, the efficiency will be enhanced, at the initial adaptation phase efforts are distributed to other areas as the need for agile governance is not strong and urgent. Apart from that, other findings are consistent with the literatures and all the other propositions are supported from the cases we examined.
Table 15. Consistency of propositions against research findings

| Proposition 1 | To adapt to agile project management method, organisation should make desirable cultural change. | Fully supported |
| Proposition 2a | To adapt to agile project management method, organisation should establish project operational infrastructure including processes, facilities and management practices. | Fully supported |
| Proposition 2b | Integrated agile governance is necessary to facilitate the organisational adaptation. | Not fully supported |
| Proposition 3a | To adapt to agile project management method, individual should be equipped with stronger competences. | Fully supported |
| Proposition 3b | To adapt to agile project management method, project team should develop collaboration skills and ensure effective communication. | Fully supported |
| Proposition 4 | Organisational adaptation to agile project management method does not necessarily include strategic adaption. | Not fully supported |
| Proposition 5 | The adaption of different organisational elements is interrelated. | Fully supported |

Among the organisational elements being examined, people factor is definitely the dominant one, followed by culture. Though infrastructural adaptation seems to be the quickest and easiest to make, it is also an indispensable part to supplement the other adaptations. Due to the interrelationship among those organisational elements, the enhancement of each area will in turn create synergy and thus contribute to the efficiency of the entire adaptation process.

Connecting the test results to the research question, to adapt from traditional project management to agile project management, changes in culture, people, and infrastructure are necessary. The relevant importance implies the effort that should be devoted to these different organisational factors. Thus, people and culture factors should receive most attention as they have higher priorities in early adaptation phase while devotion to infrastructure can be at a lower level. The interrelationships among the organisational factors indicate the importance of changing all of them simultaneously and correspondingly so as to achieve overall efficiencies (Burke & Litwin, 1992). Different practices in the four cases have been presented and discussed previously and can serve as a reference for other companies. However, as all the practices are probed by practitioners themselves, it is hard to identify which the best practices are. And during adaptation, the practitioners should not be limited to these practices, and should try to bring in novel and customised practices to meet different contextual needs. Thus, the conclusions here will remain at a more general level so as to be applicable for all companies.

Besides the implications from these propositions, other findings can also serve to provide reference for organisational adaptation to agile project management at a more detailed level. The original organisational culture, the size of the company, the adaptation phase and the nature of business can all have influence in the adaptation processes. The impact factors can be even more than these if the sample size goes bigger. But it can be seen that the adaptation process in general have some common
rules which has been presented above. And in practice, an organisation should certainly take contextual factors into account to tailor the detailed measures to ensure a smooth adaptation.

7.2 Recommendations

Following the above conclusion, some recommendations are made for companies in China to successfully and effectively transform from traditional project management to agile project management.

The scope of this research is to study how an organisation can adapt smoothly from traditional project management to agile project management. Thus, the presumption is that an organisation identifies the needs to make the adaptation. And whether an organisation should adapt to agile project management and to which extent an organisation should change is excluded from this study. But before making recommendations in practice, it is still necessary to mention that the adaptation process should only begin after the clear identification of needs and assessment of suitability as what has been suggested by four cases.

As the adaptation is not likely to be a one-time process, in the progression of adaptation, it is recommended that effort should be balanced in different organisational elements according to their relative importance at different stage, so as to maximize the overall effect with support and resources constraints considered. The empirical results of this study show that both practitioners and scholars affirm that there is interrelationship among different organisational elements (Kaplan, 2005; Burke, 2008; Burke & Litwin, 1992). So practically, weakness in one area will definitely discount the effect in other areas and a balanced attention on each area can achieve mutual enhancement.

Agile project management remains a philosophy and principle to practitioners other than a structured approach. Different from mature traditional way of project management which has been developed from more than 50 years of experience, agile project management is an infant. Thus, it is recommended that practitioners should be open to creativity to change the detailed practices and tailor the processes to live up to the agile values. Through trial-and-error, there is plenty of room to improve agile project management efficiency.

Last but not least, the agile method is not omnipotent. It is not a ‘silver bullet’ to solve all the problems (Boehm, 2002). Both plan-driven approach and agile method have home grounds of project characteristics within which one of them performs better than the other. Outside each approach’s home ground, a combined approach is preferable and feasible (Boehm, 2002). In the process of organisational adaptation, it is also inevitable that these two methods will work at parallel. Thus, traditional project management and agile project management should not be regarded as opposite and incompatible to each other. Instead, organisation needs to find an appropriate way to synthesize the virtues of them, which can best fit their organisations’ needs.
7.3 Possible future research directions

The process of doing this research also allows us to identify some possible future research directions. Firstly, the partially supported and unsupported propositions represent areas deserve further research. As this is an exploratory study and have only four cases, the propositions can be examined further using larger sample size to draw conclusions. Secondly, this study confirms the interrelationship among different organisational elements. The further research on how they interact with each other may yield meaningful findings for practices.
References


Uncovering the evidence for effective practices through empirical research”, t.tp.: t.pt.


Appendixes

Appendix 1: The twelve principles of the Agile Manifesto

1. Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.
2. Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.
3. Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
4. Business people and developers must work together daily throughout the project.
5. Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.
6. The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.
7. Working software is the primary measure of progress.
8. Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.
9. Continuous attention to technical excellence and good design enhances agility.
10. Simplicity—the art of maximizing the amount of work not done—is essential.
11. The best architectures, requirements, and designs emerge from self-organizing teams.
12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.
Appendix 2: Discussion guide

Discussion guide of in-depth interview for Master Thesis
Master thesis topic: An Exploratory Study of Organizational adaptation to agile project management – An investigation of IT industry in China

General guidelines
- Guide the direction of the discussion instead of probing desirable answers
- Ask open questions so as to enrich the discussion content
- Clarify industry jargons when first overcome to prevent confusion of information perceived
- Sensitive questions should be put in the middle or at the end of the discussion
- If there are required information that the interviewee does not possess, have him or her refer us to someone else at the end of the discussion

Opening lines (to initiate discussion)
In light of the turbulent economy, highly competitive market situations and ever-changing as well as higher demands from customers in the IT industry in China, there is a growing need for organizations to increase agility by adopting agile project management; however little is known about how this method can be implemented. Therefore we would like to understand how your organization has transformed to using agile project management.

Can we begin this interview by understanding more about your designation, duties and responsibilities in your organisation?

1. How would you describe the general application of agile project management in IT industry in China?
   - Popularity of agile project management
   - Duration of agile project management application
   - Scale at project level or organizational level

2. What are the initiatives for your organization to adopt agile project management?
   - Customer perspective
   - Internal management efficiency
   - Need for innovation

3. Who initiate the adoption and how did he/she successfully implement the APM?

People
4. Do you perceive that agile project management requires higher competence of project team and project leader? In what way?
   Project leader
   - Leadership style
   - Skilled to inspire team members
   - Ability to create frequent information exchange environment
   Project team member
   - Comprehensive skill sets
   - Communication skills
   - Self-organized

5. What practices did the organization implement to ensure the above requirements are met?
   - Recruitment process
   - Requirement specification
   - Trainings (on-job)
What does your organization do to facilitate teamwork?
- Team building activities
- Workshops

6. Does agile project management have a different team dynamics when compared to traditional waterfall method? In what way?
- Communication (frequencies, means)
- Collaboration
- Involvement of clients
- Team morale
- Motivation

Infrastructure (Project governance, tools and processes for project execution and control)
7. How does the monitoring and controlling mechanism work?
- Ways to ensure accountabilities and responsibilities are clearly defined and fulfilled

8. Does your organization employ new tools and processes? What are they?
- Memo
- Software
- Weekly/daily meeting
- Knowledge sharing section
- Lesson-learned sharing section

Culture
9. What is a favourable culture to implement agile project management?

10. Does the organization implement cultural change to facilitate the adoption of agile project management?

Strategy
11. Does the organization consider strategic change so as to facilitate the adoption of agile project management?

Interrelationship
12. Do you see any interrelationship among the above elements? (People, infrastructure, culture, strategy)

13. Which one do you perceive as the most important element? Why?
- E.g. A mature infrastructure environment can facilitate cultural change, etc.

14. What challenges does an organization encounter in the process of adopting agile project management? How should the organization respond?

15. Is there anything you believe would be interesting for further investigation in agile project management adaptation field?
Appendix 3: Interview questions

1. How would you describe the general application of agile project management in IT industry in China?
2. What are the initiatives for your organization to adopt agile project management?
3. Who initiate the adoption and how did he/she successfully implement the agile project management?
4. Do you perceive that agile project management requires higher competence of project team and project leader? In what way?
5. What practices did the organization implement to ensure the above requirements are met?
6. What does your organization do to facilitate teamwork?
7. Does agile project management have a different team dynamics when compared to traditional waterfall method? In what way?
8. How does the monitoring and controlling mechanism work?
9. Does your organization employ new tools and processes? What are they?
10. What is a favourable culture to implement agile project management?
11. Does the organization implement cultural change to facilitate the adoption of agile project management?
12. Does the organization consider strategic change so as to facilitate the adoption of agile project management?
13. Do you see any interrelationship among the above elements? (People, infrastructure, culture, strategy)
14. Which one do you perceive as the most important element? Why?
15. What challenges does an organization encounter in the process of adopting agile project management? How should the organization respond?
16. Is there anything you believe would be interesting for further investigation in agile project management adaptation field?
Appendix 4: Invitation letter to potential interviewees

Dear [Name],

I’m [Sandra Shen/Ying Zhang], a candidate of Master of Science in Strategic Project Management (European) of Umea University. My colleague, [Sandra Shen/Ying Zhang], has spoken with you earlier today and was advised to send you an email to further introduce the purpose of Master Thesis and content of our interview with you.

**About the Master Thesis**
The topic of our Master thesis is “An exploratory study of organisational adaptation to project management method – An investigation on IT industry in China”. In light of the turbulent economy, highly competitive market situations and ever-changing as well as higher demands from customers in the IT industry in China, there is a growing need for organizations to increase agility by adopting agile project management method. However little is known about how this method can be implemented. At the preliminary phase of this study, a research gap has been identified after an extensive research on literatures about project management method, which is the absence of a holistic view on how an organization can successfully transform and embrace the adoption of agile approach.

Therefore, the prime research objective is to explore, describe and analyse the perceived practices of organisational adaptation to agile project management method; and our research question is:

*How can an organisation adapt from traditional project management to agile project management?*

**Content of the interview**
During the phone interview, we will ask some open-ended questions regarding the following topics:

- General trend of the agile project management method application in IT industry in China
- The initiative of adopting agile project management method in the organisation
- The process of transforming to using agile project management method
- Challenges in implementing agile project management method

**Benefits of participating in our study**
This study is intended to be mutually beneficial. As a token of our appreciation, we are glad to share our final full thesis report at the conclusion of our study targeted for the early January 2011.

Please rest assured that any information discussed will be held in the strictest confidence and all analysis will be presented on an aggregated basis only.

Thank you for your attention, we do hope you find these topics interesting. We shall contact you soon to follow up in hopes of arranging a short discussion with you from 22nd November to 3rd December 2010. Meanwhile, please feel free to contact us with...
any queries about the study. We look forward to hearing from you.

Yours faithfully,
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