ISCTE Business School
Instituto Universitário de Lisboa

Research on Internal Service Based CTS Team Performance Management

ZHANG Yunhai

Thesis submitted as partial requirement for the conferral of

Doctor of Management

Supervisor:
Dra. Ana Passos, Assistant Researcher, ISCTE University Institute of Lisbon

Co-supervisor:
Professor Shao Yunfei, Professor, University of Electronic Science and Technology of China, School of Management and Economics

February, 2013

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February, 2013

Declaration

I declare that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university and that to the best of my knowledge it does not contain any material previously published or written by another person except where due reference is made in the text.

Signed YUNHAI ZHANG Date 3-20-13

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作者申明

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作者签名：张运海 日期：3-20-13
姓名(拼音)

ZHANG YUNHAI

Abstract

Along with the economy globalizing, the fierce competition between enterprises is sparking in international markets. As a sharp and strong tool to obtain competitive advantage, the performance management thoughts and system have been highlighted in theory and practice circles (like what mentioned in *Build to Last*, *Taking People with You*). Meanwhile, the internal services, as a new theory, have been a new turning point to promote the performance of enterprises. However, the existing managerial theory on performance management combined with the internal services is quite few. Considering the existing situations and based on the researches had been done within China and oversea, the internal services and performance management of a team had been systematically studied with theatrically and practically in this dissertation. The main contents are summarized as following:

First, in order to study the effect of internal services in the performance management of STX CTS team in China, build up a cubic 3-dimension performance management model. The three dimensions are "Sales sense, Factory operation sense, and Customer sense".

Secondly, deploy an action research method to analyze the internal services effects on the performance management and set up a model of performance management process for STX CTS team in China, which is in consist of 4 steps: plan, align and develop, control and improvement, and reward (namely incentive). And analyze the different traits and effects of internal services in the different performance management process.

The empirical study is conducted by utilizing the model within STX China CTS team. The result of the cubic 3-dimension model for team performance improvement is positive, which means the mechanism works well and can be leveraged in Hard Disk Drive firms as well as other IT firms.

In the end, the dissertation summarizes the limitations, and proposes the direction for further study.

Key Words: Internal Services, Performance Management, Cubic 3-dimension Model, Action Research.

JEL: M54; O15.

Resumo

A globalização da economia tem conduzido, cada vez mais, a uma forte competição entre as empresas nos mercados internacionais. Os sistemas de gestão de desempenho têm vindo a ser propostos, quer ao nível teórico quer empírico, como ferramentas relevantes para as empresas obterem vantagens competitiva nos mercados (tal como foi mencionado no *Build to Last*, *Taking People with You).* No mesmo sentido, os serviços internos podem ser relevantes para promover o desempenho das empresas. Contudo, as propostas teóricas que combinam a gestão do desempenho organizacional com os serviços internos são ainda reduzidas. Tendo como ponto de partida a situação exsitente e a investigação conduzida na China e internacionalmente, procurou-se neste trabalho estudar de forma sistemática os serviços internos e a gestão do desempenho de uma equipa específica. Apresenta-se de seguinda as principais etapas e conclusões deste trabalho:

Em primeiro lugar, com o objectivo de estudar os efeitos dos serviços internos na gestão do desempenho da equipa CTS da STX na China, foi elaborado um modelo cúbico de 3 dimensões de gestão do desempenho. As três dimensões são: Sentido de Vendas, Sentido de Operações na Fábrica e Sentido no Cliente.

Em segundo lugar, foi utilizado o método de pesquisa-ação para analisar os efeitos dos serviços internos na gestão do desempenho e desenvolver um modelo de processo de gestão de desempenho para a equipa CTS da STX na China, que consiste em quatro etapas: planear, alinhar e desenvolver, controlar e melhorar e recompensar (nomeadamente incentivos). Foram ainda analisados os efeitos das diferentes características dos serviços internos nas diferentes etapas do processo de gestão de desempenho.

O estudo empírico teve por base a utilização do modelo descrito na equipa de apoio técnico ao cliente (CTS) da STX. O modelo cúbico das 3 dimensões para a melhoria do desempenho mostrou-se adequado, o que significa que os mecanismos funcionaram de acordo com o previsto e podem utilizados em empresas que produzem unidades de disco rígidos ou outras empresas de TI.

No final da dissertação, são apresentadas as principais limitações deste trabalho e propõe-se direcções para estudos futuros..

PALAVRAS CHAVE: Serviços internos, Gestão do desempenho, Modelo Cúbico de 3 dimensões, Pesquisa-Acção.

JEL: M54; O15.

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List of Acronym

STX: *Seagate Technology Co,.ltd*
CTS: *Customer Teachnical Support*
TCM: *Technical Customer Management*
CQE: *Customer Quality Engineering*
BM: *Business Management*
CAE: *Customer Application Engineering*
CEE: *Customer Experience Engineering*
PLM: *Product Line Management*
QA: *Quality Assurance*
FA: *Failure Analysis*
TAT: *Turn Around Time*
CLCA: *Close Loop Corrective Actions*
Call Center: *A calling center for answering enders*
LCO: *Longmount Colorado Organization, one of STX R&D center*
TCO: *Twins City Organization, one of STX R&D center*
ScsPark: *Scince park of Singapore, one of the STX R&D center*
R&D: *Research and Development*
IT: *Information Technology*
FAE: *Field Application Engineering*
GQAM: *Global Quality Account Management*
Dppm: *Defective Parts per Million*
MBO: *Management by Objective*
KPI: *Key Performance Indicator*
I-P-O model: *Input-Process-Output Model*
NSG: *Notebook Storage*
PSG: *Desktop Storage*
ESG: *Enterprise Stroge*

Chapter 1: Introduction

1.1 Introduction

1.1.1 CTS Team Organization of HDD Firms in China in Recent Years

Along with the globalization of economy, the fierce competition of international markets between IT firms had been sparking off. To have and sustain a healthy competition situation, most of multinational IT firms had setup their regional offices in China to support business development besides their factories or mass production centres. Typically, those offices or branches are reporting to their headquarters or regional business centres, located in different cities across China. In normal practise, in those offices, there are sales folks, marketing folks and customer technical support teams (such as field application engineering, technical business development teams, customer quality support engineering teams) besides the administrative staffs.(like clerks), Government relationship management folks, public relationship management folks.

Being a big part of the business office staffs, customer technical support team is playing an important role to support both sales and customers on behalf of the firm sales quotas and revenues in IT industry. This is special relevant –since IT products have a shorter product lifecycle (on average 2 years) compared to the other high-tech products. Hence, the intensive technical expertise support is a must to make sure new product launching progress is well on track.

To build up the seamless connection and interaction with customers and internal teams during pre-sales and post-sales activities, it is necessary to keep an eye on the customer technical support team performance in terms of customers' satisfaction and customer technical support team operational excellence optimization.

As a sharp and strong tool to obtain competitive advantage, the performance management system has been highlighted in theory and practise in the past few decades. Like the performance improvement cycles, 360 degree performance rating and many others. Hence performance management in customer technical support team who is working in business office(while acting as the interface or liaison among sales team, factory operation team, product research and development team, customers), as a “Global-local” team in globalized

IT firms, has been a fresh turning point to promote the firms performance in front of customers.

However, the existing managerial theory (such as the I-P-O model of team and workgroups effectiveness) shows that the research on performance management is scarce: How to improve the local business support teams' effectiveness (in short: job performance) is becoming more and more important, even critical (for example, the cloud compute customers need intensive local technical supports like joint-qualification, job-development, joint research). Although many studies had been conducted and focused on CTS team performance improvement (such as from the service operation management, the service gap analysis, servqual, serperf), the micro-analysis and investigation of performance management in customer technical support team within sales and marketing organization are still very limited.

1.1.2 Difficulties Faced by CTS Team

To provide some background about the current research, I was assigned to take a lead of China CTS team in the middle of 2009 after firm resizing by the end of 2008 due to global economy recession; Prior to the new assignment, I was one of the lead from Asia Engineering team who was in charge of new product launch, product quality and process yield improvement in STX Suzhou volume site since year 2007. In order to figure out the ways and solutions in terms of "easy to do business" with China customers, the executive team of firm made the decisions to reorganize area: the Field CQ (customer quality team), the FAE (field application engineering team), GQAM (global quality account management team) were merged and reconsolidated as a CTS team (customer technical support). As a new comer to the team, I had planned to do in-depth interviews with both customers and team members. The detailed sum is below:

By conducting the face to face in-depth interview with members from the company's customer technical support team (a hard disk drive manufacture) as well as its customers in China, we identified several concerns with the current situations. There were real concerns from peers, counterparts and customers to customer technical support team. Despite the reorganization is team performance is deteriorating somewhat, even worse than previous. Below are the main concerns that identified:

(1) Customer blames for long turnaround time of failure analysis or slow responses as internal teams need time to create stories that will work for all customers; (2) Not sure

whether customer technical support team spends time telling stories or fixing root causes as customer production line integration production line reject rate (normally, it is calculated into dppm) from their factories remains high; (3) Customer technical support team spends lots of “non-value add” time with customers, internal team, as of unstable product quality Dppm and delayed failure analysis reports; (4) Customer technical support team always to “Play dumb” in front of customers even though they know the true answers (facts) for fear of compensation claims; (5) At times, sandwiched between sales and factory teams – “think company” but gets blamed from both sides.

These concerns are especially relevant if one considers the main roles and responsibilities of customer technical support team in company STX. In fact, these are the follow: (1) To ensure customer product quality goals (like line reject rate, field annual return rate; these are normally calculated with dppm format) are consistently met; (2) To rectify customer escalations expeditiously and prevent similar re-occurrence; (3) Timely qualifications of new products at customers; (4) Mitigate and contain quality excursions within the factory or component vendors. It is easily to observe that customer technical support team is defined not only as a liaison or coordinator, but also as a decision maker on technical related issues in front of customers within each sales account team which includes sales folks and factory folks. The professional level of their skillsets in terms of both technical and business sense will definitely affect the customer satisfaction and the firm’s long term business growth.

If someone from customer technical support team with better technical skillsets but lesser customer or business sense, for example, he or she may not be able to handle customer relationship well; and by the end of the day, neither external folks (customers) nor internal folks (sales personnel and factory support team) will have the recognitions and acknowledgement on him or her; Consequently, it will lead to customer (both inside and outside) complaints and result in business share impact due to the poor local technical support. Meanwhile, the tension among counterparts and peers will be induced; Therefore, how to help team walk through those kinds of dilemmas will be a key concern to team success as well as to firm’s market share improvement and revenue sustaining and improving.

While, besides the management problems within customer technical support team, there is no doubt that how well do their peers like factory customer quality engineers (CQE, normally, they are based in factory and staying close to factory operation team) do to support him or her as well as the technical customer management engineers (TCM, normally they stay close to research and development team in design centers) do in terms of support customers will significantly impact customer technical support team performance as they are the frontiers and the local contact windows to customers on half of the entire supporting team both of front-end and back-end. If there is any communication lagging among those teams, it will eat up the reputation of the entire teams' (both frontiers and backend supporting teams) performance anyway.

In currently day to day practice, people may easily fall into the traps that "people observe difference, people create distinctions". Differences help us to understand potential sources of misunderstanding between people and give us the clues of how we can work together more effectively, while distinctions create social barriers between people for the express purpose of creating (or reinforcing) advantages and disadvantages (David & Kim, 2010). Hence, some sorts of feelings such as being treated as "second class" during work are induced due to the "distinctions created" among the teams. How to get rid of those kinds of perceptions is a big challenge to team performance improvement.

Well, there are some kinds of inherency between individuals' personalities and their behaviors, the predicaments of customer technical support team which had been described above do show team operational excellence (efficiencies and effectiveness) are not at where it is supposed to be.

Given the transformational, rapid-fire moving in day to day market competitions, changes are ubiquitous. Many problems encountered during the performance management in customer technical support team: (1) how to ensure the members who are working in customer technical support team to catch up the new technologies as well as to build up the proper sense of self-awareness on business is a big challenge. (2) how to enable each member in customer technical support team and energize them to improve their level of confidence in the progress and process of customer handling besides the generic statements 'customer sense'? (3) How to build up and validate an appropriate work mode among both internal teams and external teams? All of the above concerns will be discussed in this thesis.

1.2 Research Issues and Framework

1.2.1 Research Issues and Research Objectives

Based on the existing situations and the researches had been conducted, the customer technical support teams' performance management is systematically studied theoretically and practically in this dissertation. The thesis focuses on two issues: First one is to examine the key factors to effectiveness improvement in CTS (customer technical support) organization, it will be addressed from customer technical support team operational excellence and team development points of view; the second is utilizing internal service based performance improving model to try to set up and optimize work modes to reach the expected performance.

This thesis tries to fill up those gaps mentioned above and it is an attempt to empirically identify and examine team performance management. It seems this area has been overlooking for a while due to customer technical support team is not as big (“important”) enough as sales operation and factory operation in current researches.

This paper will pick up the dilemmas of customer technical support team (in STX Company) as a starting point. It will conduct the examination of team operational excellence analysis (effectiveness), and it will accomplish an in-depth analysis within and between the sales and factory operations and figure out a common work mode, which can provide guidance and be a reference to other companies and organizations, consequently, influence team behaviors and improve organization performance. Particularly, the performance management in customer technical support team through the application of internal service theory, boundless organization and knowledge worker performance management concepts to improve team effectiveness and to benefit customer’s sentiment and company business growth can be a good reference for next level analysis in future study.

1.2.2 Research Contents and Research Framework

Research Contents

This research can be clustered into three parts. Part I includes three chapters, which is started from the introduction (chapter I), the literature review (chapter II), research methodology (chapter III, the action research on CTS team performance management in STX company); part II also includes three chapters: the internal service based CTS team performance management mode built up (chapter IV), and its’ work mechanism as chapter V, team performance improving mechanism for CTS team as Chapter VI; part III is the conclusion part, chapter VII, summarizing the conclusion, this research limitations and its indications to future researches.

Research Framework

The research structure of this thesis can be illustrated as below: 1

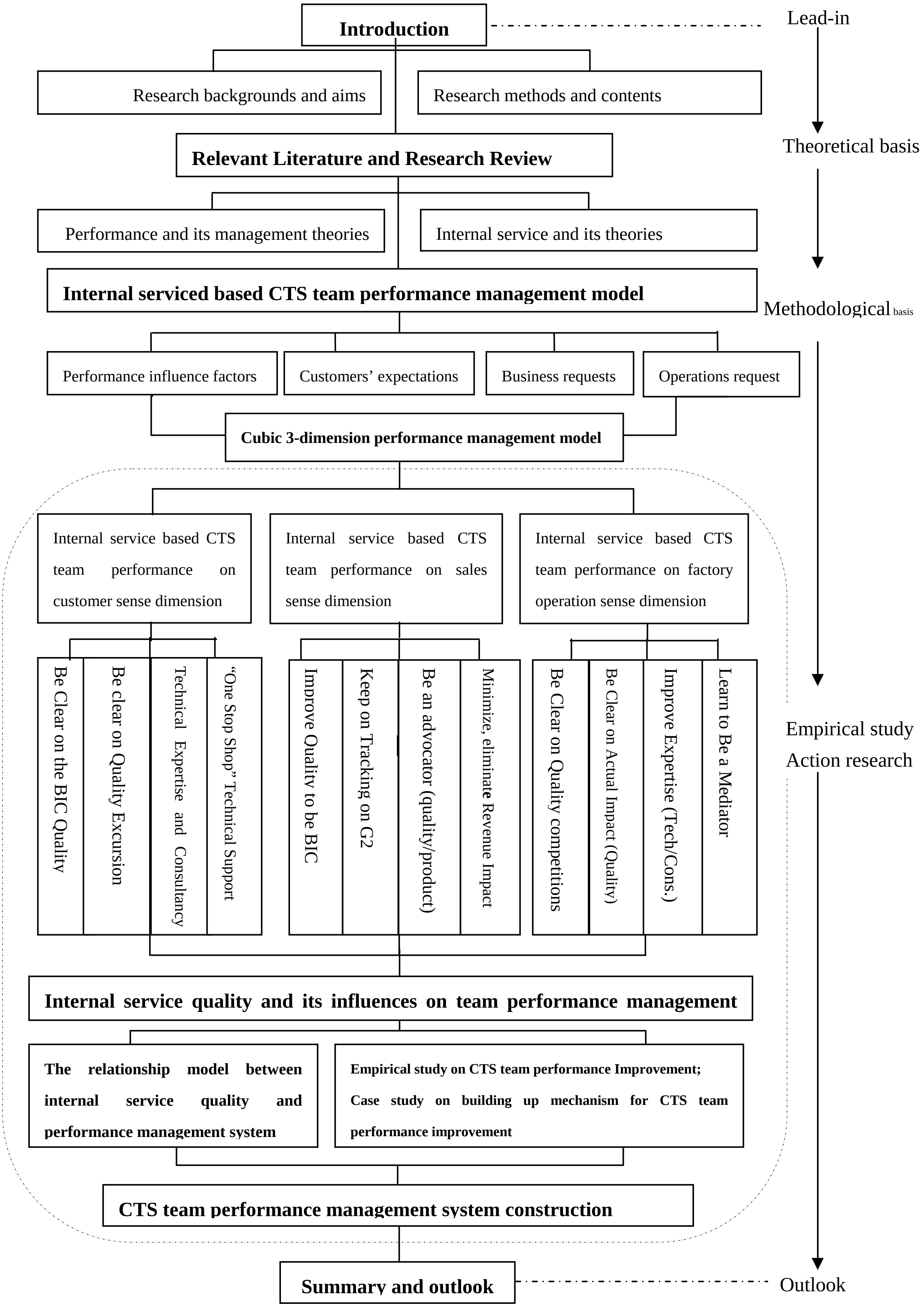

Introduction
Lead-in
Research backgrounds and aims
Research methods and contents
Relevant Literature and Research Review
Theoretical basis
Performance and its management theories
Internal service and its theories
Internal serviced based CTS team performance management model
Methodological basis
Performance influence factors
Customers' expectations
Business requests
Operations request
Cubic 3-dimension performance management model
Internal service based CTS team performance on customer sense dimension
Internal service based CTS team performance on sales sense dimension
Internal service based CTS team performance on factory operation sense dimension
Be Clear on the BIC Quality
Be clear on Quality Excursion
Technical Expertise and Consultancy
"One Stop Shop" Technical Support
Improve Quality to be BIC
Keep on Tracking on G2
Be an advocator (quality/product)
Minimize, eliminate Revenue Impact
Be Clear on Quality competitions
Be Clear on Actual Impact (Quality)
Improve Expertise (Tech/Cons.)
Learn to Be a Mediator
Empirical study
Action research
Internal service quality and its influences on team performance management
The relationship model between internal service quality and performance management system
Empirical study on CTS team performance Improvement;
Case study on building up mechanism for CTS team performance improvement
CTS team performance management system construction
Summary and outlook
Outlook

Figure 1-1 Thesis research structure

1.3 Research Methods

The following methods will be adopted in this thesis:

1.3.1 Action Research

For better understanding on the performance management in specific organization, action research is an appropriate method to validate the analysis result through the application of developing team performance management skills. Empirical conclusions are also needed to be “test for credence” by application in the organization. Hence, the application research method will be widely used in this thesis.

In this research, the first step is to discuss about the current operation status of CTS (customer technical support) team; the second step is to analyze the factors which have significant influence on the team performance; and based on this, set up one mechanism in terms of team performance improvement; the last step is to validate the achievement of performance improvement by utilizing this mechanism within CTS (customer technical support) team in company STX and with further optimizing.

In-depth Interview Analysis

Basically, the empirical research is trying to describe the facts objectively; to get sufficient data for analyzing, this thesis will rely on the utilization of research method of in-depth interview to collect related information and data.

From a data collection point of view, this study uses in-depth interview technique to collect data as taking into consideration of its nature; experimentation was considered to be inappropriate.

In fact, the interview and action research approaches have advantages of offering a variety of specific data collection techniques. In this paper, structured personal interviews and surveys are considered as the most appropriate research technique in the early stages, which is the qualitative phase of the research. The advantages of these techniques are in gathering rich data with most open questions.

However, the in-depth structured interviews and action research approach will be based on certain research findings suggested on the academic literature that will be used for exploratory purposes.

In addition, findings from exploratory stages, early phases will be integrated into further and subsequent phases in research design. Actually, all key contributors to performance management identified in the in-depth interviews and action research with the expertise and academics as well as the customers, along with other identified resources in the extant literature will be integrated in ‘specific resources’ constructs, to be examined by mail survey, and will be characterized by certain statistic tools, for validity and reliability.

Questionnaire

Besides the above methods, this thesis also deployed the questionnaire to collect the voice from both internal customers and external customers. The question in the list has the wider range and which covered the sales and marketing inputs, factory operation team inputs as well as the customer technical team inputs.

1.3.2 Empirical Study

To ensure the analysis and practice touch the base, a real case and management practice study is a valuable approach. It will afford us the reasonable result in terms of statistical and practical point of view.

And along with the application research carrying out in this thesis, a real case study is a must. So as to make sure there are the inter-correlations.

1.4 Brief Summary

This chapter is a general introduction of the thesis; it first analyzed the background of the study and its purpose of this thesis, which is the dilemma of the CTS team in STX company in terms of its performance management and the current performance status of CTS team in HDD industry in China, “being sandwiched by both sales team and factory operation team, the team performance of CTS team had been overlooked for a long time as well as its talents capabilities had been underutilized due to the inappropriate performance management mechanism”. Hence, how to build up an effective performance improving mechanism for CTS team and what’s the value added to the managers of CTS team will be fully addressed as the key purpose of this thesis.

Secondly, it deployed the action research methodology as a basic research path to conduct team performance assessment as well as its improving mechanism investigation and validation.

Finally, buildup a model for team performance improving and validate the effectiveness and reliability.

Chapter 2: Relevant Literature Review

Along with the economy globalizing and the fact that knowledge workers are playing an increasing important role in the day to day operations (particularly in customer technical support team), the team performance management is becoming more and more critical. Many researchers had spent a lot of time to study performance management in the past few decades. In general, it can be categorized as below: team theories; team performance management theories; internal service theory and the team motivation.

2.1 Team

2.1.1 The Definition of Team

The key to team management is to emphasize the cooperation and fully motivate everyone’s initiatives within a team. As a result to achieve a higher target and produce bigger output compared with each individual’s output summary.

Team, according to Stephen R Robbins (1994), is a formal group of members who interact at a high level and work together intensively to achieve a common group goal. Researches by Hackman (1990) had defined three attributes of a team: (1) in a real team, there are completed rules, each member plays a different kind of roles and relies on each other; (2) when dealing with a single task or the multiple tasks, the schedule of a team execution is relying on the cognition of each team member, and the final schedule is based on the consensus of the entire team’s inputs consolidation. (3) From the organizational operation point of view, the interactions within team members have strongly correlation with team surroundings. Sunstrom (1990) together with other researchers put the emphasis on the conceptions of interdependency and responsibilities sharing, they define the team as a small group of individuals who response for the team goals or outputs together.

Team’s appearance in an organization is a result of an organization to rapidly adapt environment changes, forming team is a best in class approach to deal with the radical changes. The core benefits of team management are: (1) to set up the common mission and vision; (2) to have higher capabilities and professional skill sets, and be able to have the complementary competencies; (3) to have common strategies and approaches, detailing the teams goals; (4) to discipline the sense of helping with each other, and use it as the guaranty of team survival.

2.1.2 Team Building

To improve the performance of an organization is a radical rule of having a team. Whether there is output from a particular point and specific issue will be an indicator to team cooperation spirit. High effective team is always showing very strong competitions, which is due to its members have the stronger synergies rather than its excellent individual players. There are four sections which can be used to describe the team building: (1) team leading, (2) team norming, (3) team spirit, (4) team culture.

Team Leading

Leadership is a tough progress in terms of forming the conceptions and the unique vision. It is growing from and depending on the values of these concepts and visions; meanwhile, influencing others and making the decision on human resources and other resources. Leadership behavior study is the key part in OB (organizational behavior) study. It influences subordinates working attitudes, goals, values and behaviors, which has a significant impact on team or group’s goal realizing. Researchers conclude that there are four variables which influence on the leaders’ behavior; they are: leaders’ personalities, subordinates traits, teams’ attributes as well as the team or organizations structures and tasks. Those variables are working interactively instead of independently and influencing the effectiveness of leaders’ leadership style.

Team Norming

Research shows that team norms have the influences on personal performance of team members, and those impresses are depending on work tasks traits and the characteristics of team norms. (Gibbons D. E. , Weingart L. R, 2001). Madjar (2005) also realize that team norms’ setting up, team support and help will induce the positive emotions, nergies to team members as well as their cognitions motivating, which will help improve the innovation performance of team members.

Team Spirit

Team spirit is a “war-spirit” like spirit or work attitudes, which is coming from a specific group of members who have the synergies in terms of skill sets, capabilities, and beliefs, attracts within a period of run-in, re-concentrating and reforming. It shows as the strong attributing and integration of a team. Team spirit consists of a few parts as: (1) the vision of team performance, (2) the teams' value demonstration, (3) clarified goal and smooth communication, everyone within the team can learn the related information and understand the situations of a firm, and turns the members' willingness from pushing to pulling as well as improving the ownership. (4) Clarifying the assignments, roles and responsibilities as well as the rewarding, punishing and equity.

Team Culture

A key part of team construction is team culture building up. Also, team culture is a key factor of team cohesiveness. Team culture is a consensus of values, ethics and rules of behaving which have been acknowledged by team members. The kernel of team spirit is emphasizing the cooperation within members. Team culture comprises team vision and team psychology. Team vision is the reasonable value awareness of members; it can be reasonably divided into core value and concrete value with further and deeper analysis. Team psychology is the psychological value awareness of members; it indicates the people needs, motivations, emotions, moods which are psychology factors, the interactions and relations between people's psychology factors and team work experiences. (Peter M. Senge, 1996)

2.2 Team Performance and its' Management Theories

Inside team, the member's behavior will be impact significantly by the performance management system and reward policy, such as whether jobs have challenges and specific goals in an organization and whether there are appropriate rewards offered play an important role.

During performance management, team cooperation and interaction can be easily overlooked, encounters the negative competition and blocks the information sharing. As a result, team synergy cannot be achieved during individual performance evaluation; while if only focus on the team performance, behaviors and capabilities, individual performance recognition will be overlooked, resulting in the lazy work mode and free rider problems as well as the individual performance is lower than it's originals before stepping in a team. Hence, team performance management should take into consideration of both team performance and individual performance, put the team performance on top of the progress, and refer this as one of evidences for individual compensation and benefit, so as to lift up the organization performance.

Team or group is a work cooperation platform instead of a whole cooperation or the approaches. Besides corporations within a team or group, the corporations between team and team are always in place, within individual team members and both. And the teams either has positive or negative attitude toward the particular cooperation. Hence, during the team performance planning, it needs to take care of not only internal factors within a team which may influence team performance, but also the evaluations from coalitions during performance evaluation.

2.2.1 Team Performance

Definitions of team performance is not exactly same due to different research objectives. The most popular one till today is from Nalder (1990), Guzzo and Shea (1992). Nalder (1990) suggests that team performance is composed of three sections: (1) the attainment of team to organization goals; (2) the satisfaction of team members; (3) the capability of team continuous corporations.

Sundstorm (1990) offers a wider performance definition; team performance is the actual performance level attained toward the expected goal. It also comprises three sections: (1) output of team production (quantity, quality, speed, and customer satisfaction); (2) team’s influencing on its members outputs; (3) to improve team’s capability so as to have better team efficiency. Deborah (1994) argues that the effective performance management will promote communication between team members and management teams, will clarify the scope of team goal, will ensure team members acknowledge the work achievements, motivate team performance, will promote members ownership and encourage the continuous improvements; while to management team, it can be used as a criterion in terms of promotion and salary adjustment as well as the human resource development within a firms, as well as continuously to optimize team and members goal and get them aligned with organizations goals ultimately.

Performance Management Influenced Factors

The fundamental of performance management is to achieve the targeted performance. Performance management capability is a combination of series of knowledge, technical, policy in a firm which are implemented during performance management. It contains the employees’ motivation and their potential development, the internal communication promotion and the firm culture formulation, effective performance evaluation, and help on sustainable development within a firm. The performance management capability influence factors are series of factors or key factors which influence the performance management. This session will firstly look back the performance influenced factors, and then discuss the performance management influenced factors.

Performance Influenced Factors

Lots of researches have studied in terms of performance influenced factors during past decades. It can be characterized as two phase as below.

(1) The function analysis phase.

To avoid falling prey to simplistic, or ill-informed diagnoses of work performance problems, managers need a model, or framework to guide their inquiry process. Various organizational scholars (e.g. Gerhart, 2003; Steers; Porter, & Biglery, 1996; Vroom, 1964) have summarized the determinants of task performance as follows: Performance =Ability x Motivation (effort) and Ability=Aptitude x Training x Resources; Motivation=Desire x Commitment.

According to these formulas, performance is the product of ability multiplied by motivation, ability is the product of aptitude multiplied by training and resources, and motivation is the product of desire and commitment. The multiplicative function in these formulas suggests that all elements are essential.

Above studies are at the beginning phase; it started from the inner impact factors analysis and expended to external influence factors analysis. From qualitative to quantitative along with the further and deeper studies conducted. However, the function analysis still has the gaps there as: 1) the factors listed here did not have the systematic analysis and organic weighted, 2) some of the factors are not appropriate, 3) there is very limited studies on the environment factors and this study is too narrow. The equation here only reflected the determinants affects, while their interactions had been neglected.

(2) Performance Influenced Factors Model-Analysis Phase

In 1980s, researchers started to look at the interactions between performance influence factors besides the particularly analysis. Waldman and Spangler (1989) who raised a model based on their integration analysis. The model consists 5 layers: personnel capability, organization motivation, feedback, management team and teamwork.

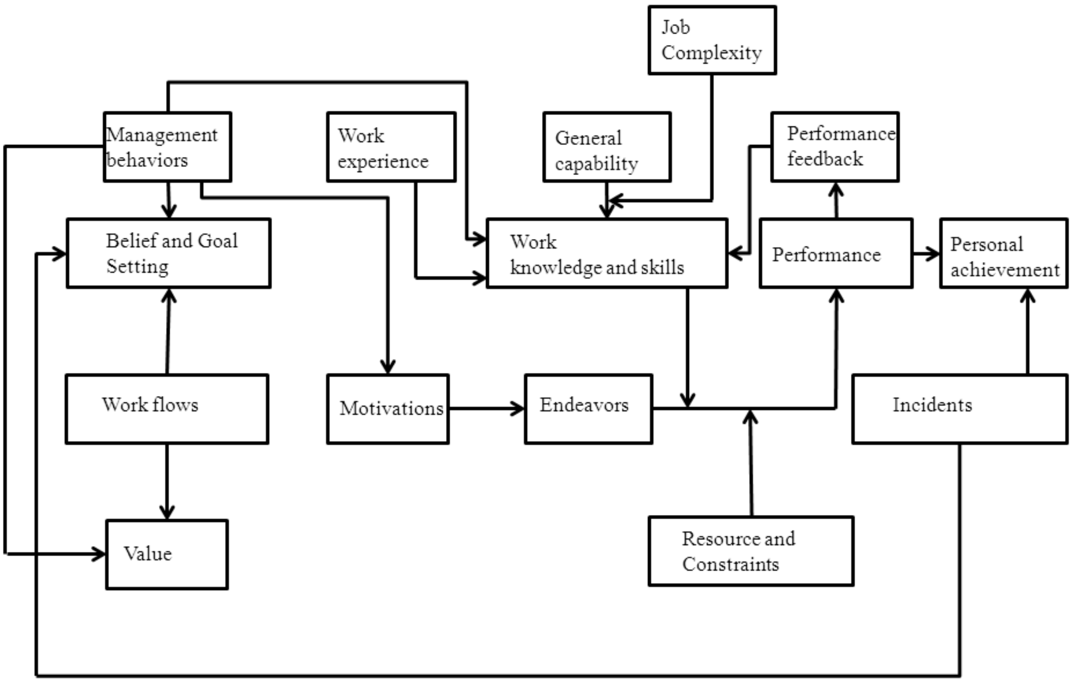

Job Complexity
Management behaviors
Work experience
General capability
Performance feedback
Belief and Goal Setting
Work knowledge and skills
Performance
Personal achievement
Work flows
Motivations
Endeavors
Incidents
Value
Resource and Constraints

Figure 2-1 The integration model of personal performance influenced factors

Source: Waldman et al (1989)

L Cardy and Dobbins (1994) and Waldman (1994) raised a model for performance management which covered the personnel and environment factors. (See figure 2-2). Cardy and Dobbin stated that personal factors will impact the job related behaviors directly because employee may bring their personal factors to their work, and will result in the performance impact somewhat. Waldman (1994) also believed that the systematic factors which are staying with each layer within an organization, may improve the performance or block the performance improvement.

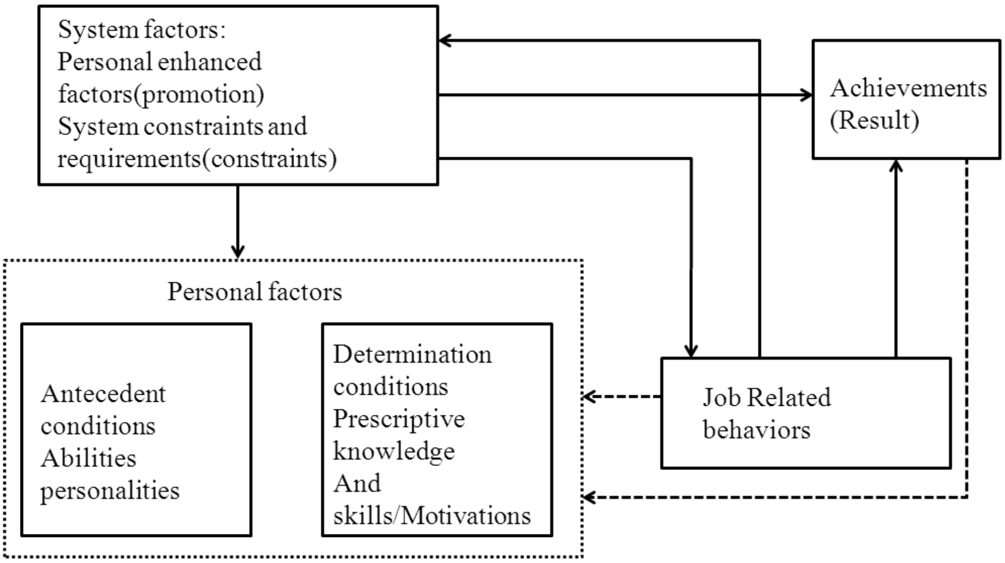

System factors:
Personal enhanced factors(promotion)
System constraints and requirements(constraints)
Achievements (Result)
Personal factors
Antecedent conditions Abilities personalities
Determination conditions Prescriptive knowledge And skills/Motivations
Job Related behaviors

Figure 2-2 Employees performance model (personal factors and environment factors combined)

Source: Waldman et al (1994)

The model here can help us to understand more details on each factor which has the influence on the performance. Even though there is an intention to cover all of them, some of the integration is not systematic; even there is an intention to cover all of them. So it might not be applicable in a firm.

The Performance Management Capability Influenced Factors

There are lots of studies had been conducted on the performance influence factors, yet there are dedicated researches in this area. This study is trying to pick up the model from Song Zhe as shown below as a reference to understand the factors within a firm which have significant impact on team performance management capabilities.

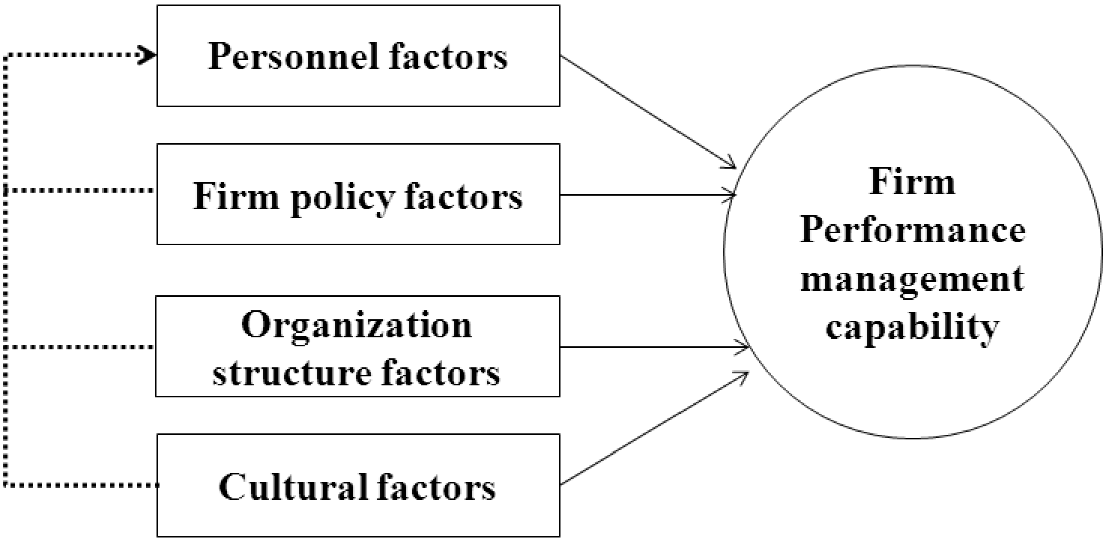

Personnel factors
Firm policy factors
Organization structure factors
Cultural factors
Firm Performance management capability

Figure 2-3 The framework of performance management influenced factors in a firm

Source: Song Z et al (2009)

According to this model, there will be four factors which play very important roles to the firm performance management capability; they are personal factors, firm policy factors, organization structure factors and cultural factors

2.2.2 Theories of Team Performance Management

Manage-by -Objective

MBO was first time raised by Peter Duke in year of 1954 in his book << the management practice>>. It refers to the top management team of an organization who set up the general goals for an organization within a specific period according to the situation and social demanding. Peter breaks it down to different levels for carrying out; MBO requires the goals setting and ensuring plan in place both from each subordinate and their supervisors so as to build up a goal’s matrix, and takes the output of goal’s implementation as an evidence of the department or personnel performance evaluation. A full cycle of objective management consists of setting up goals and its’ timeframe, conducting the gap analysis between the actual output and expected performance as well as to fill in the gaps and redesign the goals. Comparing to other approaches, MBO helps on the goals break-down and measurement, so as to ensure the personal goal and organization goal have organic linkup as well as the inside consensus.

Key Performance Indicator

KPI is a coalition of MBO and its’ core theories of organization management. By quantifying, sampling, calculating, analyzing, measuring key parameters from both inputs and outputs of an organization, it is the concentration and induction of a successfully firm’s operation.

KPI helps clarify each level supervisor’s major responsibilities, and based on this to get the performance management indicators. Through KPI management, it is easy to align the goals and strategies among individuals, functional departments within a firm. There are three rules need to be followed through during KPI set-up timeframe:

The first one is: Object orientation. To set up department and personal goal based on firm’s goal.

The second one is: Based on SMART approach to select KPI. (Namely: Specific, Measureable, Aligned, Realistic and Time-bound).

The third one is: Policies’ follows through. Whether has a successfully KPI implementation or not will depend on team’s execution; To make sure the KPI approach can benefit firm management innovation and revenue improvement, it is necessary to get rid of the obstacles during KPI implementation. Meanwhile, promote the culture of high effectively execution.

I-P-O model

Espinosa et al.(2004) raise one model named I-P-O. It suggests that the mutual interdependency is a critical factor to team performance. There are three key factors within this mode: task’s interdependency, management’s interdependency and the effectiveness of synergies. According to the model from Espinos et al, a team deals with task’s interdependency by operations through organizing, implicit cooperation and communication. The execution level of these operations will give the indication of team cooperation. And team cooperation will influence the team performance directly. Through this model, Espionsa et al suggest that the mutual interdependency and team's management toward to corporation is a critical step to team performance.

Knowledge-workers Traits Management

The concept of knowledge-worker was first defined by Druck in 1959 in his book *The Landmarks of Tomorrow*. It was narrowed down to the "white-collar" workers (more like the managers, supervisors, or top management teams who did not conduct the first working level activities) and did not cover the normal knowledge-workers. The substantial analysis had been conducted along with 1990's knowledge economy wave. Even the studied had been carried on for a few decades; there is no unified boundary on this topic. Generally speaking, it can be listed down as three main concepts as below:

The first one focuses on employee capabilities. It argues that knowledge-workers dedicated on the knowledge applications and the value is created through application activities. Davis (1991) stated that knowledge-workers are the ones who have work result through using personal knowledge and outside knowledge; Zhao Huijun (2004) defined the knowledge-workers as: have a kind level of skillsets and knowledge's and work on the knowledge acquisitions, creations and applications.

The second argument is focusing on the job position. It argues that knowledge –workers are the ones who have higher position which needs more knowledge requirements (for example: Research and Development, Marketing, Accounting, Management and consultants). Horibe (1999) argues that knowledge-workers are the ones who use the brains more than their hands during the work, such as the management staffs, Sales. While Gates argues that the knowledge-workers are the ones who work through "Window Operation System".

The third one is from the diploma point of view. Some of Chinese scholars argue that the knowledge-worker is the one who has a level of diploma. He Huang (2001) argues; the knowledge-worker masters the P.C. and understands the technology as well as has the management skillsets and can self-learn. They should hold at least polytechnic diploma.

Lots of scholars had spent plenty of time on the characteristics of knowledge-worker in the past. The bullet points as below: 1) creative capability and self-learn ability, 2) strong motivation on the career success, 3) stronger self-management ability, 4) hard to supervise their job progress, 5) higher turnover rate, which is the knowledge utilizing driven instead of company driven. Their loyalty to the position is higher than to the firm.

Job performance is the level of work dedications and outputs versus the original goal setting. It reflects how well the employee fulfills the job requirements. As of the particular characteristic of knowledge-workers, it is necessary to review the definitions. So far, most of the studies from the inland and oversea scholars do not separate it. Such as Borman and Motowildo (1993), who define task performance and contextual performance; Zhang Tiqin (2002) who studies performance from the knowledge-worker team based on a kind of systematic analysis methods. It can be referred for the knowledge-worker performance management.

The performance evaluation, this is a key part during knowledge-workers performance management. And it is the baseline for the next step which is the performance improvement. There are some kinds of differences between domestic and overseas studies. Kaplan and Norton (1992, 1996) develop the balance score card; Becker, Huselidand Ulrich (2001) develops the human resource management scorecard. Even those studies may not refer to the knowledge-worker performance rating directly; while, it can be a reference accordingly.

From the inland scholars’ studies, we can learn from Luo Guoqiang and Bian Qiongfang who develop the dynamic performance rating system through fuzzy boundary performance rating system, while this system does not cover the future contribution of knowledge-workers or their contributions to the entire team. As a result, it cannot reach an actuate performance rating; another scholar Xiao Yuan (2004), who does set up a system model to rank the performance of knowledge-workers. However, this mode cannot cover all knowledge-worker performance rating. It needs further and deeper analysis as well as the applicable study.

Boundless Organization Theory

The concept of “boundless theory” is raised by Jack Welch, who is formal CEO of G.E. The “boundless firm” what he expected is to eliminate the barriers among each functional departments; and there are no blocks among engineering team, production team, marketing team and others departments. Everything is transparent; there is no difference between in-house business and overseas. Ruin the barriers and let suppliers and customers become one union part of the whole process; and put team’s position ahead of individuals.

The Principle of Boundless Organization

First of all, boundless organization does not mean the original boundaries within a firm had disappeared. Instead it, it blurs the four original boundaries and makes them become a‘film’ like boundaries. By team coordination, it improves information communications, spreading and its penetrations. As a result, every team realizes the information sharing and distributing as well as the experiences and skills; and finally achieve the goal of innovation motivation and work efficiency improvement.

Secondly, the basic technical support of boundless organization is grid computing, it emphasizes the speed, elicits, integration and innovation; it has many forms and with its advantages that it is easy to have information, resources and energy's emission.

Lastly, boundless management encourages employees to execute the spirit of innovation, and implement innovation as well as the self-management.

There are mutual penetrations among each layer or boundless organizations. It will maximize capability of each layer; and improve self-engagements of employees, as well as their proactivity. The distributed decision mode requires each employee has sufficient information as the basic of decision making. Hence, there is a prerequisite to have a wide span of information sharing in boundless organization.

Build up the Boundless Organization

According to the previous researches, there are 4 key steps to build up a boundless organization, there are: 1) free movement up and down: Crossing the vertical boundaries. It main includes: power distribution and information sharing, coaching the employee's leadership, constructing the system of performance and compensation and benefit ratio. To let people who are response for the result or to make the decisions, capability will play an important role during performance evaluation rather than position. 2) Free movement side to side: Crossing the horizontal boundaries. It covers: to treat customer as the focus points by the uniform face, set up the multifunctional team and share information; break though the barriers between departments, and ensure planning, production and sales and other departments can be connected as one team and form a system. It quires functional teams have the same information in hand and have the same behavior to deal with customers, so as to make sure the firm is a trusted entity in front of customers. Organization has set up the proper knowledge sharing mechanism, team members can grab a plenty of information, and have different kind of experiences and methods. 3) Free movement along the value chain – Crossing external boundaries. It includes: to set up the supply chain management and strategy management alliance; virtualizing business dealing and doing business through network. The boundless organization is targeting to get rid of the surrounding barriers, and make firm tie up with suppliers, customers, competitors, government regulations, communities and other parts, and turn it into a value-added system and service the customer. 4) Free global movement:

Crossing geographic boundaries. It includes: set up the globalizing and localizing strategies, build up globalizing organization; hire the senior managers who have global working experience, bridge up the culture diversity. The geographical barriers will be broken smoothly, departments from different countries can learn from each other and oversea companies will stay on tuning on local culture with no more barriers.

2.2.3 Team Performance Improvement

Performance improvement: it is the purpose of performance evaluation, which will benefit competitions of a firm and improve its serviceability. Hence, it is necessary to set up an appropriate performance rating system. Both of inland and overseas scholars have done a lot of studies on the employee incentive and motivations. Such as Zingheim and Schuster (2001), who argue four factors on employees' motivation; Chinese scholar Zhao Huijun (2004), who has done a lots of case studies on the employees' incentive. But their arguments may not have wider span or scopes due to the limited sample size. Other studies from Chen Yunjuan (2004) together with others reveal the strategies of employee incentive; however, there is no field application (empirical) data support. Its' effectiveness is still pending validation. Most of those studies are from one angle only without a systematic logic.

Other studies on performance management are aimed to organization and employee performance integration, those scholars are: Ainswortht, Smith (1993), Mcafee and Champagne (1993). They argue the mechanism of integrated performance management and the special system. However, they have the different kinds of focuses.

2.3 Internal Service and Empirical Researches Summary

2.3.1 Service

Regarding service, Adam Smith (1723-1790) is the first one who separated the production labors and non-production labors. There are a few of scholars such as Carl Max, Sayee, Pashisa and Marshel who studied this topic and contributed a lot of ideas and comments in this area. While the modern definition comes from Hill (1977, US economist) who had given the typical definition to service: service is the change of status quo, it happens to someone or some economy entities. And the change is the output of another economy entity. It focuses on the result of the changes.

There were lots of studies from marketing associations within western scholars since

1950s. Such as AMA from US, gives definition of service: A kind of activities and benefits or satisfactions which are sold out or sold out together with products; Lehtinen argued that: service is a sort of actions or a serial of actions offered to customers through the interactions with service agent. Hyawood-Farmer, who gives a typical definition, service is a total integration which customer had been offered through the particular facilities and service agent, which may have the visible or invisible changes. Regan, who said in 1963 and argued that service is an insubstantial activity which offers satisfaction directly or offers it together with the tangible products, he figured out 4 key features of service, which are: intangibility, heterogeneity, inseparability and perishability. In 1987, Stanton argued that service is the actions or activities which offers satisfactions but maybe or may not be correlated with physical products selling or other selling activities. In 1990, a scholar from Finland Gronroos gave the definitions of service: One or a serial of actions which can help customer to solve the problems and happen between customers and service agent, physical products and service systems. Philp, the famous marketing research expert who gives the service name in 1997: service is a kind of activities or benefits offered from one side to another part which normally is invisible and will not result in the properties reallocation. It may be happened with one physical product or has nothing to do with it. ISO gives the new definition of service which is a result that targets to satisfy customer and provided by suppliers through the interactions with customers and within the supplier organization. According to this, there will be two layers of understating on service. One is service which provided by suppliers to customers. Another one is service which happened between upstream and downstream process owners. That is the internal service.

There is an argue from China inland scholar Li Jianfang in 1990s', who is the first one gives the concept and definition of service as well as the service products. Service product is someone's labor output and is intangible. Social products are coming from service products and physical products. There are two features on the service products, one is intangible, and another one is the labor output. Huang Shaojun, who argued the service product definition from the property point of view, service is a kind of dynamic value from one property holder which consigned to another one's permission on the resources utilization. As conclusion, there is not any unique one about service definition but had been figured out based on different kinds of research aims and purposes.

Characteristics of Service

Despite of the service definitions till today, we can learn the features of service. It has 4 attributes: intangibility, heterogeneity, simultaneous production and consumption, and perishability;

The first one is intangibility; this is the most basic distinguishing characters of service and which can be learned from two layers. One is service is invisible, it cannot be seen, felt, tasted or touched in the same manner which people can sense tangible goods. Another one is the benefit from post service is hard to perceive. Hence, service production process is becoming complicated and abstract, even it is difficult to measure its quality. Customer only has perceptions on the particular service (good or bad) after receiving for a while. As a result, customer cannot make sure the service they received is the targeted one which they want to have.

Heterogeneity is the second key feature of service; this is about components of services and quality of service varied time to time. Since services are performance, frequently produced by humans, no two services will be precisely alike. It is hard to have a unique definition. It relates to service provider and customer. Varied from customer to customer, this time and the next time, it is difficult to have the congruency from employee to employee within the same service provider. As a result, it is critical to have qualified employee to work in front line (as the first interface with customer).

Simultaneous production and consumption, when compared to physical products, the majority of service products have customer involving and it is impossible to separate manufacturing, selling and consuming. It is combined within one deal and there is no way to split. Every single process checkpoint has customer involving as well as interactions. Hence, to make sure customers’ involving is positive, a kind of flexibility is needed. This requires service enterprise to optimize service process besides their service environment to fulfill customers’ requirements by utilizing service flow as well as service environment. Since service offered to customer is from internal employees, it is important to improve internal service level to support the external service.

Perishability, service is a sort of demand from customer and its production and consuming are happened simultaneously. There is no way to store, resell, refund once service offered. It will perish once service offered but no one to buy or utilize it. As such, firm or organization must pay attention to service recovery to prevent service errors.

2.3.2 Service Profit Chain

Before 1990s, all of firms from manufacturing and service industries focused on their targeted profits as well as their market shares. Along with economy rapid development, many top management teams of the famous firms realized that the goal of the enterprise should focus on the demanding of customers as well as the frontiers that are in front of customers. The service profit chain comes into reality and offers a reference to top management team as a powerful utility in terms of performance management within a firm or an organization.

The concept of service profit chain is a milestone of marketing. It is coming from three theories: customer loyalty, strategically service, the key factors of employees and customers loyalty.

Likild from AMA (1982), who discovers the researches from PIMS cannot reflect current enterprise profit at that time. PIMS, which claimed previously there is a strong correlation between profit and market share. There will be profit gain along with market share increasing; vice versa. While the study from Sasser pertains to the enterprise profit which indicates that customer loyalty will impact a lot.

In the middle of 1980s, Heskett (1987) who argues the points of strategy service. It has four elements. (1) Choose the market physiologically and statistically. (2) Categorize service concepts and products based on the final service result offered to customer as well as taking into consideration of the competitors’ products and customer requirements. (3) Operation strategy. It consists of organization, control, operation policy and process. This will offer customer more value than the cost of service. (4) Service delivered system, such as facilities, MIS and the supplementary of operation strategy related stuffs. The key point from strategically service which had been leveraged is that the value which customer received is the gap between results and costs of service.

In 1991, Schlesinger conducted a study on the key factors to loyalty of employees and customers, who revealed that there were high turnover rate from the firms who offered lesser educations and trainings as well as the personnel career development. As a result, the enterprise profit was turned down. To break through the cycle, he had run a trial together with his colleagues through the enterprise incentive plan re-designing, and received a positive result. Employees’ satisfactions improved and transformed as loyalty. It also reflected to daily works in terms of the quality of work and efficiency improvements. His studies did prove employees’ loyalty has relationship with customers’ loyalty.

In 1994, 5scholars from HBS created a model of “service-profit chain”. The service-profit chain establishes relationships between profitability, customers’ loyalty, and employees’ satisfaction, loyalty, and productivity. The links in the chain are as below: Profit and its growth are stimulated primarily by customers' loyalty. Loyalty is a direct output of customers' satisfaction. Satisfaction is heavily influenced by the value of services provided to customers. Value is created by satisfied, loyal, and productive employees. Employees' satisfaction, in turn, provides services with high quality. The service-profit chain is also defined by a special kind of leadership that emphasizes the importance of each employee and customer. In short, the customers' satisfaction depends on employees' satisfaction. While employees' satisfaction is determined by job design, new hire selection and education, incentive plan as well as the service tools, utilities and technics. In addition, the resign interview and employee service hot line can also be a utility to understand the employees' satisfaction. Hence, it is the first step to improve customers' satisfaction by improving employees' satisfaction.

Heskett et al. (1994) state that: *The Service-Profit Chain establishes relationships between profitability, customer loyalty, and employee satisfaction, loyalty and productivity (p.164)*

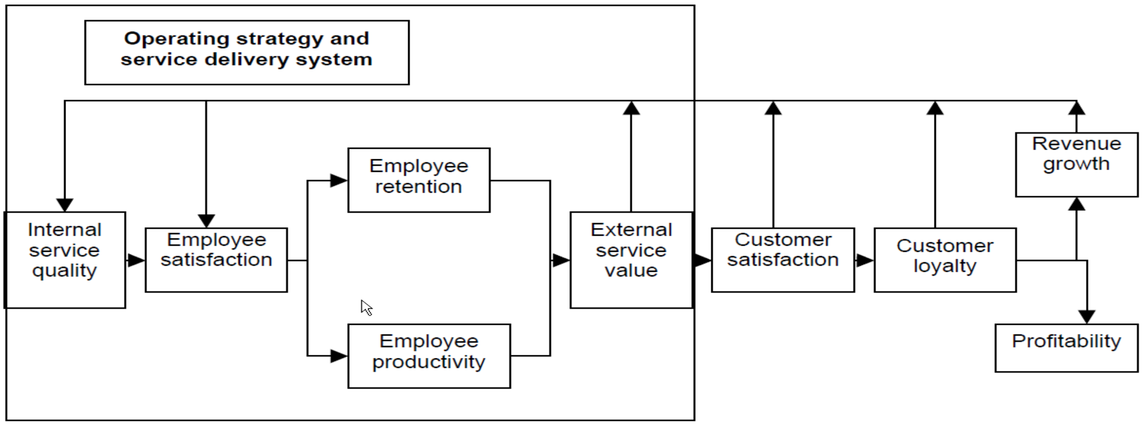

Operating strategy and service delivery system
Internal service quality
Employee satisfaction
Employee retention
Employee productivity
External service value
Customer satisfaction
Customer loyalty
Revenue growth
Profitability

Figure 2-4 The service profit chain

Source: Heskett et al (1994)

2.3.3 Internal Marketing

The Definition of Internal Marketing

Internal marketing is a concept raised out by Berry (1976) in 1970s, he argued this during his research in service industry, and argued that it was a method in terms of service quality improvement. Berry (1981) argued that: In order to achieve firm's goals, you should treat employee as customer and the job as the products to fulfill the employees' requirements.

In 1980s, internal service is becoming more and more important and had been studied in some marketing, service management and management literatures. However, it became a hot topic since 1990s.

The definition of internal service is still not consentaneous. A common one which had been referred many times is: It is a philosophy to treat employee as customer and a strategy to adjust the job to meet employees' requirement. It is always linked with "marketing-oriented", service culture, delegation to service providers; which involves in the firm's philosophy, human resource management, service management and change management. Rafig and Ahmed (2000) studied the literatures in the past two decades and observed there are three independent but has cross interaction phases on the internal service.

1. Employee incentive and satisfaction

In the early phase, internal marketing is more focusing on the concerns from employees' incentive and satisfaction. What behind this is the belief of benefits of service quality improvement through doing internal marketing; There is a pre-condition that "To keep satisfied customer, firm must keep satisfied employee" (Geroge, 1977). Sasser and Abreit (1976) argued that employee is the most important market; they claimed that job is product, employee is customer. They applied marketing knowledge in human management field. This can help on customer satisfaction improvement by training and improving satisfactions of employees who interact with customers. Just likes what Berry, Leonard L, and Parasuraman, A. mentioned that internal marketing is " to attract, retain, motivate and retain employees with satisfied job-product, it is a philosophy by treating employees as the internal customers… and it is a strategy of job-product fits (Berry and Parasuraman,1991)". Gummesson, who did a summary and argued that the capability of an employee that can influence and satisfy others is an antecedent of external customer satisfaction, once the internal customer relationship is good, the quality of service result can reach excellent, then can create satisfied, better and happier customers. (Gummesson, 2000).While, even it is more attractive for those analysis, Rafig and Ahmed (1993) argued a lot of potential questions from this mode, such as differences between external and internal customers. The internal customers, who are employees and have no permission to choose the products; normally, they have to accept the contract or quit. And to keep entire employees satisfied, it will be a big cost to firms.

2. Customer focus phase

The representative of this phase is Gronoos (1981). He focused on employees who had interactions with customers, their feedbacks from "interaction marketing" (called by Gronroos). He acknowledged that interactions between customers and employees can influence re-buy behaviors. And the most important thing is that it can provide opportunities' for firms marketing. To utilize those opportunities, it is necessary to educate and train the employees' customer sense and sales sense. Hence, the goal of internal marketing is to get the energized and trained employees who have customer sense. (Gronroos, 1981). He also pointed out that the energized employee may not perform well unless they have appropriate sales sense. And effective internal marketing also required effective support to frontline employee from backend employee. Gronroos argued that internal marketing is an instrumental to integrate the different functions within a firm. Hles and Quester agreed with the above statements.

Johnson and Seymour (1985) argued their understanding of internal marketing, which focused on an environment definition that internal marketing, is trying to set up an environment which can build up customer sense and service sense. Johnson, Scheuing and Gaida also argued that internal marketing is a way for employee to learn vision and mission of an organization, and achieve goal through training, energizing, and evaluating.

3. Strategically execution or changing management phase

This is the third phase of internal marketing notion evolving, and its key features are that it has been treated as a strategically execution or approach. Winter (1985) is the first one who studied internal service together with the organization strategically implementation. He emphasized that the value of internal service is: to reach the organization goal by collaborating, coaching and the employee motivation; Along with this, employees acknowledge the value from whole program and they will be part of it.

As of the benefit of internal service people believed from the cross functional integration, it had been treated as a part of implementation tools and had been well studied. Such as Geroge (1990) argued that internal service is a kind of philosophy to integrate human resources as a whole or the progress within a firm from different functional teams. Glassman and Mcfee (1992) focused on the function of integration by doing internal marketing. Piercy and Morgan (1991) mentioned that, internal marketing is a strategy: Its purpose is to support external marketing plan through sharing marketing proposal with internal team and people, so as to get real time support once has any proposal revising or changes during implementation. Hence, study from this phase is far away from the original ones (such as employee incentive, customer orientation). Internal marketing is treated as one of a mechanism to eliminate isolations between each department (Martin, 1992) and reduce internal conflicts and minimize frictions on changes (Darling, Taylor, 1989; Rafiq and Ahmed, 1993). It had been applied in cross organizations within different firms besides the service industries. Line Harrel and Fors (1992), who applied internal marketing in manufacturing industries.

By reviewing the three phases of internal marketing studies on its advantages and weakness points, and considering internal marketing application scope, Rafig and Ahmed (2000) argued their definitions on internal marketing as: It is a planned efforts, by application of marketing-like method to overcome frictions of organization re-forming, and in order to implement cooperate strategy and organization tactics to collaborate, stimulate and cross functional coordination and integration, it is a program and progress to reach customer satisfaction finally through doing employee motivation and training their customer sense.

Regarding how to implement internal service, many scholars had conducted quite a few studies from different angles. Reynoso and Mores (1999) describe a six-step method to implement internal service: (1) define internal customer and supplier; (2) set up a goal to improve employees' internal service sense; (3) measure the quality of internal service; (4) communicate expectations from internal customer to internal supplier; (5) urge internal suppliers to change work mode to meet expectations from internal customer; (6) re-measure internal service quality and provide feedback to internal supplier.

Studies on internal marketing

Most of studies are focusing on descriptions due to the lack of oversea scholar's research missing. It is rarely to have a study for value-added point of view from internal marketing and its' application. Meantime, majority of researchers have different kinds of opinions as well as understandings from different application field. Table below are a brief sum.

Table 2-1 Different scholarly approaches in conceiving internal marketing

Authors	Date	Key Points	Type
Berry, Hensel and Burke	1976	Internal marketing results in jobs(Internal products) that satisfy the needs of employees(Internal market) while satisfying the objectives of the organization Targeted to front-line personal A behavioral-instrumental approach Internal marketing is a strategy, a marketing program based on communication with employees, the development of their potential and motivating-remunerating tjose who offer excellent service.	Normative

Sasser and Arbeit	1976	Internal marketing results into job satisfaction Targeted to front-line personal A behavioral-instrumental approach Internal marketing is implemented through internal marketing research and job re-engineering aimed at developing jobs that attract and retain excellent service providers.	Normative
William	1977	Internal marketing results in greater job satisfaction Targeted at front-line personnel A behavior-instrumental approach Internal marketing is a strategy to deal with status and pay concerns of front-line personnel in order to improve customer service	Normative
Berry	1981 1987	Internal marketing results in job satisfaction Targeted at front-line personnel A behavioral-instrumental approach Internal marketing is a strategy for job re-engineering and internal communication amied at deriving custome minded front-line personnel	Normative
Gronroos	1983	Internal marketing in customer consciousness Targeted at the entire organization and all employees A hehavioral-instrumental approach Internal marketing is strategy for developing the required “state of Mind’ that will allow customer service effectiveness under a broader relationship management paradigm	Normative
Tansuhaj,Wong and McCullough	1987	Internal marketing results in increased levels of job satisfaction and commitment to the organization Targeted at front-line employees	Empirical
Gummesson	1987	A behavior-instrumental approach Responsibility of the company’s marketing specialists (marketing and sales departments) Internal marketing is implemented through communication with employees Internal marketing results in increased levels of productivity and efficiency Targeted to all employees involved in the service value-creation chain A mechanic approach Internal marketing is implemented through communications with employees and cultures change mechanisms	Case study

Tansuhaj,Wong and McCullough	1988	Internal marketing results in increased levels of job satisfaction and commitment to the company Targeted to front-line personnel A behavioral-instrumental approach Responsibility of the company's marketing specialists (marketing and sales Departments) Internal marketing is implemented through communications with employees	Normative
George	1990	Internal marketing in effective internal exchanges Targeted at all employees A holistic approach Internal marketing is implemented through coordinating human resource and marketing departments to improve company's service orientation	Normative
Rafig and Ahmed	1993	Internal marketing results in increased marketing strategy effectiveness by aligning, motivating and integrating the employees towards the implementation of company strategies Targeted at all employees A holistic approach Internal marketing is implemented through the application of marketing techniques along with human resource management practices to facilitate the implementation of the company's market objectives.	Normative
Foreman and Money	1995	Internal marketing may have various objectives depending on who is targeted (specific groups of employees or the entire organization) Can be Targeted at the specific departments or at the entire organization A behavioral-instrumental approach Internal marketing is implemented through communication. Development and participative management and motivation and rewards	Empirical
Forman and Varey	1995	Internal marketing results in satisfaction of the employee's needs. Both as individuals and service providers Targeted at front-line personnel A holistic approach Internal marketing is implemented through internal communication aiming to"sell' the importance of customer service	Normative

Peircy	1995	Internal marketing results in strategic alignment Targeted at those who can influence the implementation of the marketing strategy A behavioral-instrumental approach Internal marketing allows the removal of interdepartmental barriers for developing and implementing the company's market objectives.	Normative
Gronoos	1997	Internal marketing results in sales-and service-minded personnel Targeted at all employees, regardless of job description and hierarchy A behavioral-instrumental approach Internal marketing should integrated with the marketing function because marketing is the responsibility of every employee who influences customer's value	Normative
Wasmer and Bruer	1999	Internal marketing results in individual employee's objectives alignment with company objectives Targeted at all employees A behavioral-instrumental approach Internal marketing is implemented through formal and informal internal market research and communication to "sell' the company's objectives internally	Normative
Varey and Lewis	1999	Internal marketing is change management Targeted at all employees A holistic approach Internal marketing is the philosophy and the behavior that allow rapid change in response to the company's marco and micro envroments	Normative
Rafig and Ahmed	2000	Internal marketing results in increased productivity and job improvements Targeted at all employees A holistic approach Internal marketing is the planned effort to achieve employee satisfaction, customer satisfaction and interfunctional coordination through employee empowerment	Normative
Ahmed and Rafig	2003	Internal marketing results in increased productivity and improvements Targeted at all employees A holistic approach Internal marketing is a cultural framework and an instrument to achieve strategic alignment, while building customer service competence, by managing internal relations through internal communication	Normative

Naude,Desai and Murphy	2003	Internal marketing results in increased job satisfaction and market orientation adoption Targeted at all employees involved in the service value-creation chain A mechanical approach Internal marketing perceived implementation is influenced by individual and organization characteristics	Normative
Ballantyne	2003	Internal marketing results in knowledge renewal Targeted at all employees A mechanical approach Internal marketing influence service procedures and operations facilitating their re-engineering using input from both the external and internal environment	Normative
Lings	2004	Internal marketing orientation(IMO) represents a company philosophy IMO results in increased levels of job satisfaction Targeted at front-line personnel A cultural approach Three major facets of IMO, namely internal market research, communications, response	Normative
Lings and Greenley	2005	Internal marketing interchangeably used with internal market orientation to describe the effort to empirical Improve internal climate Results in increased levels of job satisfaction Targeted at from-line personnel A behavioral-instrumental approach Four major facets of such internal marketing program, namely formal information generation, informal information generation, information dissemination and responsiveness	Normative

Chinese inland scholars' researches on internal marketing just started in recent years. There are many papers and thesis to discuss it and can be clustered into four categories:

(1) Review and study researches from inland and overseas scholars, focusing on the notion of internal marketing, its content and the value within organization, and the tactics to implement internal marketing (Sun Tao, Sun Yiqun(2003), Huang Jing, Wang Jiaguo (2003), An Hui (2007), He Chunhui He(2007)). This indicated the study about internal marketing in China is at entry level. Needs more dedications on it.

(2) Analyze the relationship between internal marketing and inter-functions such as the relationship between internal marketing and external marketing (Chen Ziping,(2008)), the relationship with company culture (Huang Jing(2002), Han Yudong (2007), the relationship with human resource management (Guang Beilan together with others (2006), Song Qinan together with others (2007)), and the relationship with interface management (Sang Hui

together with others (2007)), the relationship with organization trustworthy.(Lin Min, (2008)).

(3) Theoretical study on internal marketing, and the combination of internal marketing strategy. For example: Shou Zhigang and Gan Biqun (2004) studied internal marketing by three facets, (marketing; marketing organization; Marco marketing), and set up a framework of extended internal marketing theories. Liang Wei (2003) brought out a three-step model for internal marketing application by analyzing internal marketing strategy combination within a firm. Zhang Yancai and Han Yiqi had created a model which is based on service blueprint and internal customer mapping.

(4) Empirical studies. Most of scholars from China inland which had conducted studies on internal marketing are in hoteling industry. Zhang Tongjian (2008), sampled hotels and tested 276 hotels from Beijing, Yunnan, Sichuan, Guangdong, Jiangsu, Zhejiang, and Hunan.

In short, most of Chinese inland scholars still focus on qualitative study instead of quantitative study on internal marketing. And most of them have lesser systematic analysis. Meanwhile, the overseas analysis may not be applicable in China due to culture difference.

2.3.4 Internal Service

There is not a unique definition for internal service till today. Davis (1992) argues that internal service is a series of regular works, programs, and actions in terms of supporting the other functional teams which is deployed by an organization. It emphasizes the interactions within an organization as well as its intensively connection level. The difference between internal service and external service are the customer bases. The customer base of internal service is the internal employee of a firm; while customer base of external service are the customers of an organization or a firm. Nagel and Ciller (1990) argued that internal customers are the employees of a firm, the product and service they received which is offered by other employees within a same firm. While, according to Marshall et.al, the differences between internal customers and external customers are: 1) internal customers have no choice on the products or service which organization or firm offered, 2) external customers can select the service place, 3) internal customers are acting as professional customers in terms of product or service receiving. They are knowledgeable about the service which was offered to them.

Based on previous analysis from domestic and overseas scholars, this thesis defines internal service as: Internal service is a series of activities (works, programs, actions and policies) which is developed to promote teamwork in terms of coordination within a firm or an organization; it is supposed to help on team goals’ accomplishment besides individual’s development. Normally, it covers lots of areas and it can be characterized into three portions based on its functionalities. (See the figure below). 1) Supportive service, 2) Hiring and development service, 3) Incentive service; and details of each service can be illustrated as below:

Portion I: Supportive Service. To be efficient and effective in employees' jobs, staffs require internal support systems that are aligned with their needs to be customer focused. This is the fundamental of internal service. It requests firm or organization to set up and provide needed support systems. This service has three parts: the first one is to provide supportive technology and equipment. When employees do not have the right equipment or their equipment fails, they can be easily frustrated in their desire to deliver quality work. To do their jobs effectively and efficiently, employees need the appropriate equipment and technology; meanwhile, having the appropriate technology and equipment can extend into strategies regarding workplace and workstation design. The second one is to develop service-oriented internal processes. To best support each staff in their delivery of quality work, an organization's internal processes should be designed with customer value and customer satisfaction in mind. In other words, internal procedures must support quality service performance. To the firms who still have internal processes driven by bureaucratic rules, traditions, cost efficiencies, or the needs of employees, providing service and customer oriented internal processes is implying a need for total system redesign. Normally, those kinds of redesign of system and processes are called "processes reengineering". The third one is to promote timely communication and set up the appropriate communication channels (like regular skip level meeting, face to face one to one meeting.). Most empirical studies indicate the team performance will be affected if timely communication within a team or an organization is not in place. By firstly acknowledging that everyone in the organization has a customer and then measuring customers' perceptions of internal service, the organization can develop an internal service culture. The way to encourage supportive internal service relationship is to measure and reward internal service. In the end, this will help improve the employees' satisfactions.

Portion II: Hiring and development service. Internal service includes hiring as well as people and team development activities. It targets to build up a team which has customer oriented and service minded workforce, so as to make sure team can effectively deliver service quality, and ensure the service performance. This service has three parts. Firstly, to hire the top notch people and be preferred employer. To effectively deliver service quality, considerable attention should be focused on recruitment and hiring personnel. Those attentions are contrary to traditional practices in terms of lowest wage, education background oriented certifications. It is focused on the candidates' service competencies, service inclination and willingness besides their technical professional expertise, and by completing for talent market share (called by Berry and Parasuraman), the people can be selected and referred to the top notch candidate. Meanwhile, the firms or organizations need to learn to be a preferred employer to attract the best people. There are many approaches to be a preferred employer, For example, firms can provide the concentrated training and people care environment. Secondly, to train and work with these individuals to ensure service performance through technical expertise training and interactive skills training which is called soft skills training. Most of organizations are quite conscious of and relatively effective at training employees in technical skills. Those skills can be taught through formal education or through on-job- training. Meanwhile, service employees also need interactive training, so as to make sure they know how to engage in pleasant conversation, ask questions or use humor during they interact with customers. Thirdly, to empower employees and promote teamwork; empowerment means give employees the authority, skills, tools and desires to work in the team and work for customers. Especially, employees need the knowledge and tools to be able to make the appropriate decisions in front of customers. Although the key to empowerment is giving employee authority to make decisions on the customer's behalf, authority is not enough; employees also need incentives to make the right decisions. Meanwhile, if employee is empowered along with their career path well developed, it will be critical to keep them up to the speed in terms of facing new challenges when facing competitions in front of customers. In addition to having employees' empowerment, teamwork promotion is another key action in supportive service. The nature of service jobs suggests that customers' satisfactions will be enhanced when employees work as teams. Through prompting teamwork, an organization can enhance employees' abilities to deliver excellent service while the camaraderie's and support enhance their inclination to be excellent service provides.

Portion III: Incentive service. Employees turn over, especially when the best in class ones are leaving will result in very detrimental to the customer satisfaction, employee morale and overall service quality. Hence, the incentive services are normally offered to the best employees. There are three parts within the incentive service. 1) Include employees in the company's or organization's vision, which is called enhance employees commitments to company's vision as well. For employees who remained motivated and interested in staying with the organization, it is necessary to share an understanding of the organization's vision; employees who deliver the service everyday need to fully understand how their jobs fit into the big pictures in terms of company's vision and organizations' goals. If there is no commitment to vision, the best in class employees will be attracted by other opportunities in end. The normal practice is to keep the vision communicated frequently to employees and it should be followed a top-down communication path, which is initiated by top managers. When the vision and direction are clear and motivating, employees are more likely to stick with company through the inevitable tough times along the path to the vision. 2) Treat employees as customers. The product offered to employees are a job with assorted benefits and quality of life; and lots of companies have adopted this idea that employees are also customers of the organization, basic marketing strategies can be applied on them; If employees feel valued and their needs are taken care of, they more likely to stay with the organization. 3) Timely measure performance and reward strong performers. The reward system will value productivities, sales, or other dimensions that can potentially provide good service. Timely performance measurement and rewarding will affect the turnover of the top notch employees significantly. Hence, to keep the best in class performers in an organization, timely reward and promote them is a must to a firm.

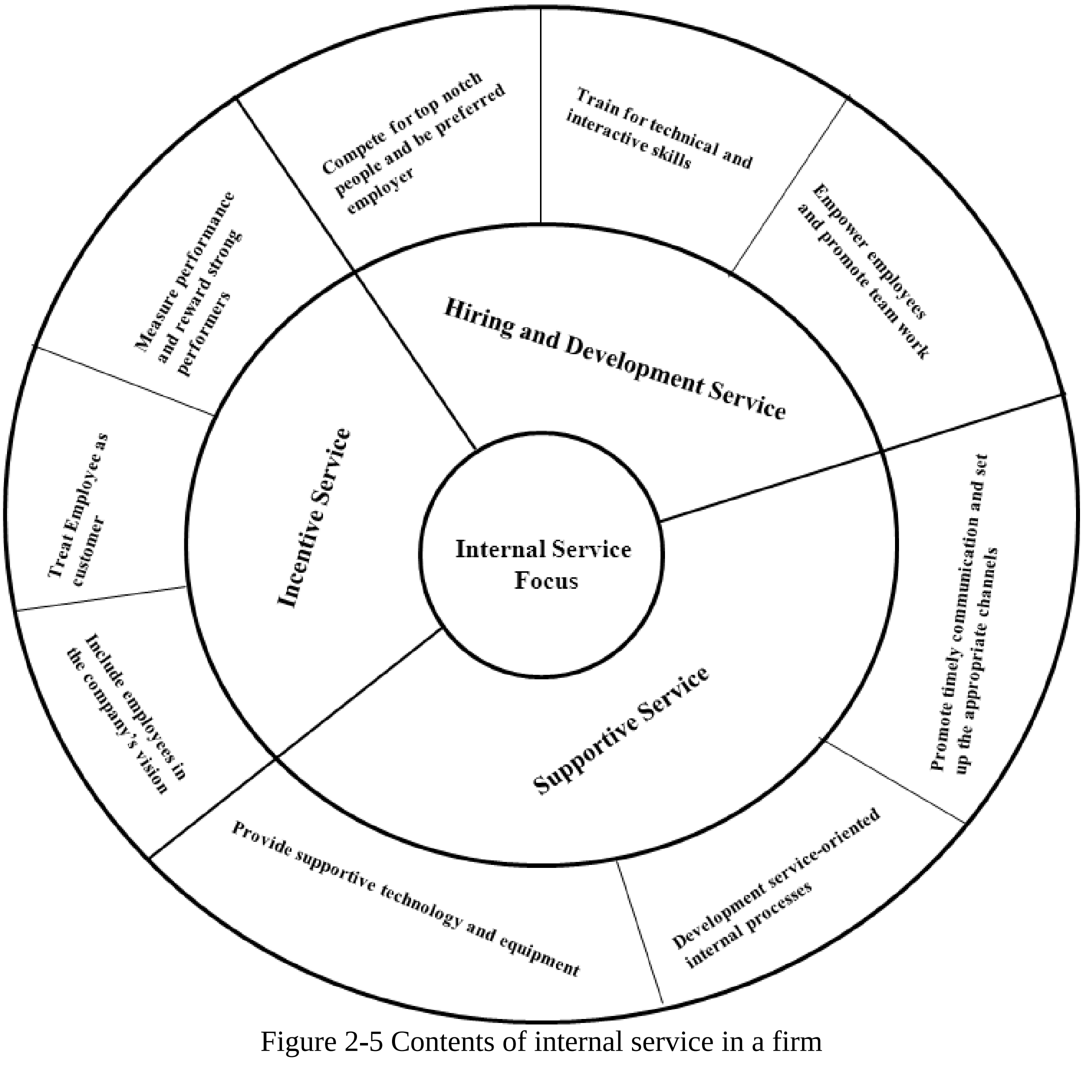

Internal Service Focus
Hiring and Development Service
Incentive Service
Supportive Service
Compete for top notch people and be preferred employer
Train for technical and interactive skills
Empower employees and promote team work
Promote timely communication and set up the appropriate channels
Development service-oriented internal processes
Provide supportive technology and equipment
Include employees in the company's vision
Treat Employee as customer
Measure performance and reward strong performers

Figure 2-5 Contents of internal service in a firm

2.3.5 Internal Service Quality

The notion of internal service quality is coming from external service quality. Parasuraman, Zeuthamal and Berry (1985) give a definition of that service quality is a gap between customer's perceptions of service received and the expectations of service delivered. The equation is: service quality=perceived service-expected service. When expectations are exceeded, service is perceived to be exceptional quality and also to be a pleasant surprise. When expectations are not met, however, service quality is deemed unacceptable. When expectations are confirmed by perceived service, quality is satisfactory. While internal service quality is the prerequisite of external service quality, internal service quality is a guarantee of external service (Gronroos, 1981).

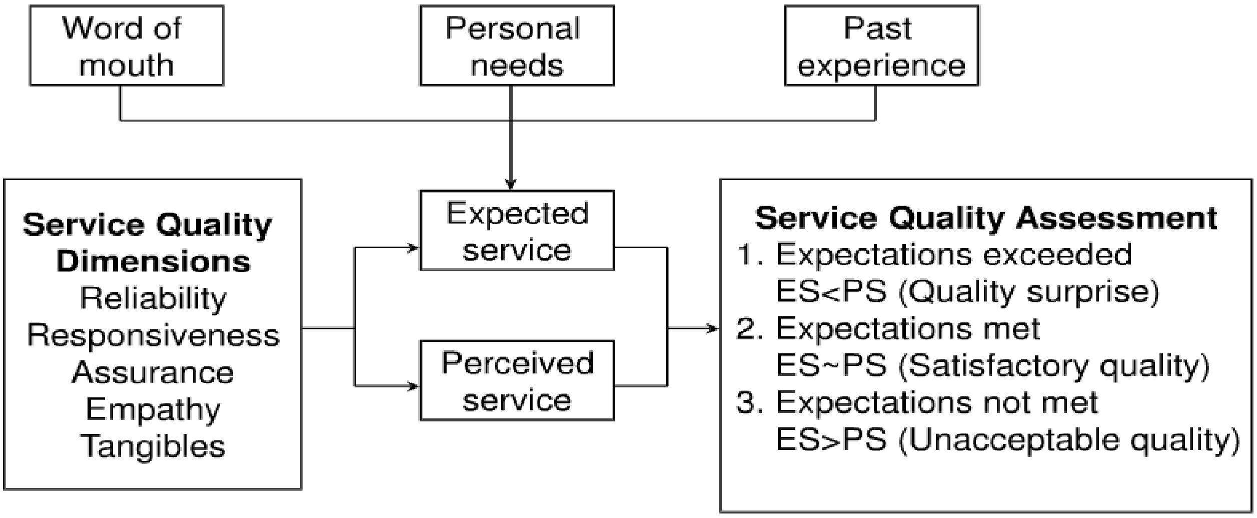

Word of mouth
Personal needs
Past experience
Service Quality Dimensions
Reliability
Responsiveness
Assurance
Empathy
Tangibles
Expected service
Perceived service
Service Quality Assessment
1. Expectations exceeded
ES<PS (Quality surprise)
2. Expectations met
ES~PS (Satisfactory quality)
3. Expectations not met
ES>PS (Unacceptable quality)

Figure 2-6 The relationship within service quality characterization

*Source:*PZB et al (1985)

Model of Internal Service Quality and It's Measurement

Many factors may impact service quality. The gap analysis mode from PZB (1985) is raised (see the figure below).

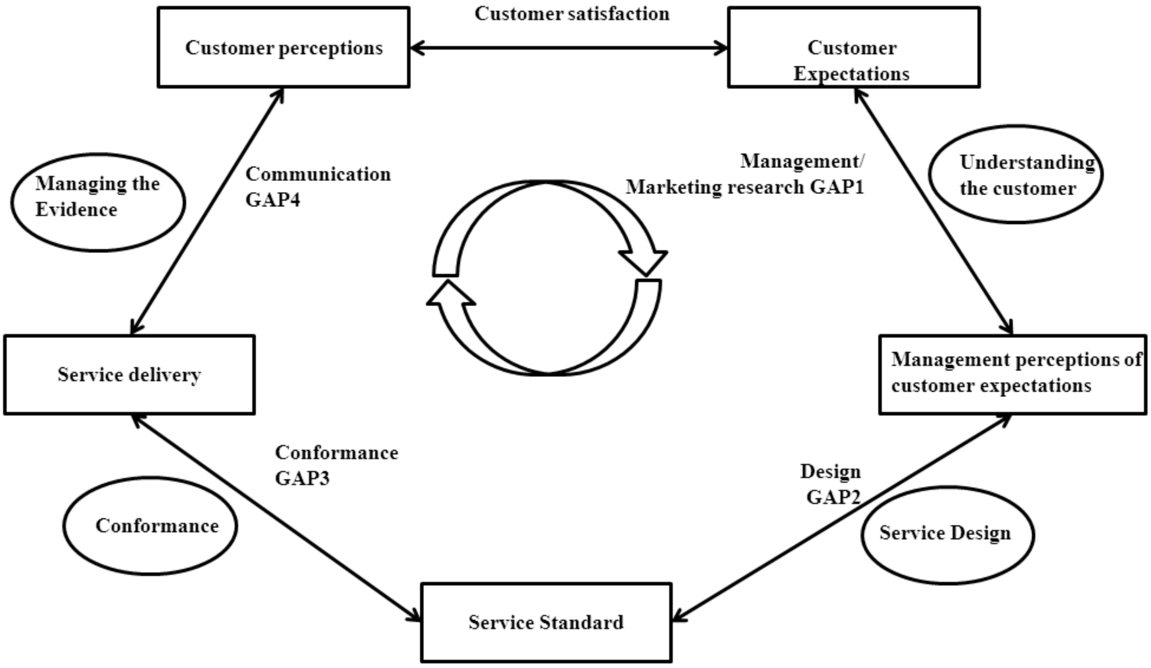

Customer satisfaction
Customer perceptions
Customer Expectations
Managing the Evidence
Communication GAP4
Management/ Marketing research GAP1
Understanding the customer
Service delivery
Management perceptions of customer expectations
Conformance GAP3
Conformance
Design GAP2
Service Design
Service Standard

Figure 2-7 The model of service gap analysis

*Source:*PZB et al (1985)

The first gap is the discrepancy between customer expectations and management perceptions of the expectations. Gap1 arises from management's lack of fully understanding about how customers formulate their expectations on the basis of a number of sources: advertising, past experiences, personnel needs, and communications with friends. Strategies to close this gap include improving market research, fostering better communication between management team and its frontier employees, and reducing the number of layers of management team.

The second gap is the results of management's inability to formulate target levels of service quality to meet perceptions of customers' expectations and translate those into workable specifications. Gap 2 may come from a lack of management teams' commitment to service quality or a perception of the unfeasibility of meeting customers' expectations; Setting goals and standardizing service delivery tasks can close this gap.

The third gap is referred to service performance gap because actual delivery of the service does not meet the specifications set by management team. Gap 3 can arise for a number of reasons, including lack of teamwork, poor employee selection, inadequate training, or inappropriate job design.

Customers' expectations on the service are formed by media advertising and other communications from the firm. Gap 4 is the discrepancy between service delivery and external communications in the form of exaggerated promises and lack of information provided to contact personnel.

The function is **Gap 5=f(Gap1,Gap2,Gap3,Gap4)**

Frost and Kumar (2000) design a model for internal service which based on PZB service gap model .See the figure below

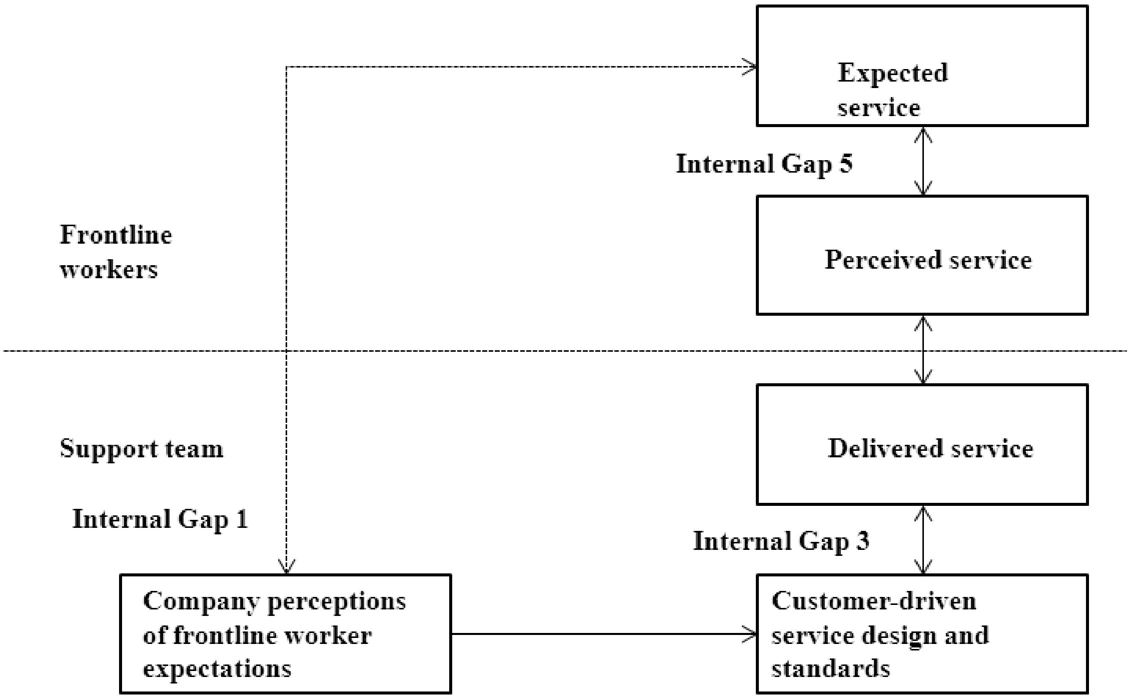

Expected service
Internal Gap 5
Perceived service
Frontline workers
Support team
Delivered service
Internal Gap 1
Internal Gap 3
Company perceptions of frontline worker expectations
Customer-driven service design and standards

Figure 2-8 The gap model of internal service

Source: Frost and Kumar (2000)

Internal gap1 is the difference between the perceptions of support team (internal service provider) and the expectations of frontline workers; internal gap3 is the difference between service normative and delivered service. This gap will result in the internal service gap.

There is no standard measurement on the internal service quality. Parasuraman et al (1988) develop a service quality table which called SERVQUAL for external service, and it used be a tool for internal service quality management. However, along with the studies conducted, it had been observed that there exists the difference between the external and the internal service. Crawford&Getty (1991) who had applied the service model during study internal and external customers and found lots of difference: internal customers more focus on resource allocation, the clear responsibilities, the standards of communication, and the decision making and motivation; while the external customers more focus on atmosphere, immediacy, reliable, and personnel service quality, value as well the service delivery. Hallowell et al.(1996) summarized the 8 dimensions of internal service (See the table below) (internal serrva Qual). There is a big difference between the servaqual from PZB team.

Table 2-2 The 8 dimensions' of internal service

Internal service quality elements	***Definitions***
Communication	Is that any effective communication within employee or within department?
Policy and Flow	
Teamwork	
Management support	
Goal alignment	
Effective training	
Service facility	
Recognition and reward	

Source: Hallowell et al. (1996)

Research status on internal service

Many overseas scholars had conducted a lot of studies on the measurement of internal service. Most of the internal service quality studies focus on measurement of internal service from different industries, which is based on service-profit chain management orientation.

Summary below is from Chinese inland scholars, who study internal service:

(1) The relationship between internal service and firm organization study. Wen Jinfeng (2000) studied the relationship between internal service and organization performance. Man Peng and Zhang Wei (2000) who combed through the internal service mode (PZB) studied the team atmosphere and its structure as well as how it impacts service quality (the mechanism and approaches).

(2) The relationship between internal service and external service study. Wang Chunxiao and Cen Chengde (2001) mentioned that internal service quality may impact external service quality directly or indirectly. Qing Qianglong (2003) set up the comparison mode between internal service and external service.

(3) The measurement of internal service and evaluation study. Tang Xiaofen (2003) used the extended GAP model to build up the index of service progress. Jin Chunhua and Liu Yu (2005) developed a table to measure internal service quality in HR team and conducted an empirical study based on this. Wu Kewei (2005) studied internal service quality in IT firms based on the model from PZB, and revised it based on 4 more dimensions from internal coordination. Gao Yuan (2006), who studied the elements of internal service in government. Huang Peilun (2008), has done an empirical study in telecom firms, and validated the model

of internal service and the quality of relationship impact on the internal customers' loyalty.

2.4 Brief Summary

First, this chapter goes through the historical studies of team performance management and improvements of the past decades. It is reviewed on concepts of team performance, its' influenced factors, as well as the utilities and theories for team performance management, such as MBO, KPI, I.P.O. mode, the boundless organization

Secondly, this chapter does a quick comb through researches of internal marketing, internal service and internal service quality, which will be the fundamental theories and practice of the thesis in terms of team performance improvement mechanism built up. It has fully analyzed the recent studies and researches from both overseas scholars and China domestic scholars, on internals service theories (like internal marketing, internal service quality, the gap of service quality); Even though there already have some kinds of internal service based team performance management researches in place, most studies are focusing at firm level performance managements and it is too theoretical to implement for a particular department somewhat; Most studies results are from purely service companies (like banks, hotels, restaurants, Assurance). Neither of them has been dedicated on the performance management in terms of CTS team within high-tech firms which has its unique traits and practices.

Chapter 3: Action Research on STX China CTS Tea Performance

3.1 The Research Path

This study will deploy the action research path based on the natural of this thesis. The first step is to analyze the job performance of STX China CTS team in terms of the status and the team goals; the second step is to quantify the gaps based on questionnaire and in-depth interview with the peers, counterparts and customers who are interacting with CTS folks; the third step is to comb through the results in terms of in-depth interview and questionnaire; Finally, to figure out the key factors which have significant impacts on the CTS team performance management, and build up a model on behalf of team performance improvement.

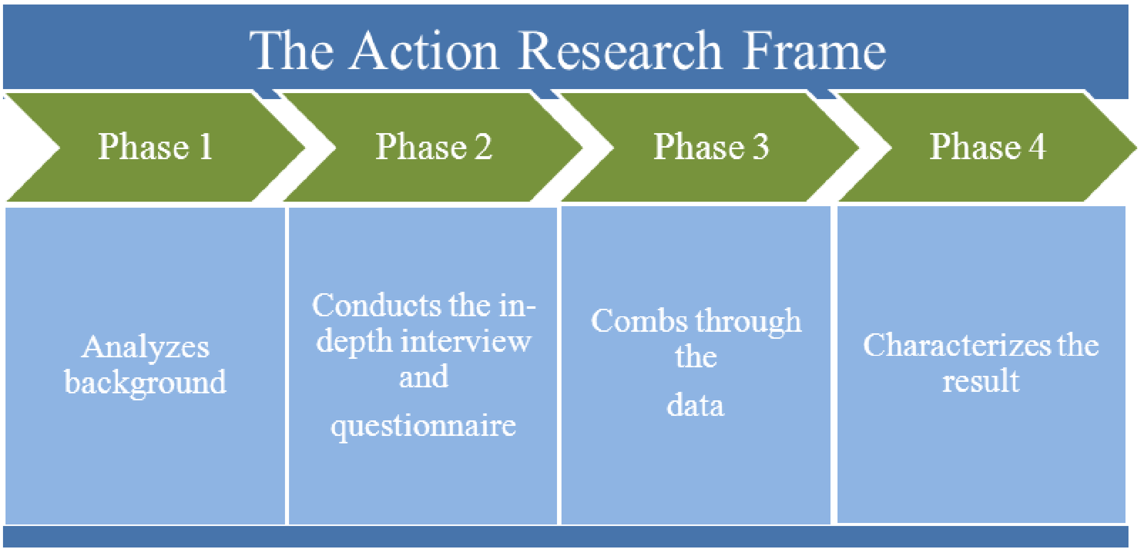

The Action Research Frame
Phase 1
Phase 2
Phase 3
Phase 4
Analyzes background
Conducts the in-depth interview and questionnaire
Combs through the data
Characterizes the result

Figure 3-1 The action research frame

3.2 The Detailed Background

3.2.1 STX Presence in Global and China local

STX was founded in 1979, which is the leading provider of storage devices in 2008. It became the first hard drive manufacturer to ship 1 billion hard drives. Its' products include 2.5 inch and 3.5 inch hard disk drives, solid state drives and hybrid drives (which incorporate both rotating media and flash memory) for compute–intensive enterprise environments that demand high performance, low–power consumption and proven reliability.

S’s products are widely used in high performance desktop and laptop systems, ultraportable devices such as netbooks and thin laptops. It delivered the industry’s first 2TB, 7,200 RPM desktop hard drive, along with the world’s first 7mm, 2.5inch form factor drive. These innovative storage products deliver super-sized capacities, industry leading performance, encrypted security features and more.

In addition to the hard disk drive manufactory, STX recovery services transform inaccessible data into accessible data from any brand of hard disk drive, server applications data storage technology and virtualized environment. Leveraging the engineering design and technology resources of the world's most trusted and reputable name in storage technology, STX offers the most advanced data recovery services available today.

STX has been at the forefront of the storage industry for over 30 years. With executive offices located in Cupertino, California, It employs more than 50,000 people around the world to contribute the development of breakthrough storage products. From the first 5.25 inch hard drive for PC to the development of perpendicular recording technology, STX has pioneered new industry standards in the digital information age and continues to help individuals and businesses maximize the potential of their digital content through technology leadership and innovation.

While, in China, there are two factories which are located in Suzhou and Wuxi, in addition, there are 4 sales and marketing office based in Beijing, Shanghai, Shenzhen and Hongkong. It will have the fifth office in Chengdu to take care of the business from southwest of China. Business development team, Sales team, PLM (Product Line Management) team and CTS (Customer Technical Support) team are seating in the sales and marketing offices cross China. So far, there are around 50 CTS folks. They are taking care of the entire technical supports in terms of pre-sales and post-sales issues during new product qualification and launching, quality control and improvement on mass production products at customer side. (Example: In-line reject-rate reduction, field return reduction, quality matrix calibration, regular communication).

3.2.2 China CTS Team Staffing Characterization

To China CTS team, there are total 50 people and had been divided into two teams, one is dedicated on ODM customers management, which is called “Global OEM” sub-team. Another one is for China domestic customer’s technical support and Technical marketing. In the second team, there are 20 people. It was established in year 2009 along with China business development strategy.

Among the 20 people, 7 in shanghai, 5 in Beijing, 4 in Shenzhen and 4 in Chengdu. It was started from 6 people by the year 2009. (1 people in Beijing, 1 people in Shanghai, 4 people in Shenzhen).

The team practice in the year of 2009 was dedicated on technical issues trouble shooting only, as they have no ideas or plans to take care of others to support the goal of easy-to-do business. This resulted in the dissatisfaction from both internal and external customers.

The complaints from key customers were focused on the support professionals' skillsets both technical and communication skills. Some customer mentioned that they had been suffered this for about 2 years to make themselves understood. The high turnover rate of local support people had been a big headache. To resolve this problem, the application research had been conducted.

3.3 In-depth Interview

3.3.1 Voice of External Customers

First of all, to get external customers' requests fully understood, the in-depth interview question list had been developed and interviews had been completed within 6 weeks among 9 key customers cross China in the year of 2009. The questions are all open-end questions, and each of them had been allotted with 20 minutes. The discussion will last for one and a half hours.

The questions are: 1) What's the biggest challenge to you to deal with CTS members from Hard disk drive suppliers? 2) How do you think STX current CTS support compare to the competitions? 3) What are the last painful things you had on STX China CTS team? 4) What are your expectations on STX China CTS team? 5) How frequently did you talk about those topics (from 1 to 4) with STX Local CTS management team? And did you get the answers and results what you were looking for?

The first customer which was selected was Lenovo; the No 3 Personal computer manufacturer in the world in the year of 2009 (Today is the No.1 P.C. maker in the world). Headquarter of Lenovo group is in Beijing, while laptop research and development team are in Shanghai and Desktop qualification team are in Shenzhen. China CTS team has 3 people (1 dedicated in Shenzhen, 1 dedicated in Beijing, 1 shared headcount in Shanghai) to support them in the year of 2009 and before. After one and a half hours discussion with their HOD (head of storage department), the following outputs had been characterized. There is a big gap between what technical support STX offered and customer perceived. They are not satisfied with the entire CTS team support behaviors, especially on the longer TAT of CAs (Turnaround time of Issue's Corrective Action) once has any quality excursions. They even asked to replace some CTS engineers due to their bad performances. They strongly concerned that they had not been treated as the key OEM customers likes STX's doing for their competitions (such as Dell, HP, IBM, EMC). Even though STX is a little better than CTS team from other HDD vendors, they cannot accept those kinds of support practices. They are looking for the improvement plans as soon as possible and looking forward to having fundamental improvements in the year of year 2010.

Besides key OEM customers, the in-depth interviews with Tier2 OEM customers and key channel customers had been conducted accordingly. From the inputs we can see that those customers have a feeling that they had been overlooked for a long time. It seems STX has less interest to do business with them since there is even no support at all for quality excursion or technical issues on their products during integration and field. This indicates the customer sense of CTS team is not in place and has to be improved immediately. For more details, please refer to the appendix II on detailed discussions summaries.

3.3.2 Voice of Peers and Counterparts

Meanwhile, the in-depth interview had also been conducted with the peers and counterparts of CTS team. Such as sales folks, CQE folks, TCM folks, factory operation folks who had the daily interactions and engagements with CTS team, their inputs will be helpful to understand the current performance of the team demonstrated and delivered. Their inputs will be a key portion to CTS team performance improvements. Based on their inputs, we can easily conclude that CTS team are not well managed even it is in chaos both to customers and internal teams. Leaders and managers of this team need to take the improvement action immediately to get the performance well on track. More detailed interview summaries in the Appendix III

3.4 Survey

3.4.1 Questionnaire

To make sure the voice of customer are well understood as well as the performance of

CTS team are fully analyzed, the research should have both qualitative and quantitative analysis. Hence, this thesis deploys Likert scale as a utility to collect data for further and deeper analysis. Please refer to the appendix I for more details about the questionnaire.

The questionnaire has two parts. Part I is the basic information collection in terms of candidates’ department, age, gender, work experience, perceptions on team collaboration and performance management. Part II is the key portion of this questionnaire, which is designed to solicit the real inputs in terms of the team performance and recognition within the CTS team, from internal customers (peers, counterparts; namely sales team, factory operation team), external customers (namely, the firm customers). It has four segmentations, which includes the evaluation on CTS team’s performance from CTS team, the external customer teams, sales &marketing team, factory operation team.

The questionnaires have been sent to customers, internal peers and counterparts through email. Those candidates had been told to put their feedbacks in terms of the scores from point “1” to point “5” once they received the questionnaire. In this questionnaire: “1” means the strongly disagree, “2” means disagree “3” means agree on somewhat, “4” means agree, “5” means strongly agree.

This survey covers 8 IT hardware companies; 6 of them are big size companies, 2 of them are smaller size companies. 200 pieces of questionnaires has been sent out and 127 pieces with validated inputs and 80 piece of them are discarded due to incomplete inputs or misunderstand the questions or no feedback. Among them, there are 37 pieces from CTS team, 29 pieces from sales and marketing team, 37 pieces from customers side (focus on the frequently contact windows), and 24 pieces from factory operation team.

3.4.2 Data Analysis

Within the questionnaire in part II, the first one is CTS team self-evaluation on team performance; there are 11 questions designed within this segmentation and there is one parameter assigned for each question respectively (this means we will have 11 parameters studied once has the feedbacks). They are: A1: The team’s business results are delivered; A2: We would like to stay and work in this team moving forward; A3: We have very high efficiency in terms of task accomplishing; A4: We know the big picture (i.e. where the business is headed, the affected competition, and how we are doing); A5: We all devote ourselves into work to achieve the goal; A6: We work as a team; A7: We are capable to achieve team’s goal; A8: The job satisfaction is depending on other departments support; A9: We collaborate with other teams very well; A10: We have challenge to fulfill external customers' support request; A11: Each team member has strong technical expertise.

From the mean analysis: we can see: the mean of 9 parameters out of the 11 are lesser than 2; which indicating CTS team did not have much confidence in terms of customer management as well as the issues handling during daily work. People even would like to stay away from this team. Question A8 (The job satisfaction is depending on other departments support) has higher mean value. It indicates CTS team members fully understand that their job satisfaction is depending on the rest of team support and the appropriate team cooperation is needed. Please refer to the bar chart of mean as below.

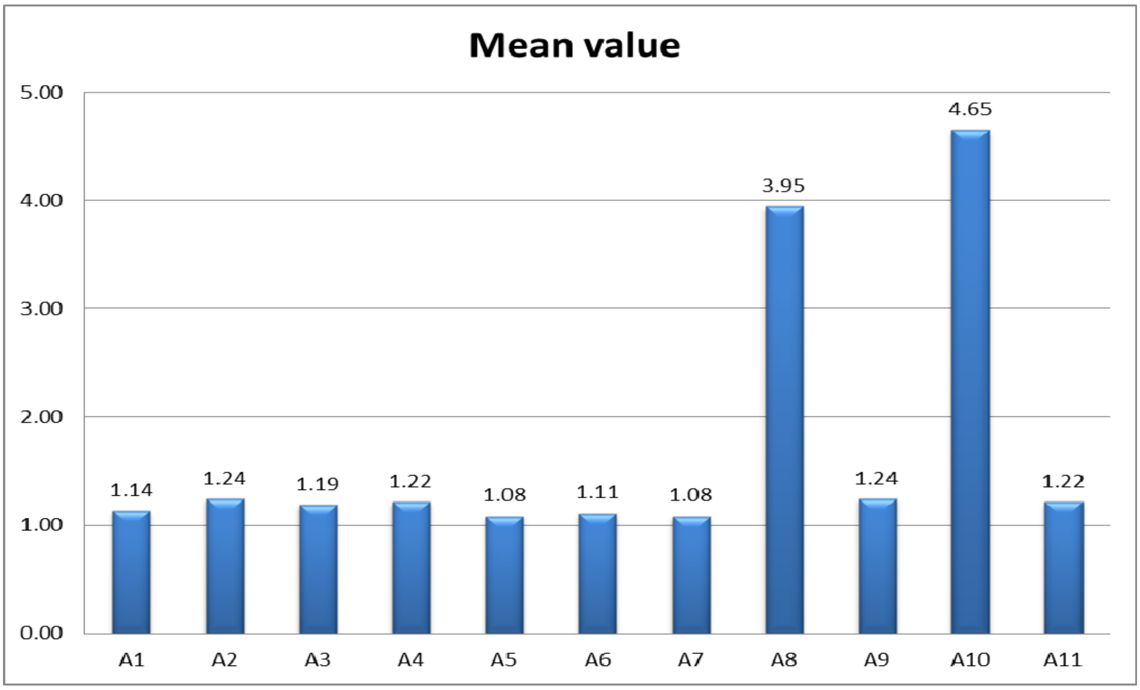


Figure 3-2 The mean value of CTS self-evaluation on their performance

From detailed analysis on each parameter by Pareto charts as below, it can be observed that 86.5% of people strongly disagree to the statement that team's business result are delivered, which means the CTS team have much room in terms of their team performance improvement; 75.7% people even would not like to stay with the team; 81.1% of people believe the team did not have very high efficiency in terms of task accomplishing. 78.4% of people are not clear about team's goal; 91.9% of people did not think the team has adequate capability to achieve its goal; 64.9% of people believe there is challenge to fulfill external customers support requests.

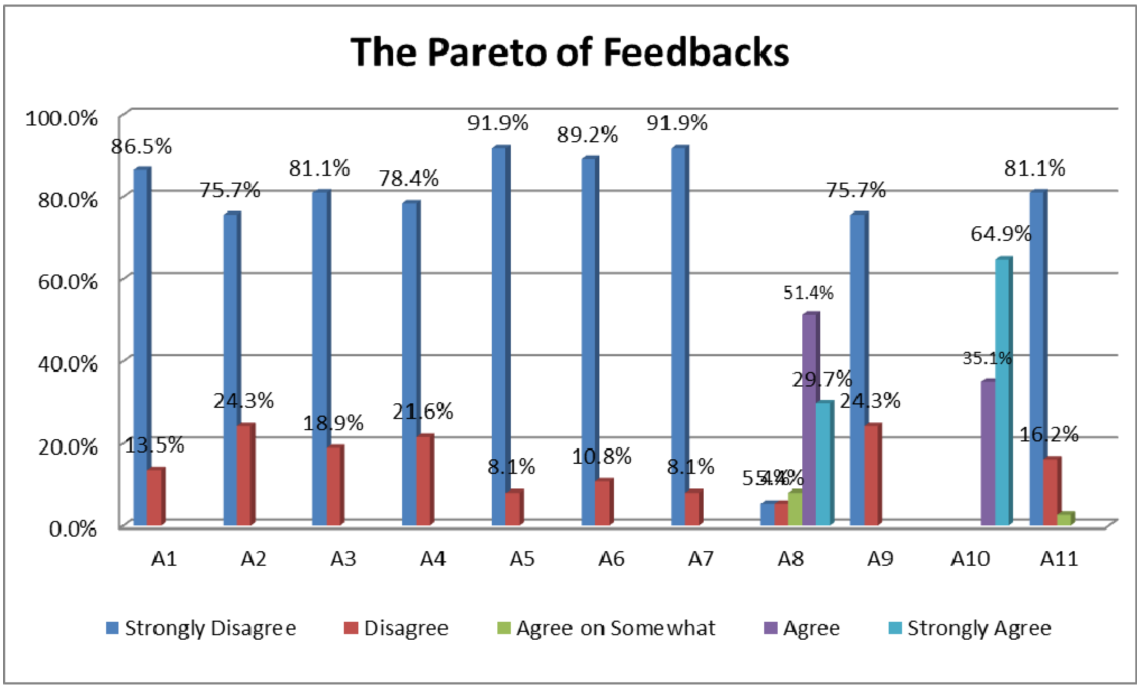


Figure 3-3 The pareto analysis on CTS-evaluation on their performance

Through the statistic software SPSS, 37 pieces of questionnaires had been well analyzed, on the self-evaluations summary from CTS team: The mean of 9 out of the 11 parameters are lesser than 2; the standard deviation and variance of 10 parameters is less than 1; the mean of 9 parameters is less than 1.3; the skewness of 9 parameters is bigger than 1 and have positive skewness. All above indicates CTS team members did not acknowledge the team capabilities and work effectiveness. They even did not have clear understanding on team's goal. Meanwhile, they have lower job satisfaction, and they believe their team performance delivering is not in place or well on track.

The second segmentation is designed for frequent customer contact windows. The purpose is to get their evaluations on CTS team who are interacting with them. There are 6 questions designed and 6 parameters had been assigned accordingly along with the questions. B1: CTS team provides very good support; B2: Compared to other suppliers, this team has the best in class service quality; B3: There will be a big challenge during affected products (namely quality concerned products) called back and replacement; B4: There is a very good regular interaction with CTS team; B5: There is a very good regular interaction with CTS team's managers (supervisors, leaders); B6: Being satisfied with technical issue solved and questions answered.

Table 3-1 The SPSS snalysis on CTS's self-evaluations on their performance

		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11
N	**Valid**	37	37	37	37	37	37	37	37	37	37	37
Mean		1.14	1.24	1.19	1.22	1.08	1.11	1.08	3.95	1.24	4.65	1.22
Std. Error of Mean		.057	.072	.065	.069	.045	.052	.045	.173	.072	.080	.079
Median		1	1	1	1	1	1	1	4	1	5	1
Mode		1	1	1	1	1	1	1	4	1	5	1
Std. Deviation		.347	.435	.397	.417	.277	.315	.277	1.053	.435	.484	.479
Variance		.120	.189	.158	.174	.077	.099	.077	1.108	.189	.234	.230
Skewness		2.226	1.248	1.655	1.438	3.201	2.632	3.201	-1.398	1.248	-.649	2.203
Std. Error of Skewness		.388	.388	.388	.388	.388	.388	.388	.388	.388	.388	.388
Kurtosis		3.120	-.471	.778	.068	8.713	5.207	8.713	1.953	-.471	-1.672	4.478
Std. Error of Kurtosis		.759	.759	.759	.759	.759	.759	.759	.759	.759	.759	.759
Range		1	1	1	1	1	1	1	4	1	1	2
Minimum		1	1	1	1	1	1	1	1	1	4	1
Maximum		2	2	2	2	2	2	2	5	2	5	3

There are 37 pieces of questionnaires collected; by analyzing the inputs from the chart below: The mean value of 3 parameters is greater than 2. B3 (There will be a big challenge during affected products callback and replacement) even has the highest mean at 4.65; it indicates customer has very strongly concerns on the supports from CTS team when they have “bad” quality products which need to be return. This is a sign that customers are looking for improvements from CTS team in terms of the return process as well as the procedures, which is a big headache in front of customers.

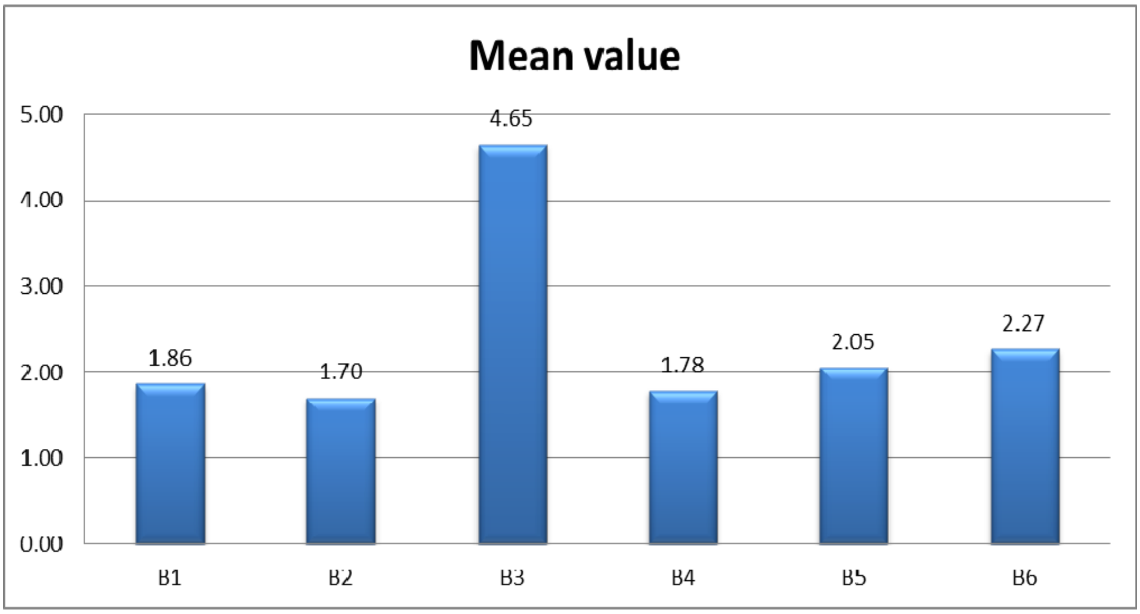


Figure 3-4 The mean of customer evaluations on CTS team performance

From the Pareto analysis on each parameter showed in chart below, we can see: 86.5% of the people did not think CTS team provides good support to them; 64.9% of the people did not think CTS team had done the best in class service in terms of the support quality compared with other suppliers and there is a big challenge to them when products needs to be returned due to quality issue; 78.4% of the people thought the regular interaction with CTS is not good or the mechanism is not in place, local CTS management teams (managers, supervisors, team leaders) are even the worst.

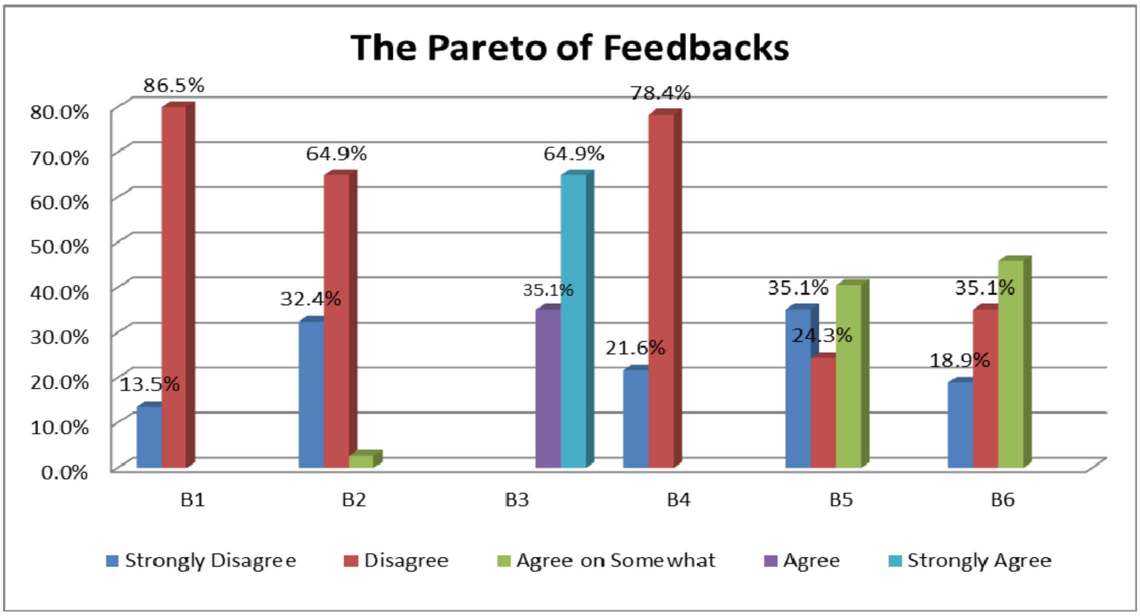


Figure 3-5 The pareto of customers evaluations on CTS team performance

By SPSS analysis, we can get a full picture of those parameters: Skewness values are all less than 0, which indicates the 7 parameters are all having negative skewness. It means customer has very strong concerns on CTS teams' job performance in terms of their technical expertise and professional skills (such as communications skills, presentation skills.). Customers are not satisfied and looking for immediately improvements.

Table 3-2 The Statistical analysis of customers evaluations on CTS team performance

		B1	**B2**	**B3**	**B4**	**B5**	**B6**
N	**Valid**	37	37	37	37	37	37
Mean		1.86	1.70	4.65	1.78	2.05	2.27
Std. Error of Mean		.057	.085	.080	.069	.145	.126
Median		2	2	5	2	2	2
Mode		2	2	5	2	3	3
Std. Deviation		.347	.520	.484	.417	.880	.769
Variance		.120	.270	.234	.174	.775	.592
Skewness		-2.226	-.282	-.649	-1.438	-.109	-.516
Std. Error of Skewness		.388	.388	.388	.388	.388	.388
Kurtosis		3.120	-.596	-1.672	.068	-1.733	-1.100
Std. Error of Kurtosis		.759	.759	.759	.759	.759	.759
Range		1	2	1	1	2	2
Minimum		1	1	4	1	1	1
Maximum		2	3	5	2	3	3

Following up is the third segmentation, which are the evaluations from sales and marketing team on CTS team's performance. It has 7 questions listed and 7 parameters are assigned as well. They are: C1: CTS team efforts has significant contribution to sales revenue; C2: Compared to competitors, job performance of CTS team in this firm is better than others; C3: To improve the performance of CTS team, it needs to allocate more resources; C4: To improve the performance of CTS team, it needs to enhance team members capabilities; C5: To improve performance of CTS team, it needs to enhance internal teams collaboration; C6: It is very important to keep the regular communication with internal teams; C7: It is very important to keep internal team posted on the internal service feedback.

From the survey, there are 29 pieces of questionnaires collected. By mean analysis through SPSS, we can get bar chart as below: all of the 7 parameters got bigger mean value; which reflects sales and marketing forks have very strong request on CTS team performance improvements besides the appropriate resources allocation as well as the quality of inside team communication improvements.

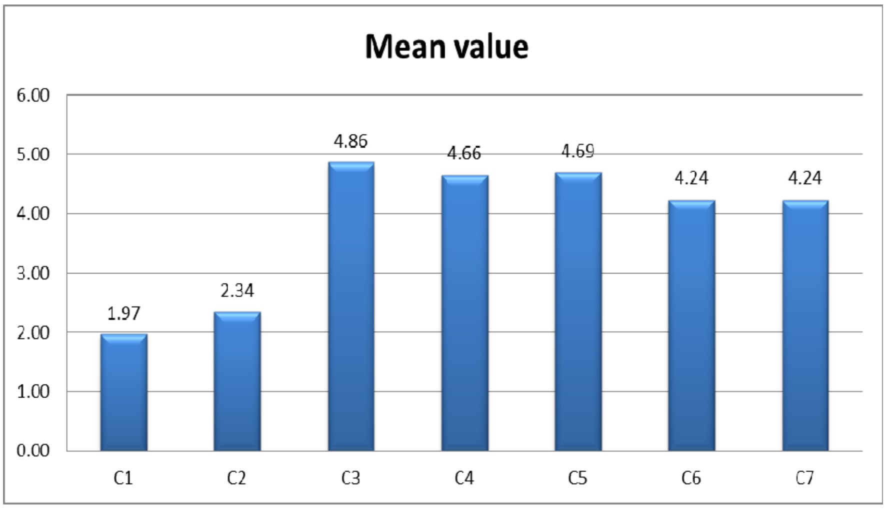


Figure 3-6 The mean value of sales and marketing team’s Evaluation on CTS team performance

From the detailed Pareto analysis on each parameter (please refer to the chart below), it can be observed that: 79.3% of the people strongly believe that today’s CTS team did not contribute their efforts to business in terms of revenue growth; 89.7% of the people thought their CTS team’s performance is worse than competitors; 89.7% of the people strongly believe that improving CTS team performance needs to allocate more resources; 65.5% of the people strongly believe that improving CTS team performance needs to improve team members capability; 69% of the people strongly believe that improving CTS team performance needs to enhance team internal collaboration; 75% of the people believe that it is very important to keep the regular communication with internal teams.

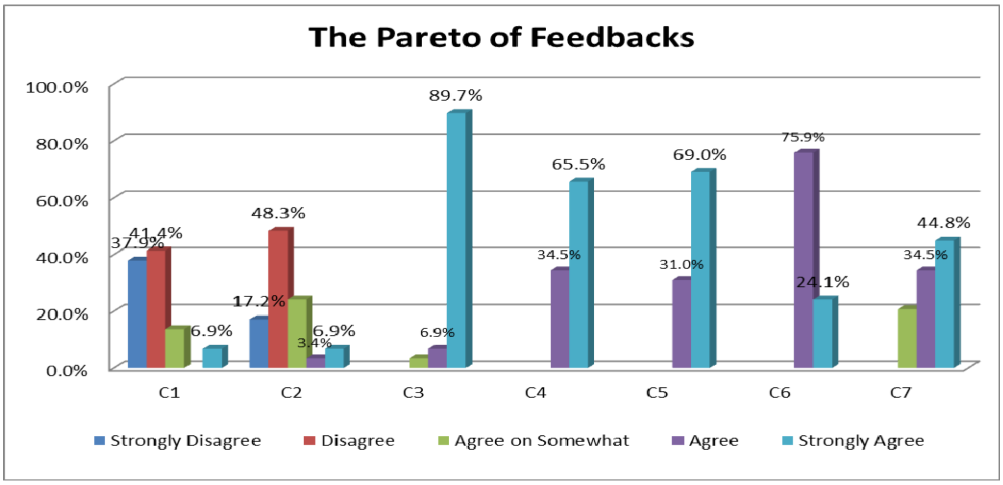


Figure 3-7 The pareto of sales and marketing teams' Evaluation on CTS team performance

From SPSS analysis on the 7 parameters shown below, we also can figure out that 3 parameters have positive skewness with value greater than 1. This observation indicates sales and marketing folks do need CTS team to do their best to support firms business in terms of team performance improvement as well as to help on the business growth (such as time to market on new products, quick response with appropriate actions to solve customer issues, etc.). The rest 4 parameters have negative skewness, which is telling us that improving CTS team performance along with appropriate resources allocated is a must. The resource includes off-line trainings, on job practices, to attend technical seminar, etc.

Table 3-3 The statistical analysis on CTS performance from Sales and marketing team’s evaluation

		C1	C2	C3	C4	C5	C6	C7
N	**Valid**	29	29	29	29	29	29	29
Mean		1.97	2.34	4.86	4.66	4.69	4.24	4.24
Std. Error of Mean		.201	.194	.082	.090	.087	.081	.146
Median		2.00	2.00	5.00	5.00	5.00	4.00	4.00
Mode		2	2	5	5	5	4	5
Std. Deviation		1.085	1.045	.441	.484	.471	.435	.786
Variance		1.177	1.091	.195	.234	.222	.190	.618
Skewness		1.514	1.050	-3.428	-.689	-.865	1.276	-.469
Std. Error of Skewness		.434	.434	.434	.434	.434	.434	.434
Kurtosis		2.516	1.287	12.006	-1.644	-1.349	-.406	-1.198
Std. Error of Kurtosis		.845	.845	.845	.845	.845	.845	.845
Range		4	4	2	1	1	1	2
Minimum		1	1	3	4	4	4	3
Maximum		5	5	5	5	5	5	5

The fourth segmentation is the final portion of part II i.e. the evaluations on CTS team from factory operation folks. There also have 7 questions listed (which means there will be 7 parameters): D1: It is necessary to have CTS’s support to make sure factory solve the product quality issues timely; D2: Compared to competitors, job performance of CTS team of this firm is better than others; D3: To improve the performance of CTS team, it needs to allocate more resources; D4: To improve the performance of CTS team, it needs to enhance team members capabilities; D5: To improve performance of CTS team, it needs to enhance internal teams collaboration; D6: It is very important to keep the regular communication with internal teams; D7: It is very important to keep internal team posted on the internal service feedback.

For the data analysis by SPSS, there are 6 parameters' values in terms of mean and median are bigger than 4, only D2 has smaller mean which is less than 2. It is a very significant sign here that factory operation folks did not think their CTS team's performance is higher than competitors. And they believe the CTS team's performance needs to be improved as soon as possible.

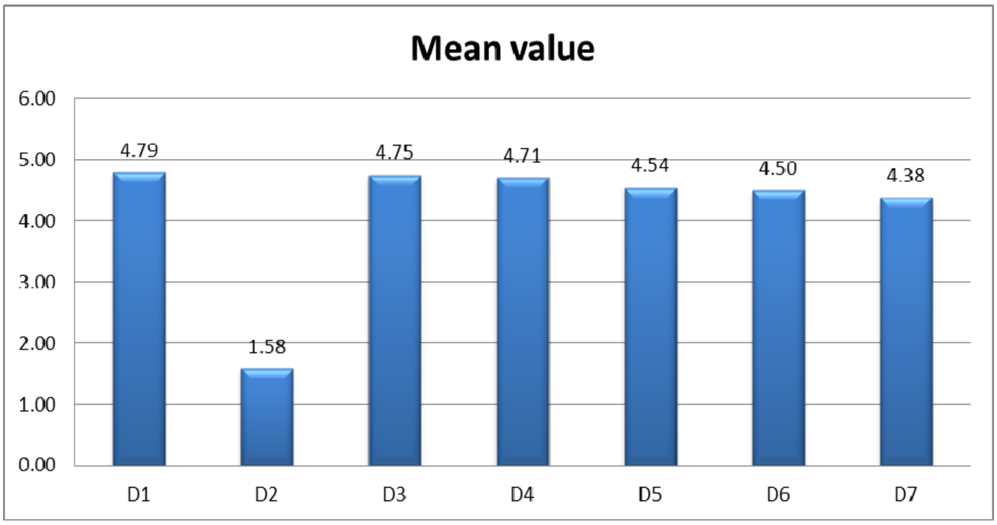


Figure 3-8 The mean value of factory operation team's evaluation on CTS team performance

With the Pareto analysis shown below, we can observe that: 83.3% of the people strongly agree that to solve the product quality issues needs CTS teams support; however, 91% of the people thought their CTS teams performances is lower than competitors; and more than 50% of the people thought it is necessary to allocate more resources to CTS team and it is very important to keep internal communication and regular feedback so as to improve CTS team's performance.

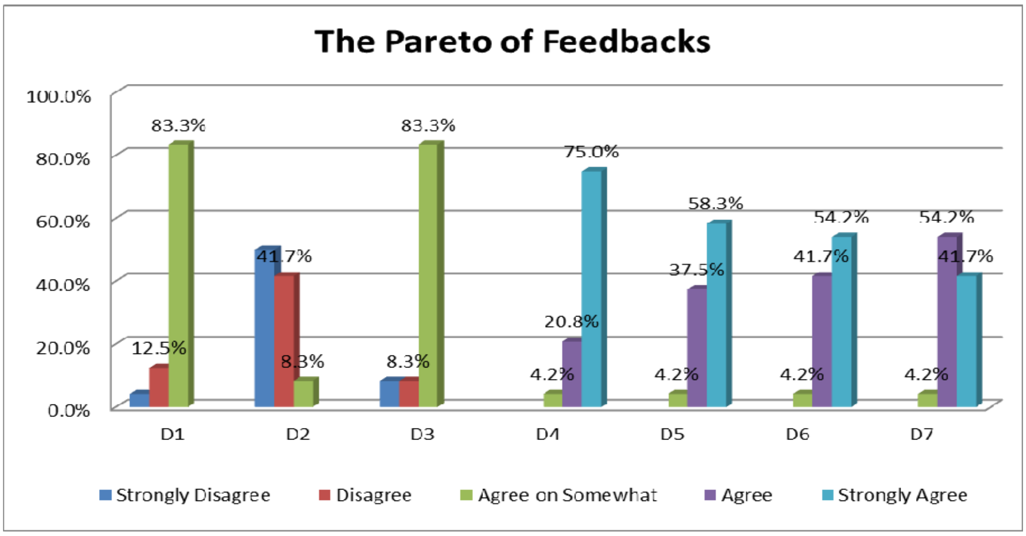


Figure 3-9 The pareto chart of factory operation team evaluations on CTS team performance

Through SPSS analysis, we also can figure out more details as below: All of the parameters Std deviation and variance are less than 1 and close to zero beside the negative sknewness in place. This is telling us that factory operation team is aware of the value of CTS team, and factory operation folks have their expectations on CTS team performance improvement in terms of CTS team effectiveness and efficiency.

Table 3-4 The statistical analysis on CTS performance evaluation from factory operation team

		D1	**D2**	**D3**	**D4**	**D5**	**D6**	**D7**
N	**Valid**	24	24	24	24	24	24	24
Mean		4.79	1.58	4.75	4.71	4.54	4.50	4.38
Std. Error of Mean		.104	.133	.124	.112	.120	.120	.118
Median		5.00	1.50	5.00	5.00	5.00	5.00	4.00
Mode		5	1	5	5	5	5	4
Std. Deviation		.509	.654	.608	.550	.588	.590	.576
Variance		.259	.428	.370	.303	.346	.348	.332
Skewness		-2.539	.683	-2.375	-1.800	-.873	-.694	-.210
Std. Error of Skewness		.472	.472	.472	.472	.472	.472	.472
Kurtosis		6.258	-.424	4.614	2.676	-.114	-.401	-.683
Std. Error of Kurtosis		.918	.918	.918	.918	.918	.918	.918
Range		2	2	2	2	2	2	2
Minimum		3	1	3	3	3	3	3
Maximum		5	3	5	5	5	5	5

From the above analysis, we can see the results are very similar to the in-depth interview what had been conducted with their management teams. From CTS points of view, they are not being well supported due to there is no adequate training in place and inappropriate supports from factory folks and sales team. This team has not been recognized either by internal customers (sales and marketing team) and external folks (the customers). While from the external customers (the frequent contact people) points of view, the supplier’s CTS team did not provide much value added support to them even though this team is the process or flow gating during the bad quality products callback or pullback. From sales and marketing folks inputs, they are eager to see and to have a stronger CTS team (both on technical skills and soft skills) in front to make sure the entire team is able to satisfy external customers and work as a consultant. From factory operation folks point of view, they strongly believe there is much room in front of CTS folks to improve its performance even though they are aware of it that they are the internal supplier to CTS folks.

To have a further and deeper understanding based on the analysis above, we can characterize them into three clusters: (1) Customers have strong concerns on support engineers' professional skills in terms of their behaviors and technical skillsets. This can be characterized as "customer sense"; (2) Peers from sales operations are looking for the value from CTS team in terms of "easy-to-do" business. It covers customer quality, technical concerns, time to solutions and a clear closure path on issues. This can be characterized as "sales sense"; (3) Peers and counterparts from factory operation team have lots of focus on customers issues as well as CTS team interaction skill sets in front of customers so as to make sure there is really customers feeling collecting. It can be characterized as "factory operation sense".

Besides, the internal CTS members are looking for the appropriate job scope, job roles and responsibilities redesign, as well as the SMART goal setting for this team. This can be characterized as "boundless team building requirement or internal service".

3.5 Research Result Characterization

Based on the analysis mentioned above, it is easy to figure out the key factors to STX CTS team performance improvement.

The first one will be "customer sense" related factors which have significant influence on CTS team performance. The team will be dismissed or push to quit if customers keep dissatisfying on the support.

The second one is the "sales sense" related factors. Without appropriate sales sense in place, this team will go nowhere as a part of sales and marketing staff. While, the sales sense is called business sense some times; however, to have sales sense is a common requirement to everyone even you are not the sales people in this free competition world.

The third one is the "factory operation sense" related factors, most of the CTS folks did not realize this or overlooked it previously; they always think about their peers and counterparts from factory operation teams should give them answers and supports whatever they need. They do not want to communicate with those backend support folks as well as cannot make themselves well understood in front of factory operation teams. The misunderstanding will result in conflicts and demoralize both teams in the end of the day.

3.6 Brief Summary

This chapter mainly focuses on the team performance status characterization in both STX China CTS team and in competitors CTS team (like WDC, HGST). By deploying action research methodology, this chapter has conducted in-depth interview as the first step on behalf of the qualitative data collection and characterization.

Following by the in-depth interview with management folks, there is a dedicated questionnaire developed to gather more detailed data for further and deeper analysis by quantitative data characterization. Along with those surveys feedback from both STX China CTS team and competitors China CTS as well as the external customers and peers, and counterparts, a generic summary has been successfully characterized based on key influence factors within three segmentations by doing SPSS analysis, The three factors are: customer sense related factors, sales sense related factors, and factory operation sense related factors. These findings will be acting as the fundamental inputs for next step studies in terms of CTS team performance improving model built up and its application for team performance improvement.

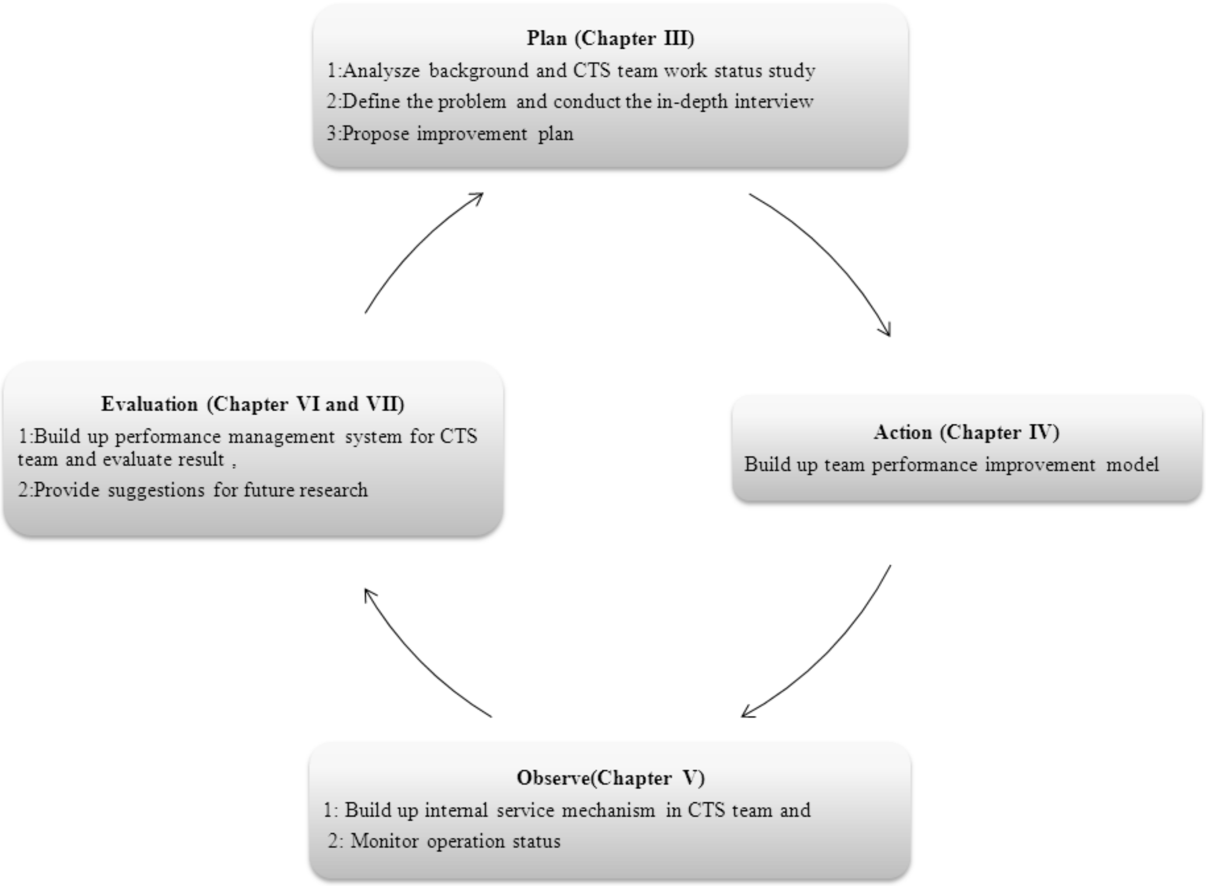

Plan (Chapter III)
1:Analysze background and CTS team work status study
2:Define the problem and conduct the in-depth interview
3:Propose improvement plan
Action (Chapter IV)
Build up team performance improvement model
Observe(Chapter V)
1: Build up internal service mechanism in CTS team and
2: Monitor operation status
Evaluation (Chapter VI and VII)
1:Build up performance management system for CTS team and evaluate result ,
2:Provide suggestions for future research

Figure 3-10 High level Sum for each chapter

The following chapters will follow up the action research path as below; Besides chapter III, which is focusing on the background and CTS team work status study as well as the problem defining through in-depth interview and survey; chapter IV will focus on the team performance improvement model build up; chapter V will be the observations and measurements of the model implementation and result characterization; chapter VI will focus on the team performance management system build up, provide the comments on this study, and provide the improvement plan for future research.

Chapter 4: Internal Service Based Performance Management Model Built up for CTS team

4.1 CTS Team Performance Management Model

Based on the above discussion in Chapter III, this thesis developed a model which is based on three dimensions for CTS team performance improvement. As showing in figure below:

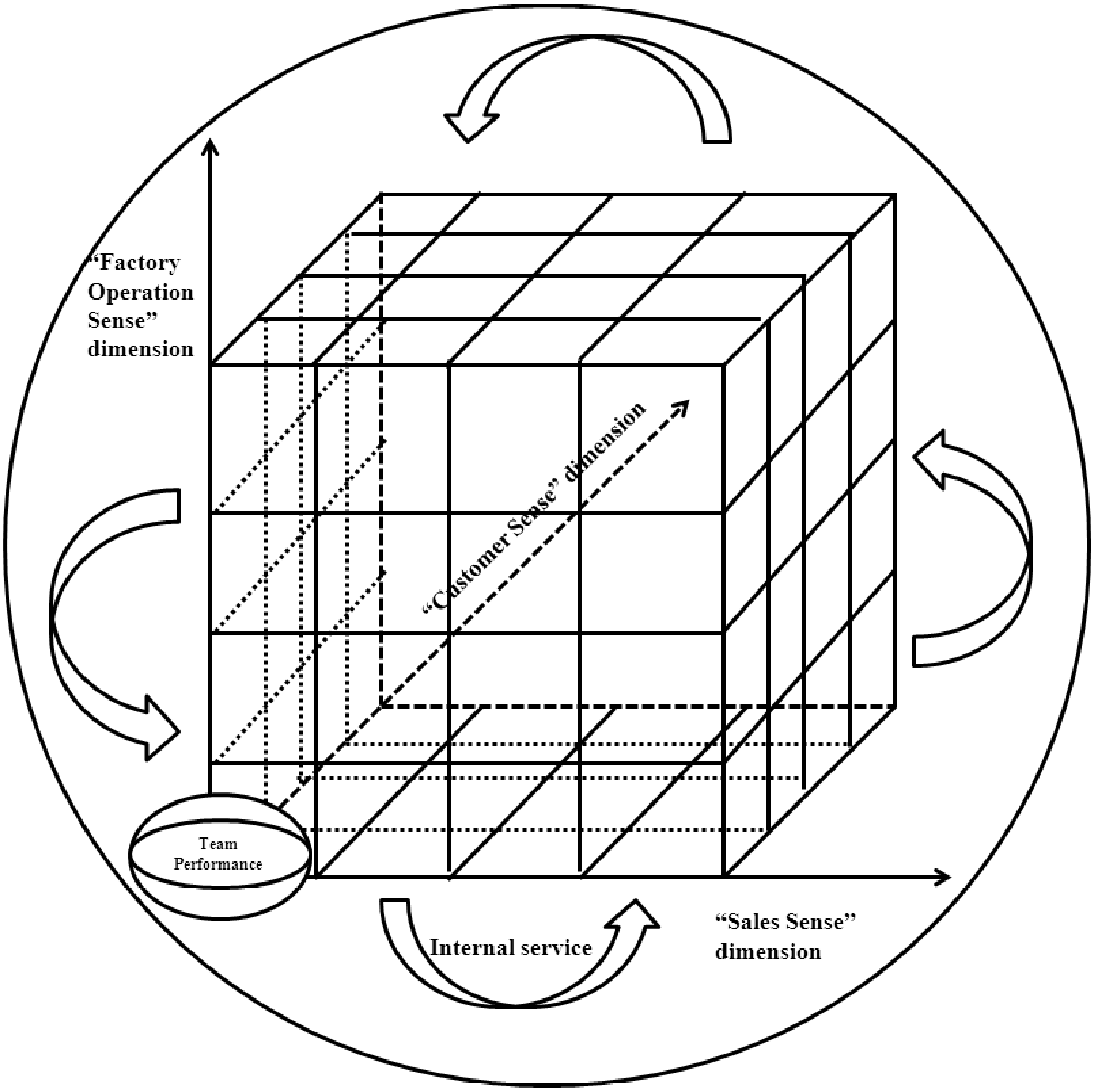

"Factory Operation Sense" dimension
"Customer Sense" dimension
Team Performance
Internal service
"Sales Sense" dimension

Figure 4-1 The model of CTS team performance management

The three dimensions here are:

X-axis is the sales sense oriented (or business sense oriented) dimension. This is also called “sales sense dimension”; this axis is focusing on the team strategy alignments with sales and marketing folks on behalf of company revenue targets achieving. Key concept is to improve the capabilities in CTS team on behalf of the idea of “Easy-to-do Business”.

Y-axis is the customer sense oriented (or customer technical support requirement Oriented) dimension. It is called “Customer sense dimension” in the model. It focuses on the customers’ expectations digesting and requirements characterizing based on each firm’s internal language. It also helps to drive the appropriate resources to fulfill it accordingly.

Z-axis is the factory operation sense (or quality and cost balance sense) dimension. It is also important to customer technical support team because you must commit to customers with the specific actions future improvements actions, the cost of quality understanding, and the corrective actions fix effectiveness.

4.2 Model Characterization

4.2.1 Action Requests on Sales Sense Dimension

From sales sense dimension, there are a few items which need CTS team to pay attention to during team performance management. This chapter will illustrate them one by one based on the internal-service theories.

Improve Product Quality to be Competitive

Being a member of sales and marketing team, CTS has been considered as the part-time sales based on sales teams arguments. The only difference here from sales team perceptions are CTS folks are the “technical expertise sellers” while sales are the “high technology products sellers’.

Hence, to improve the product quality to be competitive on product price and share negotiation is a must. CTS folks had been treated as the representative of factory operations who can consul sales folks and give them confidences when they got challenges on product quality. Product quality convers production line integration fallout out Dppm, the product quality performance of field application as well as the warranty performance.

Normally, CTS folks will feel the pushing pressure from sales team on this and need to work on and update the day to day improvement action plans. It is boring somewhat to CTS folks as they have some product expertise and they know about the quality improvement roadmap. They have their perceptions and may have frustrated feelings once they received the requirements like this. They may also think the questions from sales on the product configuration and quality details are too naive and will result in all of the on hands requests reprioritizing. Conflicts will come out together with complaints from both particular sales representative and the particular CTS engineer. The team tension is generated and there will be a big impact on team commitment. This will result in performance dropping from both sides (Sales team and CTS team).

How to make breakthrough when struggling with those dilemmas? The internal-service based performance management will be a helpful utility. The most important thing here is to set up CTS works priority together with sales folks during product quality improvement period. This means CTS folks need to think about the benefits from company revenue point of view and how much quota sales folks owned for each quarter or month. How can CTS help sales folks gain more share without price erosion due to quality issues? CTS team needs to provide solid evidences on the product quality competitions characterization as well as the improvement plans. Once sales folks see convincible data, they are all enabled with the appropriate confidence and will try to persuade customer’s procurement team. CTS folks will be standby to support any technical related discussion. There will be a seamless linkup between CTS and sales folks during quarterly share negotiation. By prioritizing the work list and improving the job transparency, both sales and CTS team will reach an agreement and psychological contract between each other. The gap of communication and misunderstanding will be eliminated.

Keep on Tracking on G2 Information and Real Market Share

Basically, G2 information tracking and posting, is from the market research and survey team and is not from CTS folks under normal practice. While, this traditional thoughts results in CTS folks keep the narrower mindset on competition data collection as well as the data characterization and utilization.

But from professional sales point of view, sales people are frontline workers (it is before new product qualified by customer or RTS (released to shipment) granted), the CTS folks are backend supporters who are the closest one nearby them (market research team is normally located in headquarter in U.S.) as well as to customer factory operation folks and logistic folks. CTS teams have the first hand information and have it day to day updated during the interactions with customer contact window. It is more accurate with the latest information in place. Hence, sales folks prefer relying on CTS folks to collect the G2 information (in terms of competitors' quality and serviceability as well as customer comments on them and the next major improvement plans) instead of from corporate's market research team.

However, this is not a fundamental roles and responsibilities to CTS folks as they are not structured in that way. Once they received those kinds of requests, they may feel like they are the "second class" in this office and need to take care of all of the grounded work besides their technical support works. CTS folks will reject it or accept it very reluctantly and they will be demoralized at this moment. This will result in complaints from both sides due to misunderstanding.

While, based on internal service, to give clear communication and develop CTS team to expand their roles and responsibilities, it will help them to learn the whole process, to know the big picture, and to understand what's behind those questions on G2 information collection and characterization. Until they fully understand the "why" from sales on this portion, there will be no lagging going forward during the information and data collection and internal communication. The individual's performance will be benefited and their personal market research capability will be improved as well. This will broaden their mindset and view in future, and it will definitely benefit their career path. So does on their job performance.

Be an Advocator in terms of Product Quality and Technology

In today's reality and normal business practice in China in IT industry, most of sales representatives who are dealing with high tech products selling are not from product research and development team. Some of them even did not receive any completed training from firms' products information center and datasheet database during new products launching. As result, they may not understand product technical terminologies, (particularly to the English documents and terms). And have no appropriate confidence level on newly launched product quality (in-house and field predications). Hence, they are eager to learn it and try to dig deeper from CTS folks who have language advantages and engineering experience and expertise.

However, most of sales folks may not want to ask questions directly due to face problem (normally, they are afraid to lose their face to ask for product and technical related questions). Some of them may want to ask it but they put it on the table in front of CTS folks as an "internal complaints". In such situation, some of the interactions will result in job dissatisfaction both to CTS engineers and to the particular sales person. While under this circumstance, team performance management based on internal service will be helpful.

First step is to set up CTS team goal and optimize performance rating mechanism, reallocate the weight of performance rating to sales folks with some level of percentages (such 10 to 20%) to ensure sales folks have accountabilities to leverage the expertise from CTS team without so called “facing problem”.

The second step is, to promote timely communication within teams. To CTS expertise, they should be recognized and rewarded by those kinds of advocacy assignment in terms of product quality and technology in front of customers and sales folks timely. Sales folks also need help CTS team to make sure CTS staffs will receive the appropriate rating scores from whom he or she interacted with; those actions will promote team work spirit as well.

The third step is, by internal service orientation, CTS folks will set up the appropriate support strategies in terms of internal supports (to internal teams, such as sales team, marketing team, customer service operation team, and the call-center folks) and external supports (to customers). It will help them to improve their loyalty as well as their accountabilities (to improve their job commitment).

Improve Technical Expertise and Consultancy Capability

It is easy to ask a question but it hard to answer it in terms of questions difficulty level. To sales folks, they may have traditional thoughts that CTS folks need to be snappers and are able to handle the most complicated issues happened at customers sites if there are any customer factory production line down situations or the possible gating decision during new product qualification progress (such as compatibility issues between components level and systems level). As such, they will raise their bar in front of CTS folks in terms of their technical expertise and capabilities on consultancy.

Basically, CTS folks also consider themselves as experts on product related technical issues. (Such as compatibility issues identification and resolving, SATA data transfer and the relevant bus traces characterization, quick failure analysis.). However, they may not recognize that their expertise should be acknowledged by sales folks for business development. If only consider the original thoughts, conflicts will be shown up.

Nevertheless of the technical expertise, sales folks always consider CTS folks as technical consultants in terms of product technical specifications, detailed design maturity test parameters, and the entire product design architectures. Hence they may ask their questions time to time without any scrutinizing the granular points. Some of those questions are pretty simple, and some of them are even lower than the entry level to CTS engineer. Most CTS folks will treat those kinds of questions answering as time wasting works. While some of them are in-depth technical questions which may need time to figure out the answers. Normally, After CTS engineers found out the answers and replies to sales, it will be explained in technical words which may not be easy to sales folks to digest. As a matter of fact, sales folks will come back to CTS engineers with complaints about the answers what are not he or she expected instead of the appreciations to CTS engineer who had helped to figure out the problems. At this moment, most of CTS engineers will be demoralized due to those negative inputs and unpleasant interactions, and even worst, some of them would like to quit the team due to this very bad feelings.

Those situations can be changed by internal service oriented performance management. From performance function point of view, motivation has a big contribution to personnel performance. How to motivate CTS folks by interacting with sales folks? It will require their articulating capability improvements in terms of the presentations and client management skill sets acquiring along with their day to day works. Once CTS folks fully understand the background of the questions as well as the appropriate sales sense acquired, they will think about how to give them the appropriate answers instead of conflicts and too complicated answers.

Since majority of sales folks are not very familiar with the high-tech products (such as hard disk drive) design maturity tests flows as well as its results (parameters and flows) characterization, CTS can help set up a regular training with simplified documents. This will help sales team understand product design margins and robustness, which will give the basic ideas on new products. On the other hand, CTS folks will have opportunities to practice their articulation skills as well as the presentation skills to non-technical people. Meanwhile, the relationship between CTS and sales team will come back on track in terms of teamwork and their collaborations. They will not point out fingers to each other anymore and may appreciate each other’s work. The perceptions of working for customers and working with sales team will be changed to work for company’s revenue improvement and personal capabilities improvement. Team performance will be improved step by step accordingly. This will build up and sustain a stable relationship among teams, and will definitely benefit staffs’ moral in both sales team and CTS team.

Minimize and Eliminate Revenue Impact and Compensation

In normal practice during high-tech products mass production phrase, there will be some levels of DPPM (defective parts per million) in house outgoing Dppm test, customer's integration test, or OBE test besides the annual field return from end users (parts which is dead due to natural death or inappropriate handling).

Sometimes, there will be some kinds of quality excursions either from suppliers factory production line or customer production line or field (Key storage components and systems players have their own dppm goals settings in terms of their quality management matrix. When actual data is above their goal, it will be considered as an excursion). Majority of those excursions will result in customers' integration production line down and suppliers' components stop loading as well as customer hub inventory's pullback and in-transit FGI (finished Goods inventory) sorting or pullback. This will impact customer pulling rate which is a key indicator of sales linearity management, such as sales quota missing due to the fact that customer had initiatives to pull in the alternative supply from competitors. Normally, customer needs supplier to provide the close loop corrective actions plan for their hub inventory immediately to make sure their integration production line can keep on running. While, to CTS folks who are dedicated to support this account, they need to prepare the recovery plan in terms of factory FGI and new built products as well as to prepare risk assessments in terms of field application besides the containment actions (such as on site sorting, new firmware releasing). All of those activities must be synchronized with sales folks on behalf of firm's revenue impact management. Some sales folks may want to report higher potential revenue impact in terms of the quantities to justify quota missing and take down their quotas for next quarter; However, CTS folks need to report real impacts in terms of customer sentiment (red, yellow, green) and the actual business lost. If the number of quantity reported to top management team were different between sales account leader and CTS account leader, confusions and conflicts will be inserted between both teams, and possibly damage both teams' reputations.

To build up team trustworthy, sales sense improvement in CTS team in terms of quota and revenue management will help individual CTS engineer to understand the urgency of an issue and find the solution to minimize the risks of potential products pullback (to save costs from both side), so does on the call back from end users in field (to save the company product quality reputations).

Once the trustworthy between both teams (Sales and CTS) had been set up, there will be no surprise to top management on the different kind of inputs on one issue. And both sides will synchronize with each other to make sure there is no any hiding in terms of real business impact (like on the potential quota taken down and the potential share lost if has any).

Meanwhile, both teams performance will be improved simultaneously as there is no internal stickiness or frictions.

4.2.2 Actions Requests on Customer Sense Dimension

CTS members should have appropriate “customer sense” which is a fundamental request to CTS folks, Otherwise, he or she cannot get his or her job done successfully. The “customer sense” here is to put your feet into customers shoes during your decision making along with the day to day works and interactions with both external and internal customers.

Given the competition situations of today, customers are always facing big challenges from their customers; they need to move faster than before to fulfill their customers’ requirements in very short time. These requirements include end users questions on products configurations, design modifications, and the joint technical projects (joint qualifications and joint developments). As such, most of the players in IT industry have to get their team members skillsets and mindsets well managed in daily work. However, most of today’s players in IT industry in China, they are still under growing; most of them do not have sufficient experiences and sufficient time to educate their staffs and energize them during their team headcount increasing. Therefore, most of CTS job players in China IT industry must have appropriate “customer sense” to deal with them to improve and sustain customers satisfaction. Key topics can be illustrated as below

Be Clear on the BIC Quality Competitions Status

As most of customers are still focusing on their internal issues solving, as well as the fast pace of products launching in IT firms, almost all of customers cannot catch up the speed of changes, especially to Chinese IT firms. They heavily rely on the information from suppliers on products design and quality competition status.

Basically, those kinds of requests are formally raised during QTR (Quality and Technical Issues Review) meeting, customer will show their integration production line reject rate (LRR) by supplier. Customers will ask for improvements’ plans and lessons learnt from suppliers to make sure the products shipped to them will be well treated going forward (namely, with the appropriate corrective action in place during manufacturing) before leaving suppliers factories. They set up their quality control matrix with criterion to manage. Based on this they will give their scores during QBR (Quarterly Business Review) to determine the upcoming business share allocation for following quarters. And their (namely: the customers) suppliers’ management teams’ performance rating will be reflected as well (given the appropriate weight). Normally, it will be correlated with their bonus and annual salary adjustment.

To get the best in class (BIC) integration production line quality practices (in line reject rate) and field return data to sustain and gain more shares, suppliers need to understand the rules as well as the customers pain points on product quality and technical issues to help both firms. As a matter of fact, customers did not have a full picture of components quality performance once shipment started while CTS folks do have their products quality data (such as the reliability test data and outgoing dppm test data). To achieve the best in class competition, suppliers’ factories will screen products and cut in appropriate corrective actions to sustain the ranking positions ahead of competitions (such as: to tighten test specs for overkilling, fine tune the test algorithm for better test gage repeatability and reproducibility) during normal production. However, suppliers’ operation teams have products yield and production scrap control targets, they may not allow everyone to have same level test specs and improvement corrective action phased in. Even factory operation folks will provide the CIP (Continue Improvement Plan, to customers based on their quality matrix).

Hence, CTS folks need to step in the review meeting timely and negotiate with customers to get the detailed competition data (integration and field return data). By analyzing the data, they can figure out the appropriate corrective actions for this particular customer. This needs CTS members must have the appropriate customer sense to make sure their (customers) pain points had been well understood; so as to make sure they can accept your plans as well as to make sure customers treat CTS team as their business partners and helpers instead of trouble makers. (I.E. Once customers stuck in the inappropriate goals settings, insufficient quality management experiences, inappropriate product handling from customer line operators or the bad logistic management within customers’ factories and their distribution channels, it results in the extra dppm during line integration production and field failures return, or put wrong test criterion which causes false reject).

CTS folks also need to have their negotiations or discussions with customers well managed with their supportive talking manner to get positive agreements which can benefit both sides. If he or she does not have appropriate “customer sense” to digest customers’ requests and to figure out the CIP plan on time, the situation will be in chaos.

Customer cannot suffer any line down situation which is caused by either supply shortage or bad quality performance. This is the red line and the fundamental request to every supplier, especially to their CTS folks who are in charging of quality performance improvement (the roles and responsibilities) for customers. To keep “customer sense” in place and maintain the relative “BIC quality data” to help both firms is a must for this job to every CTS people.

Be Clear on Real Impact of Quality Excursion

Taking into consideration of today’s manufacturing scales in HDD industry (Hard disk drive, a key storage component of P.C. and cloud compute system) as well as its component supply chain ecosystems, there might be quality excursions from time to time (which is the “bad” quality performance encountered in terms of higher integration production line reject rate and field return from customers or end users) due to manufacturing processes variation or components quality fluctuation. Customer will be anxious once the excursion happened as of information incomparable (normally, suppliers have more data in hand in terms of risk assessments and impacts on ender users). Basically, there are two kinds of excursions, one is supplier in house quality excursions which results in stop shipment (called supplier quality induced shipment on hold). Another one is the bad quality performance from customer integration production line or field return from their customers. Customer raised stop loading and stop shipment order to suppliers. Both executions will lead to suppliers’ recovery discussions and the quick corrective actions cutting in to make sure customers can resume their normal production in time and eliminate revenue impact at both sides. At this point of time, customers have no idea about root causes of the issues as well as the solutions on their field runners (namely the products which had been already shipped to their customers). They are looking for suppliers CTS folks to provide containment solutions as well as the permanent solutions as soon as possible to minimize or eliminate any potential revenue impacts.

CTS will need to list down the real impact in terms of risk assessments both of inline integration performance and field application performance so as to notify customers to prepare for corresponding actions; while the dilemma is that once you released the root causes to customers, they may get scared immediately based on their limited experiences. Further communication and the solutions from CTS folks to customers must be put in place to resolve the issues and bring customers’ sentiments and confidence back on track. To articulate the issues and solutions to customers in an appropriate manner will help customers much more than just give them a report without clearly communication (in terms of in-depth explanation on technical portion). This is requesting the skillsets of “customer sense” management.

Based on internal service theory, CTS folks need to focus on this and improve it. By doing this, the entire team’s reputation from both CTS team and customers’ suppliers' quality management team in both firms will be highly recognized, and it will offer the value added practices to both firms’ business strategies management which may result in the share increasing and revenue impact minimizing, even compensation avoiding if has any.

Improve Technical Expertise and Consultancy Capabilities on Product Design

Besides the integration production line dppm (fallouts from customer factories' integration production lines) and field return performance (ARR: annual return rate), product design is another item of CTQ (critical to quality) to customers technical teams.

Since HDD (Hard Disk Drive) is a high tech product with lots of patents applied during manufacturing and product design phase, most of customers are not quite familiar with its design concepts even after design maturity review. Especially on the terms and newly phased in technologies on new products. As a matter of fact, some of them (the folks from qualification and quality management team at customers’ sides) are pretty shy to ask questions about more details in front of big group during meeting due to their poor oral English or very limited hard disk drive (HDD) knowledge.

CTS folks need to be aware of these, and need to help them digest the information, so as to make sure customers can grow up quickly and both teams can talk about technical issues at same level in terms of the concepts of research and development.

However, the customer sense of CTS folks may not be timely re-flashed to date, this required everyone in CTS team to pay more attention to and stay close to customers and learn from them with their logics and philosophy.

Learn to be a provider of “One Stop Shop” Technical Support

Based on above analysis, most of customers prefer to have a “one stop shop” technical support from CTS team since CTS team is the closest one to them to reach for help when they have product issues and technical questions. However, the majority of IT components suppliers in China today are setting up their local technical team as a messenger team to gather the information from customers and hand over to headquarters for solutions only. It takes longer time on the root cause digging and results in longer turnaround time on corrective actions. This makes customers’ quality teams very embarrassed in front of their internal engineering teams, since they had been chased by their internal teams as well as their customers all day long when there is an issue which has significant impacts on their business (such as time to new product launch, time to volume shipment and the product field application performance and its’ warranty)

To get rid of this, CTS members need to build up stronger capabilities both at technical skillsets as well as customer sentiments management. The internal service's utilization here will help CTS team to grasp the opportunity to grow up its members by interacting with customers.

As a matter of fact, the actions from CTS folks will definitely influence the business relationship between two firms. Customers will perceive improvement progress step by step once they learned from CTS folks that those CTS teams are accountable, besides who are able to be the one that can come back for them timely. The commitments to provide "one stop shop" customer technical support from CTS members and its' management teams to customers will definitely help on getting rid of their anxious within customer quality and design team.

However, there must have baselines and agreements in place which need both sides to follow with when dealing with issues. Based on resources status in front of CTS team and customer team, both teams need to nail down detailed plan for new members to make sure they all get well trained and kept them up to speed to sustain the business.

Nevertheless, the new hiring plan needs to be shared with each other and have a clear communication to get rid of the barriers and the bottlenecks such as immature or unprofessional behaviors from both teams.

4.2.3 Actions Requests on Factory Operation Sense Dimension

Be Clear on Quality Competitions Status

As a traditional opinion, factory operations (teams and folks) are backend support team who are behind CTS team. CTS folks have accountabilities to ask for supports from factory operations on quality improvements plans as well as to arrange the new product MRR (manufacture readiness review) meeting before mass production. During day to day interaction between factory operation folks and CTS folks, operation folks are more focusing on quality competition status at customer side. They need to get all of the critical customers regular integration production line dppm data and field return dppm data to prioritize corrective action cut in or phase in time point after they figured out the root cause and validate corrective actions as well as preventative actions.

Conflicts occurred when congruencies and agreements are not in place: Each CTS engineer who has reported particular customers issues thought his or her customer needs to get close loop corrective actions and preventative actions as soon as possible besides the proved effectiveness on the corrective actions and the shortest turnaround time on failure samples analysis, and this cannot be treated as “second class” (At least cannot be perceived to be treated as a “second class” customer in front of factory operation folks) who has lower priority in front of factory folks. However, to factory operation folks, they have a long list of ‘dirty laundry’ and even they knew which customer will and needs to give first priority in terms of shipment volume and customer expectations based on the experienced survey and business impact, they are lack of communications with CTS folks sometimes due to be afraid of more misunderstanding between teams. (Such as the social lofting)

Hence, the complaints and conflicts are rising up during daily interactions. CTS folks are facing stress and pressure besides challenges from customers as he or she cannot get timely answers from his or her support team. Factory folks are complaining as well due to they had done what they can do for customers. (It was based on the priority list). Both team performances will be impacted due to those negative working atmospheres.

To solve this, it is necessary to set up a regular communication mechanism based on the internal service: CTS team should think about how to engage with factory operation folks to scrutinize the details for his or her customers in terms of supporting factory folks to have more detailed background (such as failure symptoms and customers platforms as well as the specific test flows during customer integration) so as to help on issue’s identification and duplication. This will help a lot on failure analysis turnaround time saving as well as the failure analysis report accuracy improvement during root causes defining, so as to reduce the lead time on corrective actions figuring.

And besides, team’s appreciations will be nursed along with both teams know each other more than before. This will result in work helplessness reduction, individual teamwork skillsets improvement, and leadership capabilities development.

Be Clear on Actual Impact of Quality Excursion

By normal practice, once there is a quality excursion occurred at customer side, there will be three steps to get rid of it before normal integration production resumed. There are: To quarantine vintage of impact FGI (Finish Good Inventory) vintage; to develop a containment plan for current using FGI and to cut in corrective actions for new build products besides old vintage shipments tracking. There is no doubt that the excursion will result in revenue impact at some level in terms of time to market (both to customers and sales shipment linearity tracking and management). There are even more serious impacts on the quality in terms of field return performance at customer systems level and customer confidence on the particular supplier’s product quality management.

At this point of time, CTS folks who are the frontline workers really need supports from CQE folks (customer quality engineering folks, who is the representative in terms of customer quality department and seating in factory together with operation teams) on detailed products field application risk assessments so that they can make the assumptions based on their experience and offer the appropriate recommendations to sales folks and customer quality management team.

The faster we move the lesser impacts on the business and customers confidence on the products quality. While, there are different kinds of perspectives from operation folks since the engineering risks assessments are not an overnight work which can be finished in one or two days. It may take at least two to three weeks. (Due to the hard disk drive is a special high-tech product, each risk assessment needs to be done based on the completed engineering design of experiment mode) Normally, the operation folks will take it for granted that there is no way for them to pull in those activities in terms of using more stringent test and teams who are working in the firm (such as Sales, CTS, TCM, CQE) should be aware of this. As such, they will not proactively communicate those kinds of backgrounds to frontline workers until they have detailed data along with the whole risk assignment test completed. These thoughts and actions from operation folks will result in the frontline worker hopelessness since they have to face the customers and sales folks chasing day by day. As a result, it will definitely widen the communication gap between CTS folks and operation teams.

How to walk out of those dilemmas? Both sides are right at this moment; actually, those kinds of conflicts are not right or wrong. They both are trying to help on the issue solving and do their best to help company’s business.

Performance management based on the internal-service will help a lot to both sides. CTS folks should get educated and trained with basic engineering risk assessment procedures and root cause analysis by the engineering folks. Also, CTS folks should elaborate the detailed requests from customers quality team and sales in terms of revenue impact quantity and cost of rework if has any. Both sides may think about how to put their feet in others shoes. And they will reach the agreements in terms of daily work transparency and the trustworthy. In the end of the day, they will trust the statements and inputs from each side. This will lead to right interactions climates and relationships improvements step by step between both teams. Folks from both teams will be motivated and their performance will be back on track. Once both sides know about each other much more, they will not complain anymore but help each other more than before.

Beside this, the byproducts from the activities above, voice of internal customers (such as sales folks, marketing folks) will be well tracked and their concerns on the issue driving by CTS folks are well tackled. This will also improve their confidence that there is a stronger team behind him or her during any crisis time such as the shipment missing, linearity disconnected, quota de-committed. Team appreciation will be put in place in terms of recognitions and rewards from each other based on the effectiveness and efficiency on issue resolving.

Improve Technical Expertise and Consultancy Capabilities on Cost of Quality

As a matter of fact, operation folks are totally relying on CTS folks in terms of customer communications management on products design maturity issues and the quality improvement plans. Meanwhile, operation folks have their specific expectations here: Such as technical expertise on product design concepts and failure analysis skillset as well as the technical document presentation skillsets. However, there are no standards on those kinds of capabilities but the customer’s perceptions and recognitions. And it may be a little ambiguous and intangible sometimes. Normally, factory operation folks always perceive the non-professional behaviors from CTS teams in terms of the product design concepts misunderstanding and lack of in-depth failure analysis skills. They even do not believe the problems statements and voice of customers’ summary from CTS folks.

How come both teams who are working on the same issue do not believe each other? How to avoid and prevent those kinds of situation as most of the high-tech firms have these kinds of problems? Since both operation folks and CTS folks are professional individuals who are “knowledge-workers”, they have their perceptions and judgments on the issues and may not be the same as factory operation teams. As of the attribute of knowledge-workers, there will be conflicts and argues between two teams: The frontline guys may question the failure analysis reports from factory operation teams which did not figure out the root cause of fail, even they do not believe the close loop corrective actions from factory folks as they thought those were the story telling reports instead of the solid data validation and verification as well as to have fix effectiveness in place. They thought about that engineering folks should always speak with data. CTS folks may blame operation folks on request inappropriate prioritizing or the long turnaround time in terms of issue root cause identification and corrective actions for new built products and new shipments products.

Besides, each corrective action has its cost to implement; (which is called cost of quality, cost of corrective actions) there must be a trade-off before cutting in for mass production. Hence, cherry pick the adequate corrective action or to pick up the best one is based on the total customer satisfaction management. If the transparencies on those corrective actions before cutting in are not in place, even try to hide something in front of CTS team, there will be a big concern from CTS team. Tensions will be injected immediately. And they will blame each other as of the different kinds of perspectives and understanding on the cost of quality.

Hence, the congruency level between CTS folks and operation folks on the cost of quality and technical expertise will result in different impacts on customer satisfaction management.

Learn to Be a Mediator between Sales Folks and Operations Folks

As a matter of fact, sales folks are more anxious to get a clear and crisp update instead of a long summary such as an 8D format (8 disciplines format) engineering reports (which is the current practice from factory operation, product research and development teams). This expectation will add in tensions between sales and factory operation team. The agreement will be shifted time to time because engineering folks are more tactics while sales folks have lesser patients once issues happen. To get the message and information well understood and clearly communicated, CTS teams need to take care of both sides expectations and act as a mediator if there is any conflicts among them. At this moment, CTS folks are most likely an interpreter of technical issues. They should get engineering language digested and articulated with simple way for sales folks so as to reach teams' agreements timely to make a quick and smart decision to eliminate or minimize the revenue impact.

Well, if CTS folks think about themselves as the messenger only without any "factory operation sense", the requests from sales and marketing team will be going nowhere as they both speak with different kinds of tone. Company business will get impact by the end of the day.

As such, CTS folks must have customer sense to satisfy the customers.

4.3 Brief Summary

This chapter firstly set up the model for CTS team performance improving, which is a 3 dimension based cubic model; it utilizes the theories of internal service to build up the model.

The 3-dimension cubic model will play a critical role in team performance improvement along with internal service enabled. The 3 dimensions are: Sales sense dimension, customer sense dimension and factory operation sense dimension.

Secondly, each dimension within the mode had been well characterized in terms of the particular actions needed based on internal service theory on behalf of the team performance improvement. The organic links between and within each dimension are the most important parts to understand this mode for CTS team.

Finally, the actions requirement from each dimension has been fully studied based on the current practice from STX China CTS team. It will be tested and validated in following chapters as well.

Chapter 5: Internal Service Based Team Operation Mechanism Build up

Previous chapters had set up a mode on internal service based team performance management, and had analyzed its benefits of internal service application. This chapter will try to utilize the conceptual model in team performance management improvement and build up the team operation mechanism within STX China CTS team.

This chapter has three sections. Section one: To set up and analyze the flow of internal service operation and how it impacts on the performance management in CTS team; Section two: An empirical study based on team performance improvement with internal service theory in STX China CTS team; Section three: The validation of the mode based on In-depth interview and Survey in STX China CTS team.

5.1 The Relationship between Internal Service and Performance Management System

To analyze the model work mechanism, we first investigate the relationship between internal service and the performance management. Basically, the flow of internal service operation has three function blocks, namely: organizations, policy and beliefs renovations -internal customer analysis-internal service execution strategies.

First of all, to apply the internal service, firm or the particular team must have renovations in organization, policy and team beliefs. Organization renovation is to change the current organization charts to anti-pyramid chart, so as to align with the internal service theory. The purposes of policy are supporting team members by changing their cognition so that each team member feel be treated equally and doing the job for entire team. And on beliefs changes, requires firms to pay attention to its employees and take care of them. The spirit of internal service is to treat every employee as their external customer.

The second step is to identify the internal customers, which is the only one that will let employee buy in the ideas of internal service. It is the most critical step of applying internal service during system set up. There are many options to analyze and figure out the internal service customers. The internal service strategy application has lots of methods and solutions.

The bottom line is to reach agreements within a team on internal service.

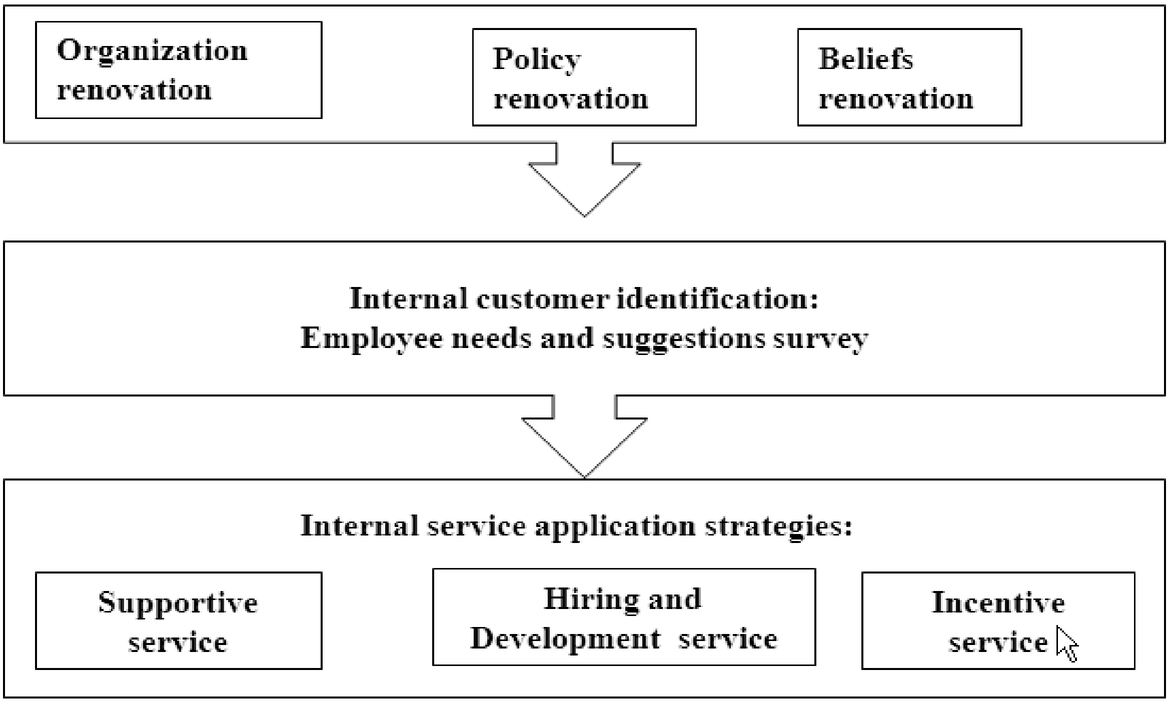

Organization renovation
Policy renovation
Beliefs renovation
Internal customer identification:
Employee needs and suggestions survey
Internal service application strategies:
Supportive service
Hiring and Development service
Incentive service

Figure 5-1 Internal service operation flow

Source: STX Zhang Yunhai (2010)

Internal service process and its operation mode can be illustrated by the chart below:

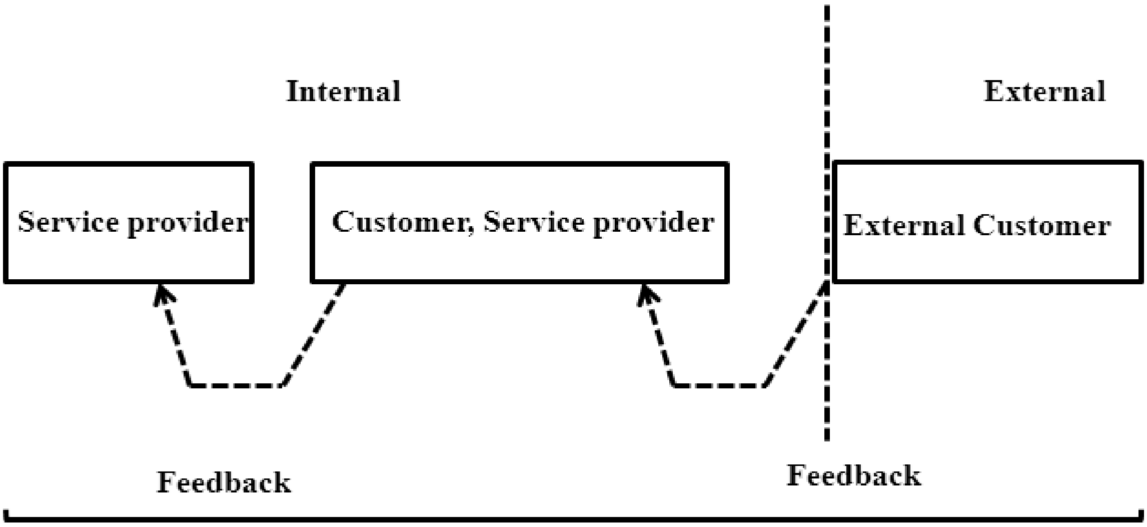

Internal
External
Service provider
Customer, Service provider
External Customer
Feedback
Feedback

Figure 5-2 Internal service process

Source: Song Z (2009)

From this flow chat, there might be lots of internal service functions teams; they are acting as customers as well as service providers to next flow. The output of this flow is the perceivable service which firms offer to external customers. If CTS team would like improve their performance, the team must provide excellent service to its customers both internally and externally; while during the service, the internal functional teams (and departments) must offer appropriate supports at right time. No matter what kinds of firms' organizations, the relationships between service providers and internal customers are always there. If the internal service is very bad, external service will be harmed and that will impact the team performance in the end.

5.2 The Relationship between Internal Service Quality and Performance Management Capability

Internal service quality is an assessment and evaluation of internal service application result by its strategies application. The internal service quality will influence team performance management system and verse vasa. Please refer to figure 5-3.The performance management capability is one of the indicators of a firm performance management system. It has three components: performance evaluation capabilities, performance communication capabilities and performance incentive capabilities.

There are two fundamental supporting factors (management team support and employee satisfaction). They are the key to successfully implement internal service as well as to improve the performance management capabilities. Management support means both top level and middle level management team need to step in the internal service plan execution and support to make sure there is not gating; normally, top level management team is acting as sponsors and middle level is the bridge between execution team and the working level.

Employee satisfaction is a comprehension of work feelings based on his job assessment and personal needed, (Schaffer, 1953). Many experts argued that sustainable customer satisfaction (CS) can only be reached through employee satisfaction (ES). Employees' mood will affect customers feeling and can lead to customer dissatisfaction if it is not well managed. While ES may not lead to CS directly since there are lots of other factors behind it. The rest supporting factors must be well aligned to provide appropriate support to service people to sustain customer satisfaction. Hence, ES has a very strong position during team performance management capabilities improvement.

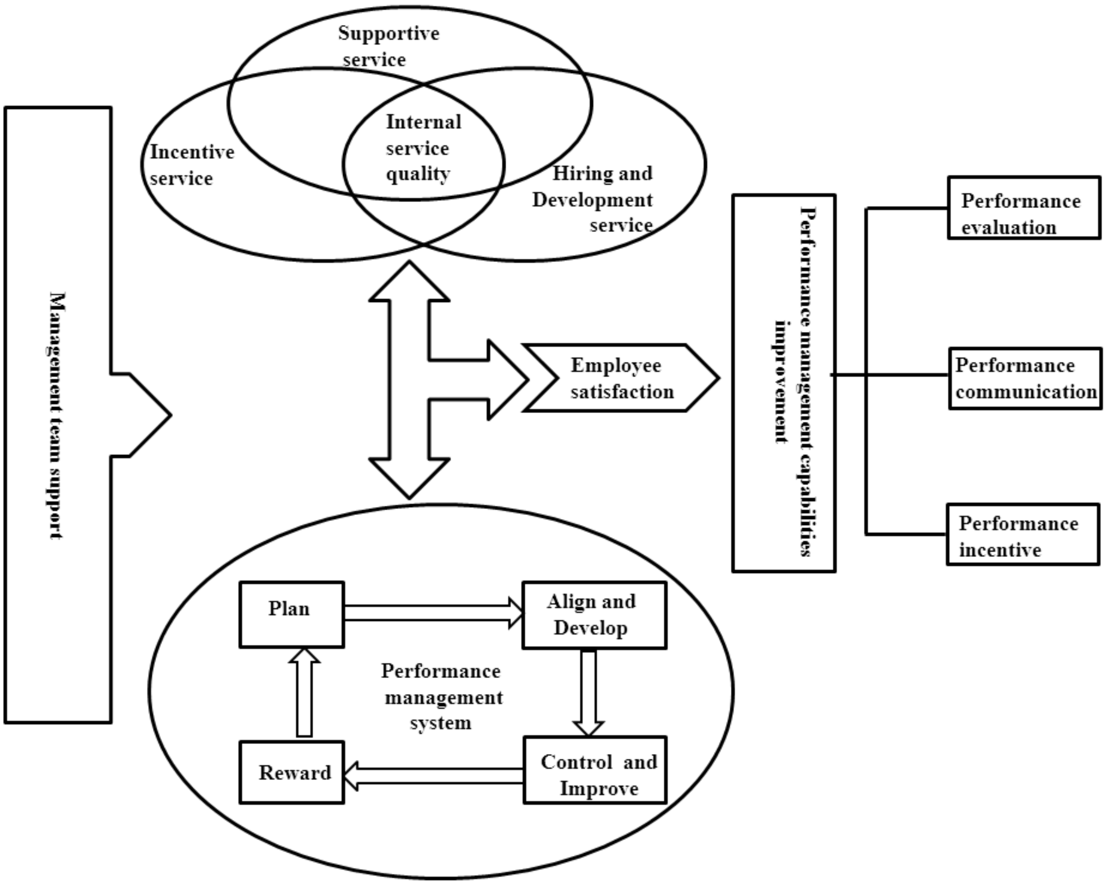

Supportive service
Incentive service
Internal service quality
Hiring and Development service
Management team support
Employee satisfaction
Performance management capabilities improvement
Performance evaluation
Performance communication
Performance incentive
Plan
Align and Develop
Performance management system
Control and Improve
Reward

Figure 5-3 Figure The relationship model between internal service quality and performance management system

Source: STX Zhang Yunhai (2010)

The relationship mode listed above shows how to improve the team performance management capability; the key step is to keep internal service theory and practice as fundamental actions which need to be following through completely on performance management system build up and inside team building (within a firm or one group). The interactions between internal service and team performance management system will significantly impact on the employees' satisfaction. In turn, these influencing will definitely lead to good or bad performance management in a team as well as a firm.

5.3 An Empirical Study in STX China CTS Team

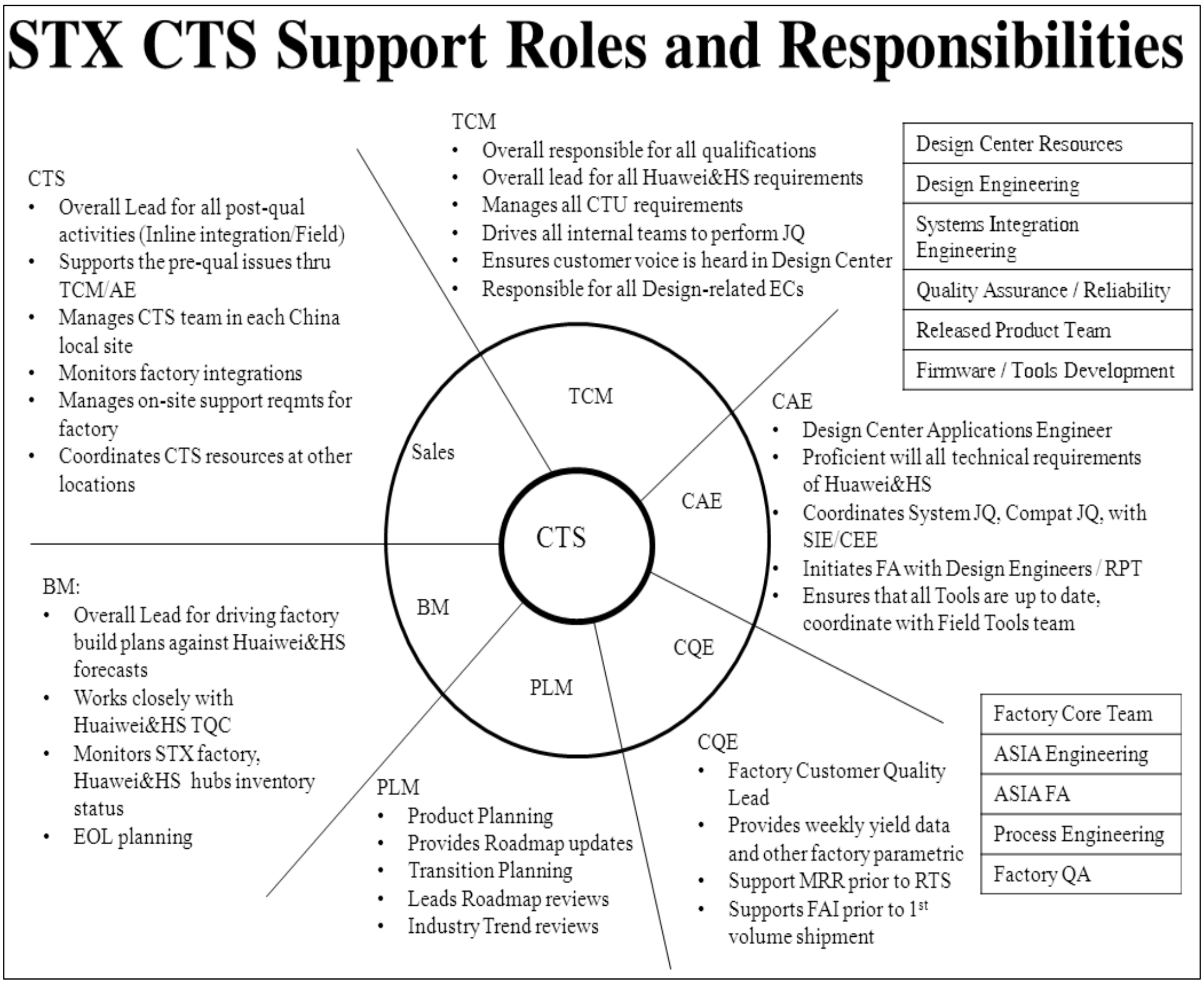
To validate the work mechanism of the 3 dimensions mode of team performance improvement, STX China CTS team is chose as the evaluation base to test and validate it. This empirical study has three sections. Section one: develop the internal service for STX CTS team, it will be clustered into supportive service, hiring and development service and incentive service; Section two is: conduct team performance improvement actions based on the 3 dimensions model; Section three is: characterize the result and validate the effectiveness.

5.3.1 Develop internal service for STX CTS Team

Supportive Service

Along with VOC collection and characterization from both internal teams and external customers, this thesis had created the model which is 3 dimension models by utilization internal service theory to improve team performance.

First of all, to re-clarify CTS team roles and responsibilities to make sure each CTS member in the team clearly understood what they need to do. Let everyone well understood what sales' senses, customers' senses, and factory operations' senses are and how to cultivate these sense deeper and further based on internal service theory. Besides, it is also important on re-optimize their job assignments and job loadings so as to identify the workload gaps within team. See the figure below:



STX CTS Support Roles and Responsibilities

CTS
- Overall Lead for all post-qual activities (Inline integration/Field)
- Supports the pre-qual issues thru TCM/AE
- Manages CTS team in each China local site
- Monitors factory integrations
- Manages on-site support reqmts for factory
- Coordinates CTS resources at other locations

TCM
- Overall responsible for all qualifications
- Overall lead for all Huawei&HS requirements
- Manages all CTU requirements
- Drives all internal teams to perform JQ
- Ensures customer voice is heard in Design Center
- Responsible for all Design-related ECs

Design Center Resources
Design Engineering
Systems Integration Engineering
Quality Assurance / Reliability
Released Product Team
Firmware / Tools Development

CAE
- Design Center Applications Engineer
- Proficient will all technical requirements of Huawei&HS
- Coordinates System JQ, Compat JQ, with SIE/CEE
- Initiates FA with Design Engineers / RPT
- Ensures that all Tools are up to date, coordinate with Field Tools team

BM:
- Overall Lead for driving factory build plans against Huaiwei&HS forecasts
- Works closely with Huaiwei&HS TQC
- Monitors STX factory, Huawei&HS hubs inventory status
- EOL planning

PLM
- Product Planning
- Provides Roadmap updates
- Transition Planning
- Leads Roadmap reviews
- Industry Trend reviews

CQE
- Factory Customer Quality Lead
- Provides weekly yield data and other factory parametric
- Support MRR prior to RTS
- Supports FAI prior to 1st volume shipment

Factory Core Team
ASIA Engineering
ASIA FA
Process Engineering
Factory QA

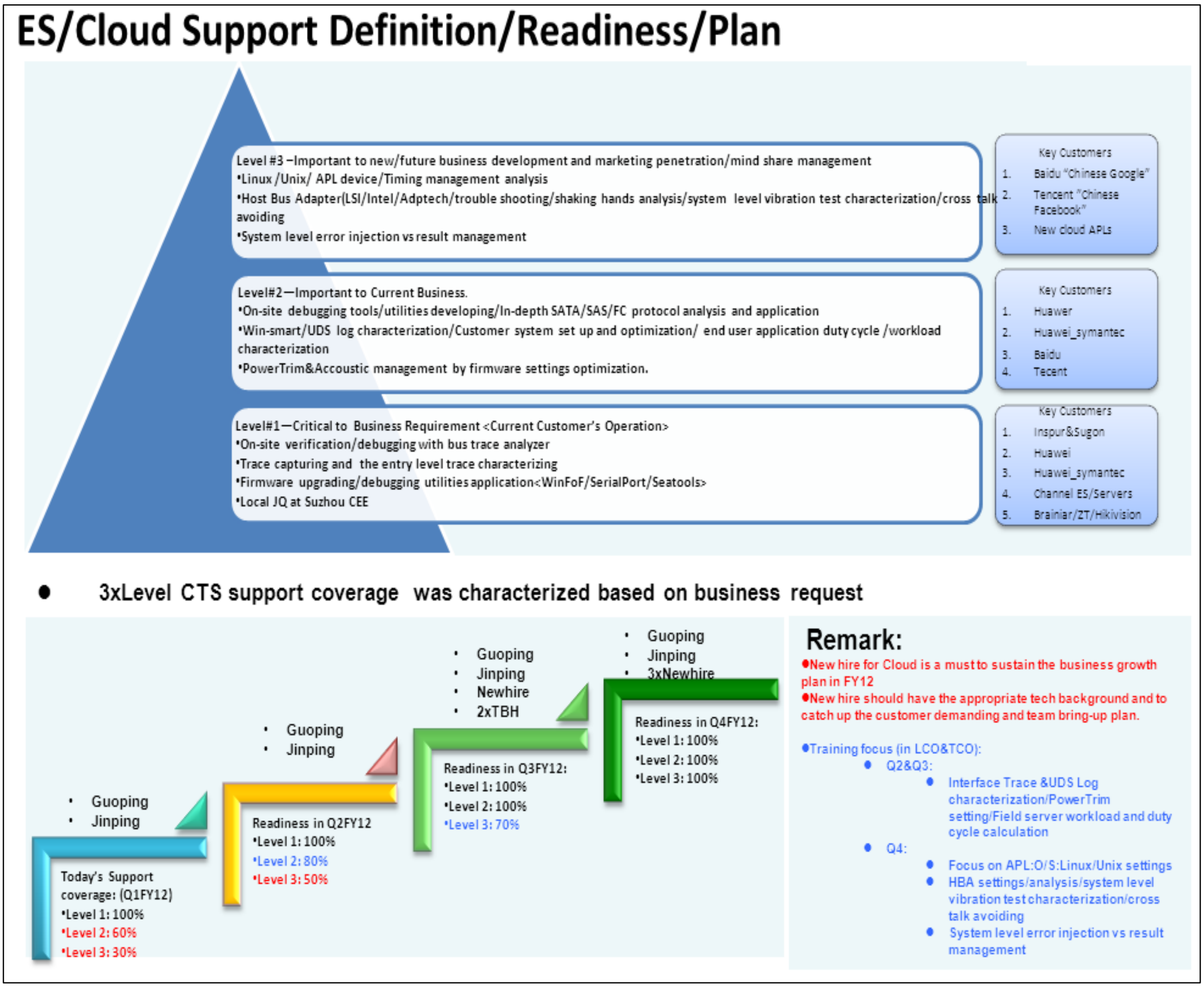
Figure 5-4 The wheel support chart of STX CTS team

Source: STX Zhang Yunhai (2009)

Hiring and Development Service

Along with the R&R clarification and workload optimization, re-open the new hiring program to fulfill the gaps. In this step, got head hunter involved to scrutinize candidates' resumes to search appropriate candidates.

Besides the new hiring progress optimization, the CTS staffs' capabilities had also been reviewed and characterized into different levels. One example is shown below:



ES/Cloud Support Definition/Readiness/Plan

Level #3 –Important to new/future business development and marketing penetration/mind share management
•Linux /Unix/ APL device/Timing management analysis
•Host Bus Adapter(LSI/Intel/Adptech/trouble shooting/shaking hands analysis/system level vibration test characterization/cross talk avoiding
•System level error injection vs result management

Key Customers
1. Baidu "Chinese Google"
2. Tencent "Chinese Facebook"
3. New cloud APLs

Level#2—Important to Current Business.
•On-site debugging tools/utilities developing/In-depth SATA/SAS/FC protocol analysis and application
•Win-smart/UDS log characterization/Customer system set up and optimization/ end user application duty cycle /workload characterization
•PowerTrim&Accoustic management by firmware settings optimization.

Key Customers
1. Huawer
2. Huawei_symantec
3. Baidu
4. Tecent

Level#1—Critical to Business Requirement <Current Customer's Operation>
•On-site verification/debugging with bus trace analyzer
•Trace capturing and the entry level trace characterizing
•Firmware upgrading/debugging utilities application<WinFoF/SerialPort/Seatools>
•Local JQ at Suzhou CEE

Key Customers
1. Inspur&Sugon
2. Huawei
3. Huawei_symantec
4. Channel ES/Servers
5. Brainiar/ZT/Hikivision

- 3xLevel CTS support coverage was characterized based on business request

- Guoping
- Jinping

Today's Support coverage: (Q1FY12)
•Level 1: 100%
•Level 2: 60%
•Level 3: 30%

- Guoping
- Jinping

Readiness in Q2FY12
•Level 1: 100%
•Level 2: 80%
•Level 3: 50%

- Guoping
- Jinping
- Newhire
- 2xTBH

Readiness in Q3FY12:
•Level 1: 100%
•Level 2: 100%
•Level 3: 70%

- Guoping
- Jinping
- 3xNewhire

Readiness in Q4FY12:
•Level 1: 100%
•Level 2: 100%
•Level 3: 100%

Remark:
●New hire for Cloud is a must to sustain the business growth plan in FY12
●New hire should have the appropriate tech background and to catch up the customer demanding and team bring-up plan.

●Training focus (in LCO&TCO):
  - Q2&Q3:
    - Interface Trace &UDS Log characterization/PowerTrim setting/Field server workload and duty cycle calculation
  - Q4:
    - Focus on APL:O/S:Linux/Unix settings
    - HBA settings/analysis/system level vibration test characterization/cross talk avoiding
    - System level error injection vs result management

Figure 5-5 An example of hiring and development service from CTS team

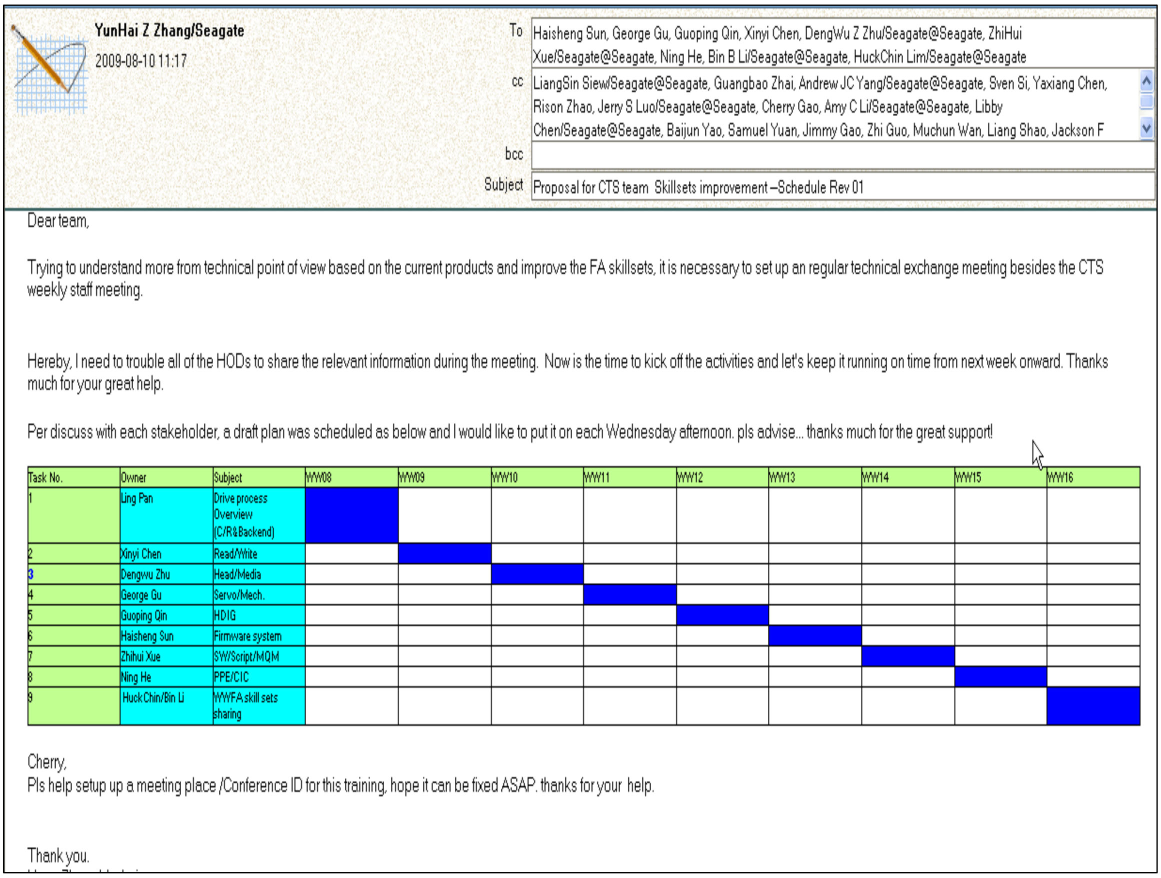
Source: STX Zhang Yunhai (2010)

From the figure above, we can see what kinds of expertise based on the job requirements CTS team need, what the team needs to have and when we need to share it in front of external customers. Those kinds of the plan had been put in place and reviewed quarterly by CTS managers and their support teams. The congruency among sales team, factory operation teams, and design teams had been reached and the whole teams are dedicated on the execution based on that.

This will give the frontier CTS folks a very clear signal that he or she is not dealing with customers alone. He or she has a strong support team around to make sure he or she is able to approach appropriate resources on time once customer issues occur. It is not only the group actions but also a team build up practice.

By doing that through the year of 2009, there are 10 people interviewed for one opening and 5 people were hired successfully within 6 months. Total headcounts grew up to 11 by the end of year 2009, (While, I took care of China CTS team in June of 2009). And their related job experiences were at 5.5 years. Meanwhile, Team member turnover rate was reduced from 20% to 5% in the year of 2010 by utilizing performance management improvement models; everyone in the team is doing their job based on his or her self-managed mode instead of asking permission from managers. Through doing this, the overall effectiveness and efficiencies had been improved from 30% to 80% based on the feedbacks from customers and internal teams. Only one member had been pushed to quit after taking a 6-month PIP (performance improvement plan). (See the attachments)

Here is team technical development plan in the year of 2009. The first wave had been done by the end of year 2009.



YunHai Z Zhang/Seagate
2009-08-10 11:17

To: Haisheng Sun, George Gu, Guoping Qin, Xinyi Chen, DengWu Z Zhu/Seagate@Seagate, ZhiHui Xue/Seagate@Seagate, Ning He, Bin B Li/Seagate@Seagate, HuckChin Lim/Seagate@Seagate
cc: LiangSin Siew/Seagate@Seagate, Guangbao Zhai, Andrew JC Yang/Seagate@Seagate, Sven Si, Yaxiang Chen, Rison Zhao, Jerry S Luo/Seagate@Seagate, Cherry Gao, Amy C Li/Seagate@Seagate, Libby Chen/Seagate@Seagate, Baijun Yao, Samuel Yuan, Jimmy Gao, Zhi Guo, Muchun Wan, Liang Shao, Jackson F
bcc:
Subject: Proposal for CTS team Skillsets improvement –Schedule Rev 01

Dear team,

Trying to understand more from technical point of view based on the current products and improve the FA skillsets, it is necessary to set up an regular technical exchange meeting besides the CTS weekly staff meeting.

Hereby, I need to trouble all of the HODs to share the relevant information during the meeting. Now is the time to kick off the activities and let's keep it running on time from next week onward. Thanks much for your great help.

Per discuss with each stakeholder, a draft plan was scheduled as below and I would like to put it on each Wednesday afternoon. pls advise... thanks much for the great support!

Task No.	Owner	Subject	WW08	WW09	WW10	WW11	WW12	WW13	WW14	WW15	WW16
1	Ling Pan	Drive process Overview (C/R&Backend)	■								
2	Xinyi Chen	Read/Write		■							
3	Dengwu Zhu	Head/Media			■						
4	George Gu	Servo/Mech.				■					
5	Guoping Qin	HDIG					■				
6	Haisheng Sun	Firmware system						■			
7	Zhihui Xue	SW/Script/MQM							■		
8	Ning He	PPE/CIC								■	
9	Huck Chin/Bin Li	WWFA skill sets sharing									■

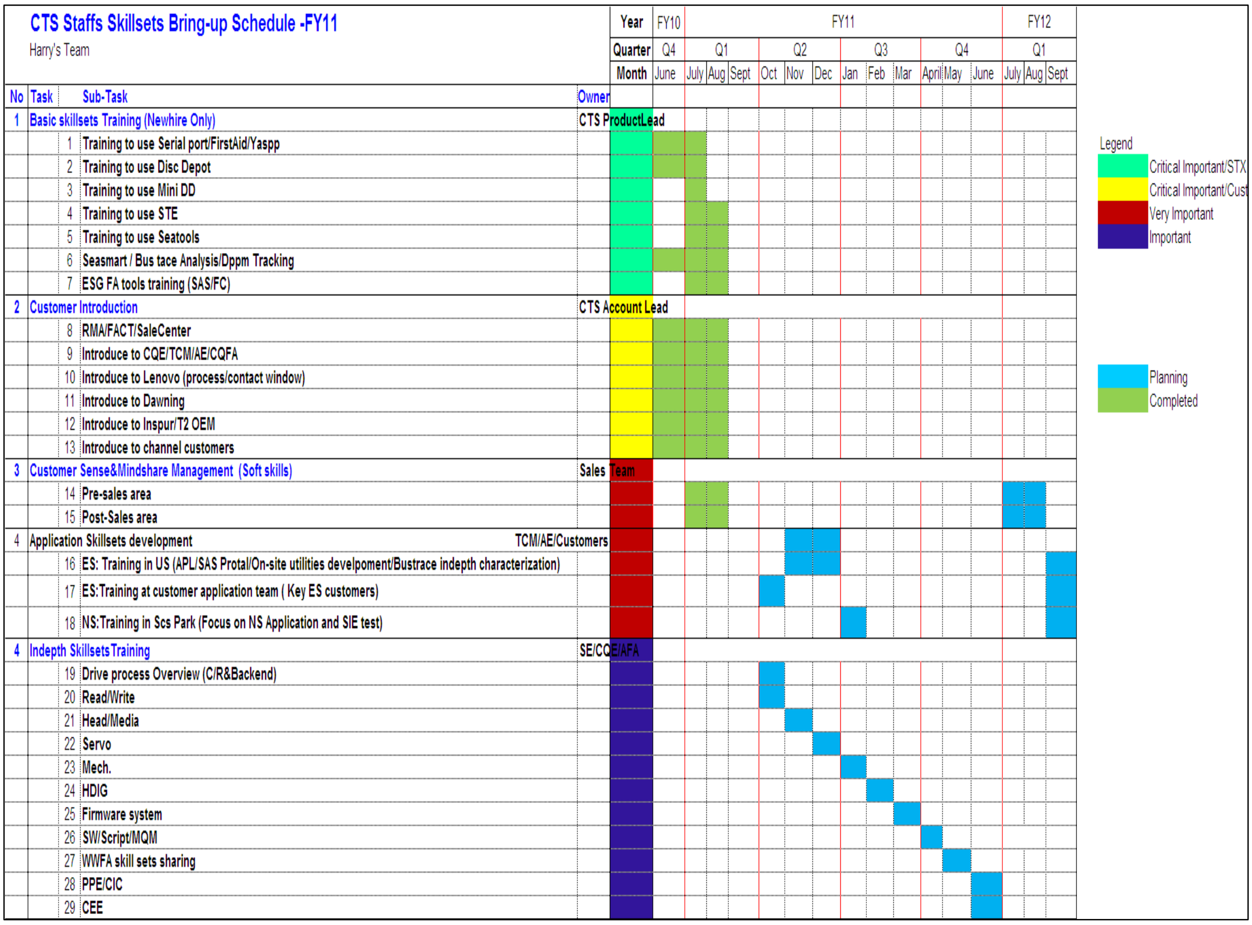
Cherry,
Pls help setup up a meeting place /Conference ID for this training, hope it can be fixed ASAP. thanks for your help.

Thank you.

Figure 5-6 The development service of STX China CTS

Source: STX Zhang Yunhai (2009)

The above training is for the experienced employees. For the new hires, we use the plan as below.



CTS Staffs Skillsets Bring-up Schedule -FY11

Harry's Team

				Year	FY10	FY11												FY12		
				Quarter	Q4	Q1			Q2			Q3			Q4			Q1		
				Month	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept
No	Task	Sub-Task	Owner																	
1	Basic skillsets Training (Newhire Only)		CTS ProductLead	🟢																
		1 Training to use Serial port/FirstAid/Yaspp		🟢	🟩	🟩														
		2 Training to use Disc Depot		🟢	🟩	🟩														
		3 Training to use Mini DD		🟢		🟩														
		4 Training to use STE		🟢		🟩	🟩													
		5 Training to use Seatools		🟢		🟩	🟩													
		6 Seasmart / Bus tace Analysis/Dppm Tracking		🟢	🟩	🟩	🟩													
		7 ESG FA tools training (SAS/FC)		🟢		🟩	🟩													
2	Customer Introduction		CTS Account Lead	🟨																
		8 RMA/FACT/SaleCenter		🟨	🟩	🟩	🟩													
		9 Introduce to CQE/TCM/AE/CQFA		🟨	🟩	🟩	🟩													
		10 Introduce to Lenovo (process/contact window)		🟨	🟩	🟩	🟩													
		11 Introduce to Dawning		🟨	🟩	🟩	🟩													
		12 Introduce to Inspur/T2 OEM		🟨	🟩	🟩	🟩													
		13 Introduce to channel customers		🟨	🟩	🟩	🟩													
3	Customer Sense&Mindshare Management (Soft skills)		Sales Team	🟥																
		14 Pre-sales area		🟥		🟩	🟩											🟦	🟦	
		15 Post-Sales area		🟥		🟩	🟩											🟦	🟦	
4	Application Skillsets development		TCM/AE/Customers	🟥						🟦	🟦									
		16 ES: Training in US (APL/SAS Protal/On-site utilities develpoment/Bustrace indepth characterization)		🟥						🟦	🟦									🟦
		17 ES:Training at customer application team (Key ES customers)		🟥					🟦											🟦
		18 NS:Training in Scs Park (Focus on NS Application and SIE test)		🟥								🟦								🟦
4	Indepth SkillsetsTraining		SE/CQE/AFA	🟪																
		19 Drive process Overview (C/R&Backend)		🟪					🟦											
		20 Read/Write		🟪					🟦											
		21 Head/Media		🟪						🟦										
		22 Servo		🟪							🟦									
		23 Mech.		🟪								🟦								
		24 HDIG		🟪									🟦							
		25 Firmware system		🟪										🟦						
		26 SW/Script/MQM		🟪											🟦					
		27 WWFA skill sets sharing		🟪												🟦				
		28 PPE/CIC		🟪													🟦			
		29 CEE		🟪													🟦			

Legend

🟢 Critical Important/STX

🟨 Critical Important/Cust

🟥 Very Important

🟪 Important

🟦 Planning

🟩 Completed

Figure 5-7 The development plan of CTS (soft skills and technical skills)

Source: STX Zhang Yunhai (2010)

Following the supportive service, both training for experienced members and new hires are developed and executed on time. Staffs are energized with those trainings and developments.

Incentive Service

Besides the above actions, from the incentive service dimension, we developed quarterly nomination mechanism for outstanding players of each quarter and issued awards timely. The detailed reasons for award will be one of the followings: 1) Exceptional achievement, which is the achievement of exceptional results, 2) Extraordinary effort , which means the extraordinary effort (time and energy) to achieve a challenging goal, 3) Improvements, which indicates the crucial process improvements that result in substantial savings (time and money), 4) Innovation, which is the distinguished innovation, 5) Leadership, which means the exemplary leadership of a critical project or initiative, 6) Service, which is the outstanding customer service or support, 7) Teamwork, which means the highly effective teamwork to achieve important goals.

Till today, there are 12 R&R released during past 3 years. This had helped on team talents growing, and personal performance improvement.

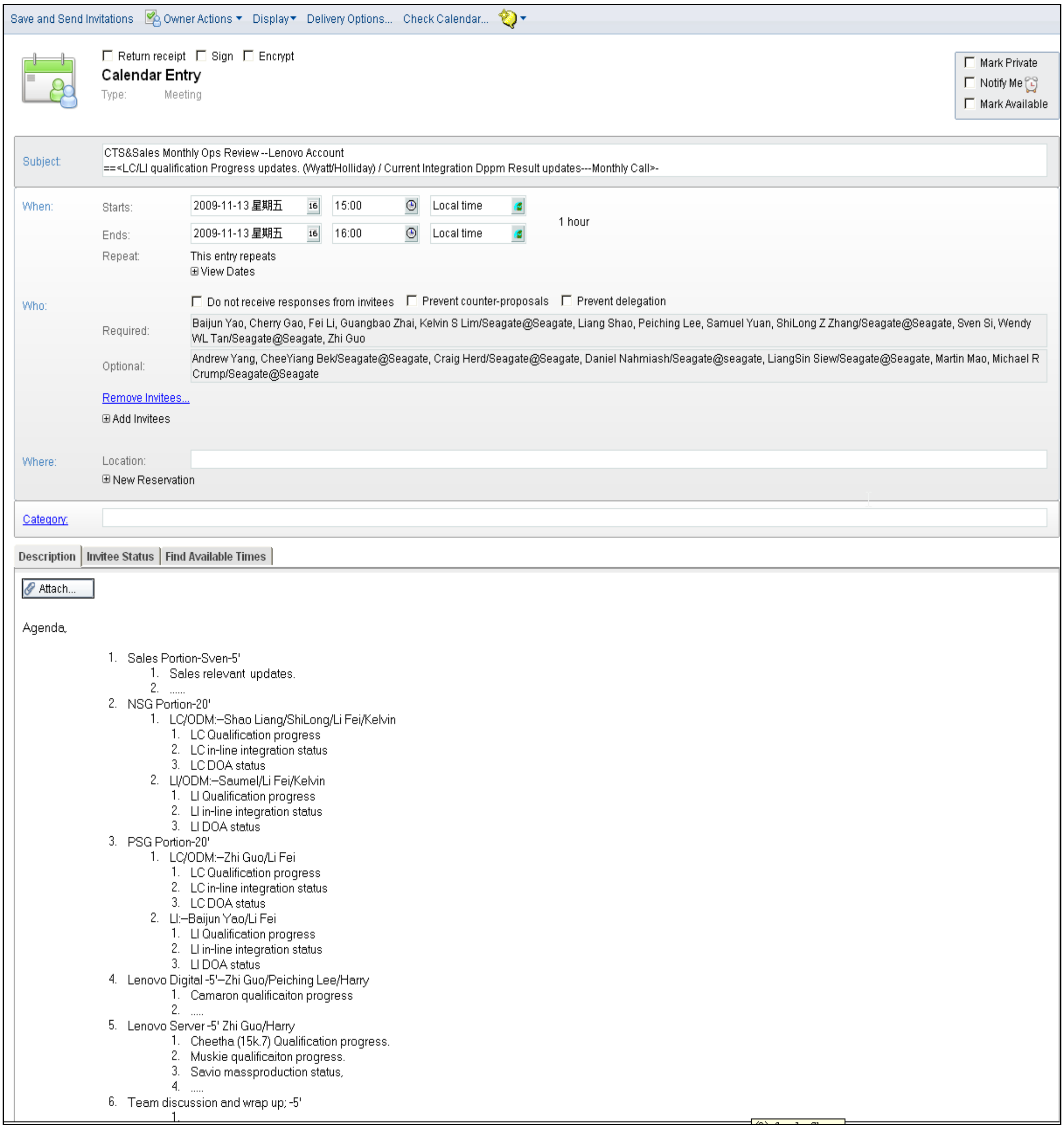
5.3.2 Conduct Team Performance Improvement Based on the Model

To validate the mode work mechanism, the result from STX CTS team will be helpful. This session will illustrate the result from the perspectives of turnover rate, customer complaints, and revenue impact minimizing and eliminating.

Actions Sales Sense Dimension

This section will describe the detailed inputs and outputs based on the cubic-3 dimension’s model.

The first one is the inputs on sales sense dimension. As a matter of fact, sales folks are the internal customers of CTS team, their expectations and perceptions must be well understood before setting up any performance management goals. The fundamental input based on the previous discussion with sales folks is: “To support them to get technical issue solved timely without any revenue impact or business share impact”. This is a critical request for CTS folks during their team goal settings. Trying to understand this from sales folk’s points of view; CTS folks need to set up the regular meeting with sales folks on monthly basis. This will help both teams know about each other besides the business competition status review and the product quality status review. One of the examples with the meeting topics is listed in figure below:



☐ Return receipt ☐ Sign ☐ Encrypt

Calendar Entry

Type: Meeting

☐ Mark Private
☐ Notify Me
☐ Mark Available

Subject: CTS&Sales Monthly Ops Review --Lenovo Account
==<LC/LI qualification Progress updates. (Wyatt/Holliday) / Current Integration Dppm Result updates---Monthly Call>-

When:
Starts: 2009-11-13 星期五 15:00 Local time
Ends: 2009-11-13 星期五 16:00 Local time
1 hour
Repeat: This entry repeats
⊞ View Dates

Who:
☐ Do not receive responses from invitees ☐ Prevent counter-proposals ☐ Prevent delegation
Required: Baijun Yao, Cherry Gao, Fei Li, Guangbao Zhai, Kelvin S Lim/Seagate@Seagate, Liang Shao, Peiching Lee, Samuel Yuan, ShiLong Z Zhang/Seagate@Seagate, Sven Si, Wendy WL Tan/Seagate@Seagate, Zhi Guo
Optional: Andrew Yang, CheeYiang Bek/Seagate@Seagate, Craig Herd/Seagate@Seagate, Daniel Nahmiash/Seagate@seagate, LiangSin Siew/Seagate@Seagate, Martin Mao, Michael R Crump/Seagate@Seagate
Remove Invitees...
⊞ Add Invitees

Where:
Location:
⊞ New Reservation

Category:

Agenda,

1. Sales Portion-Sven-5'
    1. Sales relevant updates.
    2. ......
2. NSG Portion-20'
    1. LC/ODM:–Shao Liang/ShiLong/Li Fei/Kelvin
        1. LC Qualification progress
        2. LC in-line integration status
        3. LC DOA status
    2. LI/ODM:–Saumel/Li Fei/Kelvin
        1. LI Qualification progress
        2. LI in-line integration status
        3. LI DOA status
3. PSG Portion-20'
    1. LC/ODM:–Zhi Guo/Li Fei
        1. LC Qualification progress
        2. LC in-line integration status
        3. LC DOA status
    2. LI:–Baijun Yao/Li Fei
        1. LI Qualification progress
        2. LI in-line integration status
        3. LI DOA status
4. Lenovo Digital -5'–Zhi Guo/Peiching Lee/Harry
    1. Camaron qualificaiton progress
    2. .....
5. Lenovo Server -5' Zhi Guo/Harry
    1. Cheetha (15k.7) Qualification progress.
    2. Muskie qualificaiton progress.
    3. Savio massproduction status,
    4. .....
6. Team discussion and wrap up; -5'
    1.

Figure 5-8 An example or regular interlock meeting between Sales and CTS team

Source: STX Zhang Yunhai (2009)

By monthly discussing with sales folks besides the daily tactics talks, latest requirements from sales team will be well digested and executed. CTS members' sales sense had been improved step by step.

Actions on Factory Operation Sense Dimension

This is second one from the model. To make sure both sides (namely factory operation team and CTS team) are well aligned, it is necessary to set up a core team with wheel organization charts and list down the relationship within and between each other. In addition, the team role and responsibilities had been addressed. (See figure 5-9)

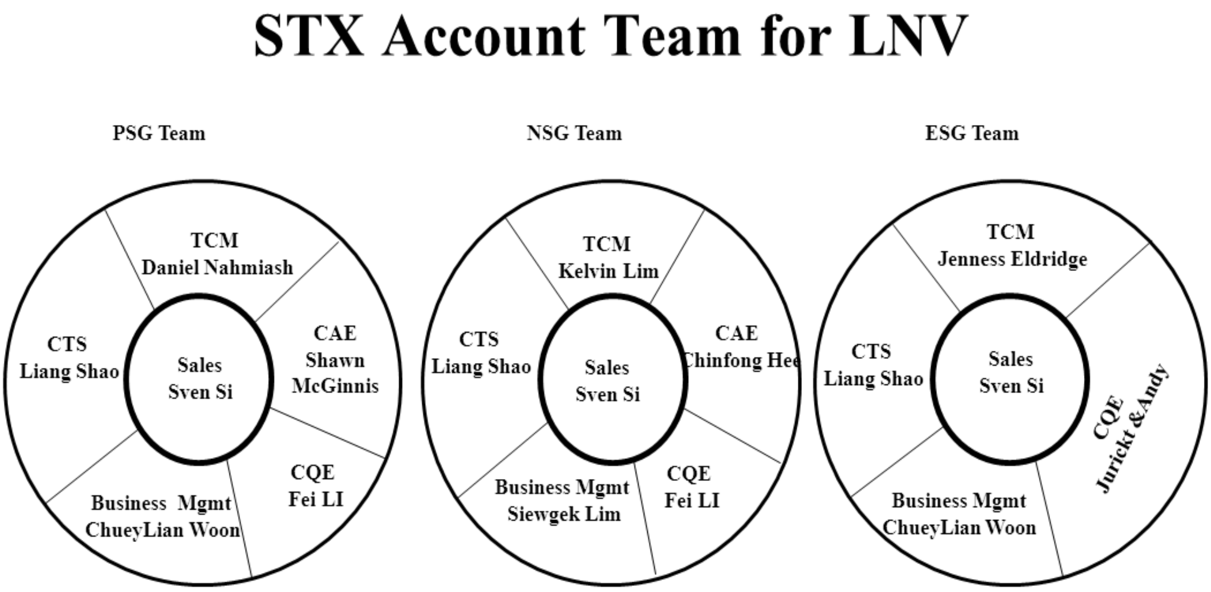
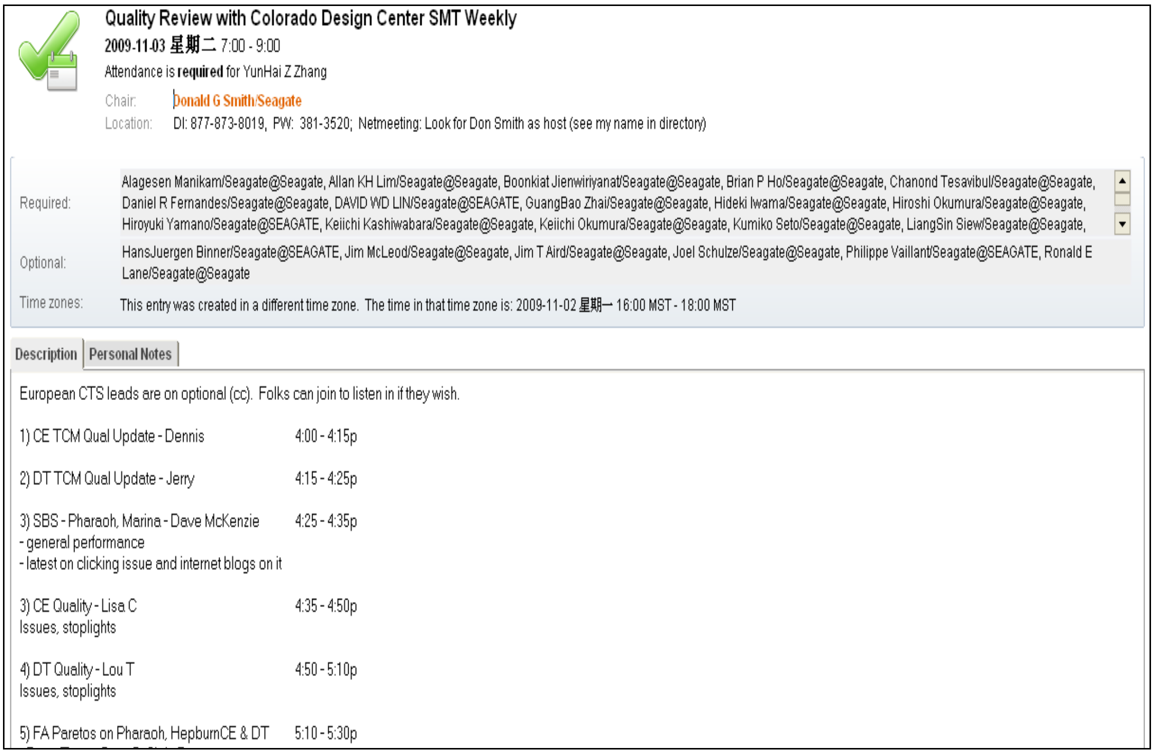

STX Account Team for LNV
PSG Team
NSG Team
ESG Team
TCM
Daniel Nahmiash
CTS
Liang Shao
Sales
Sven Si
CAE
Shawn
McGinnis
CQE
Fei LI
Business Mgmt
ChueyLian Woon
TCM
Kelvin Lim
CTS
Liang Shao
Sales
Sven Si
CAE
Chinfong Hee
Business Mgmt
Siewgek Lim
CQE
Fei LI
TCM
Jenness Eldridge
CTS
Liang Shao
Sales
Sven Si
CQE
Jurickt &Andy
Business Mgmt
ChueyLian Woon

Figure 5-9 An example of account support wheel support Chart

Source: STX Zhang Yunhai (2009)

Along with the wheel support charts, there must be a regular meeting between CTS folks and factory operation team to help both cultivate the relationships.


Description
Personal Notes

Quality Review with Colorado Design Center SMT Weekly

2009-11-03 星期二 7:00 - 9:00

Attendance is **required** for YunHai Z Zhang

Chair: Donald G Smith/Seagate

Location: DI: 877-873-8019, PW: 381-3520; Netmeeting: Look for Don Smith as host (see my name in directory)

Required: Alagesen Manikam/Seagate@Seagate, Allan KH Lim/Seagate@Seagate, Boonkiat Jienwiriyanat/Seagate@Seagate, Brian P Ho/Seagate@Seagate, Chanond Tesavibul/Seagate@Seagate, Daniel R Fernandes/Seagate@Seagate, DAVID WD LIN/Seagate@SEAGATE, GuangBao Zhai/Seagate@Seagate, Hideki Iwama/Seagate@Seagate, Hiroshi Okumura/Seagate@Seagate, Hiroyuki Yamano/Seagate@SEAGATE, Keiichi Kashiwabara/Seagate@Seagate, Keiichi Okumura/Seagate@Seagate, Kumiko Seto/Seagate@Seagate, LiangSin Siew/Seagate@Seagate,

Optional: HansJuergen Binner/Seagate@SEAGATE, Jim McLeod/Seagate@Seagate, Jim T Aird/Seagate@Seagate, Joel Schulze/Seagate@Seagate, Philippe Vaillant/Seagate@SEAGATE, Ronald E Lane/Seagate@Seagate

Time zones: This entry was created in a different time zone. The time in that time zone is: 2009-11-02 星期一 16:00 MST - 18:00 MST

European CTS leads are on optional (cc). Folks can join to listen in if they wish.

1) CE TCM Qual Update - Dennis 4:00 - 4:15p

2) DT TCM Qual Update - Jerry 4:15 - 4:25p

3) SBS - Pharaoh, Marina - Dave McKenzie 4:25 - 4:35p
- general performance
- latest on clicking issue and internet blogs on it

3) CE Quality - Lisa C 4:35 - 4:50p
Issues, stoplights

4) DT Quality - Lou T 4:50 - 5:10p
Issues, stoplights

5) FA Paretos on Pharaoh, HepburnCE & DT 5:10 - 5:30p

Figure 5-10 An example of the interlock meeting with factory operation team

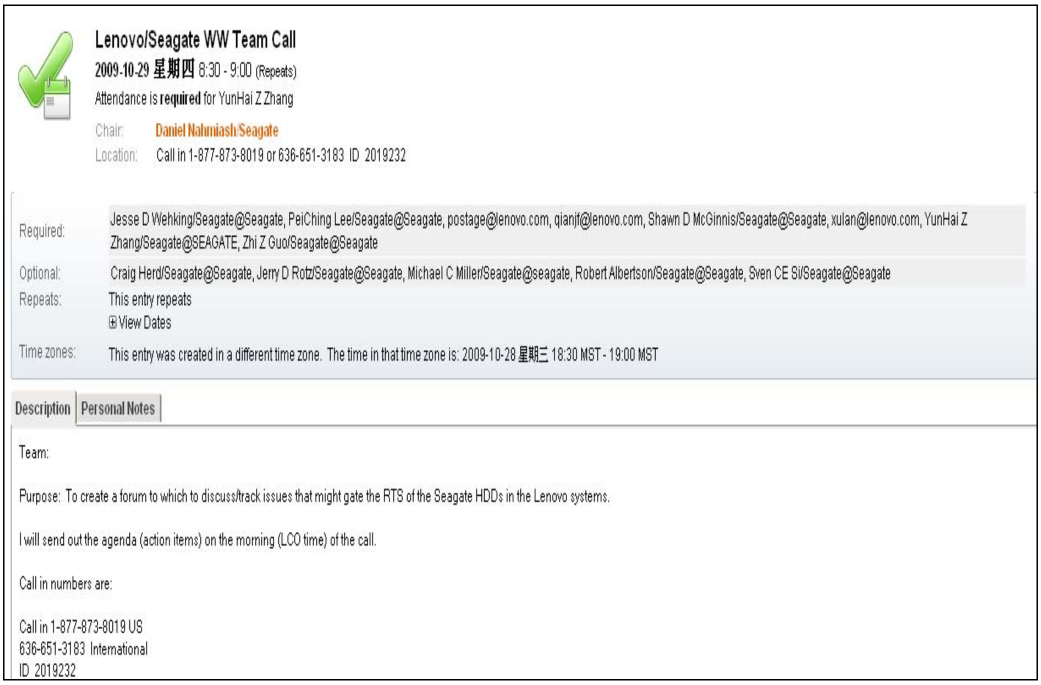
Source: STX Zhang Yunhai (2009)

Actions on Customer Sense Dimension

The third one is customer sense. It is important to get customer involved in the regular interlock meeting so that CTS members can stay close to them and learn what they really need and what their headache is.

Key practice is to set up the regular face to face meeting mechanism. Management meeting was set up bi-weekly, while account team lead meeting with customers are set up on weekly. It helps both working level and management level well synchronized on regular basis.

Customers' issues and concerns will be well addressed and internal team works progress can be tacked. These activities improved the transparency between both firms and the internal supporting teams. By doing this, customers have the perceptions that CTS team are accountable. They begin treating CTS team as peers instead of vendors.



Lenovo/Seagate WW Team Call

2009-10-29 星期四 8:30 - 9:00 (Repeats)

Attendance is **required** for YunHai Z Zhang

Chair: Daniel Nahmiash/Seagate

Location: Call in 1-877-873-8019 or 636-651-3183 ID 2019232

Required: Jesse D Wehking/Seagate@Seagate, PeiChing Lee/Seagate@Seagate, postage@lenovo.com, qianjf@lenovo.com, Shawn D McGinnis/Seagate@Seagate, xulan@lenovo.com, YunHai Z Zhang/Seagate@SEAGATE, Zhi Z Guo/Seagate@Seagate

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Repeats: This entry repeats

Time zones: This entry was created in a different time zone. The time in that time zone is: 2009-10-28 星期三 18:30 MST - 19:00 MST

Team:

Purpose: To create a forum to which to discuss/track issues that might gate the RTS of the Seagate HDDs in the Lenovo systems.

I will send out the agenda (action items) on the morning (LCO time) of the call.

Call in numbers are:

Call in 1-877-873-8019 US
636-651-3183 International
ID 2019232

Figure 5-11 An example of the weekly interlock call with customers (LNV)

Source: STX Zhang Yunhai (2009)

To keep the cubic-3 dimensions model working well, the manager of CTS team must have his own strategies and tactics to make sure each dimension is well managed. Normally, it needs the manager to do his homework first to identify the key players of each customer account and complete one to one meeting with them. This will help managers touch down the base and provide the appropriate support to CTS members. And the manager needs to set up the right goal on CTS members' performance management. He or she should not be a bossy guy while acting as a supporter to his or her team.

CTS manager should work with cross functional team as a peer and help them bridge up the gaps for any discrepancies during executions. The manager also needs to do the up-stream management to make sure the entire team goals are well aligned with top management team and ask for their appropriate support to make sure working level have the authority to reach the right resources during dealing with customers.

5.3.3 Characterize the Result (by In-depth Interview and Survey)

To validate the effectiveness and efficiency of the model, an in-depth interview and survey had also been conducted after one year's implementation. Following section will illustrate more details on this.

Data from In-depth Interview

Along with the practice based on the three dimension model, the output is very exciting. The actions had been conducted by China CTS team since September of year 2009, and the phase 1 result came out by the end of year 2009. Phase 2 result came out at June of year 2010. Phase 3 result came out at the end of year 2010. Table below is the detailed comparison. This study picked up the numbers of customer complaints as the indices

Table 5-1 The brief summary after phasing in cubic 3-dimension model in STX China CTS team

		Target (Goals)	**Before CAs (1/09-5/09)**	**Phase1 (6/09-12/09)**	**Phase 2 (1/10-6/10)**	**Phase 3 (7/10-12/10)**	**Remark**
Output from Customer sense dimension	Number of Customer complaints	<=5	30	15	8	3	90% Reduction
	FA TAT (days)	<=22	40	30	25	21	Saved 19 days for customers
Output from Sales sense dimension	Number of Arguments(instead of agreements) with Sales team	<=6	20	10	5	2	90% Reduction
	Number of Acknowledgements from Sales team	>=5	1	5	6	10	Most of members got acknowledgement from Sales team

Output from Factory Operation sense dimension	Number of communication discrepancy (in terms of customer needs and factory operation status)	<=6	15	10	6	3	80% reduction.
	Number of CLCA commitment cutting in which has the date missing	<=3	20	13	7	3	Mets targets and have 85% reduction

From above table, the remarkable achievement had been reached; The first one is customer complaints reduction. There is 95% reduction from June of year 2009 to December of year 2010; The second one is FA TAT reduction (the failure analysis turn around lead time). There were 19 days saved compared to year of 2008; The third one is the reduction of internal argues between sales team and CTS team, which has 90% reduction. This means both sales folks and CTS folks were interacting more closely and happily. The forth one is the increase of acknowledgements from sales team to CTS team. More than 10 people received the R&R (recognition and reward) award; The fifth one is the reduction of communication discrepancy counts between CTS team and the factory operation team. There was 80% reduction. This is telling us both teams had been well aligned in front of quality excursion and in house resource prioritizing; The last one is the commitment of CLCA (close loop corrective action) cutting in. The number of correction actions cutting in date postponed had been reduced 85%.

It is obvious to observe that China CTS team performance improvement plan can be reached by utilizing the cubic 3 dimensions performance improvement model based on internal service theories. The entire team operation effectiveness and efficiencies had been improved quite a lot. This will save the cost of team’s operation as well as improve customer satisfactions. As result, CTS team sustains the firms’ serviceability and gain more business through CTS team performance improvements.

Data from Questionnaire

As a matter of fact, after one year’s implementation, it is necessary to validate the result in terms of the effectiveness and efficiency on the model based on quantitative data analysis; this thesis deploys survey action research methodology and utilizes the questionnaire what had been used for status check in chapter III so as to keep the inputs consistency.

The questionnaires have been sent to customers and internal peers and counterparts through email as previously done in chapter III. And candidates had been told to put their feedbacks which scores from point “1” to point “5” after the email sending out; In the questionnaire: “1” means the strongly disagree , “2” means disagree, “3” means agree on somewhat, “4” means agree, “5” means strongly agree.

This survey covers 6 IT hardware companies; 4 of them are big size companies, 2 of them are smaller size companies. There are 200 piece of questionnaires are sent out. 143 pieces with validated inputs and 57 pieces of them are discarded due to uncompleted inputs, questions misunderstanding, or no feedback. Among them, there are 30 pieces from CTS team, 20 pieces from sales and marketing team, 70 pieces from customers side (focus on the frequently customer contact windows), and 23 pieces from factory operation team.

According to the questionnaire’s design, there are 4 key segmentations in place to collect basic inputs. They are self-evaluations from CTS team; evaluations from customers (frequent customer contact people); sales and marketing folks, factory operation folks. Since the model was implemented in STX CTS team only, the survey will be focused on STX CTS team and related customer frequent contact windows including sales, marketing team, and factory operation team in STX company.

The first part is the self-evaluations from CTS team members. 11 questions designed and 11 attributes assigned. They are: A1: The team’s business results are delivered; A2: We would like to stay and work in this team moving forward; A3: We have very high efficiency in terms of task accomplishing; A4: We know the big picture (i.e. where the business is headed, the affected competition, and how we are doing); A5: We all devote ourselves into work to achieve the goal; A6: We work as a team; A7: We are capable to achieve team’s goal; A8: The job satisfaction is depending on other departments support; A9: We collaborate with other teams very well; A10: We have challenge to fulfill external customers’ support request; A11: Each team member has strong technical expertise

From the mean chart below, we can see all of the inputs are positive. The mean of 9 parameters is greater than 4, which indicates CTS team member's job satisfaction had been improved a lot compared to one year before. Especially on the skill improvements on both the soft skills and technical expertise; the team has stronger confidence than before during handling customers and internal team in terms of communication and mindshare management. While to question 10 is an anti-order question (namely parameter A10 in the chart), the mean is 1.77. It tells us that CTS team has lesser challenge to fulfill external customer's support requests (and it means CTS team had already acquired appropriate skills on technical expertise and customer sentiment managements, hence the pressure from customer challenge is feeling smaller than one year before).

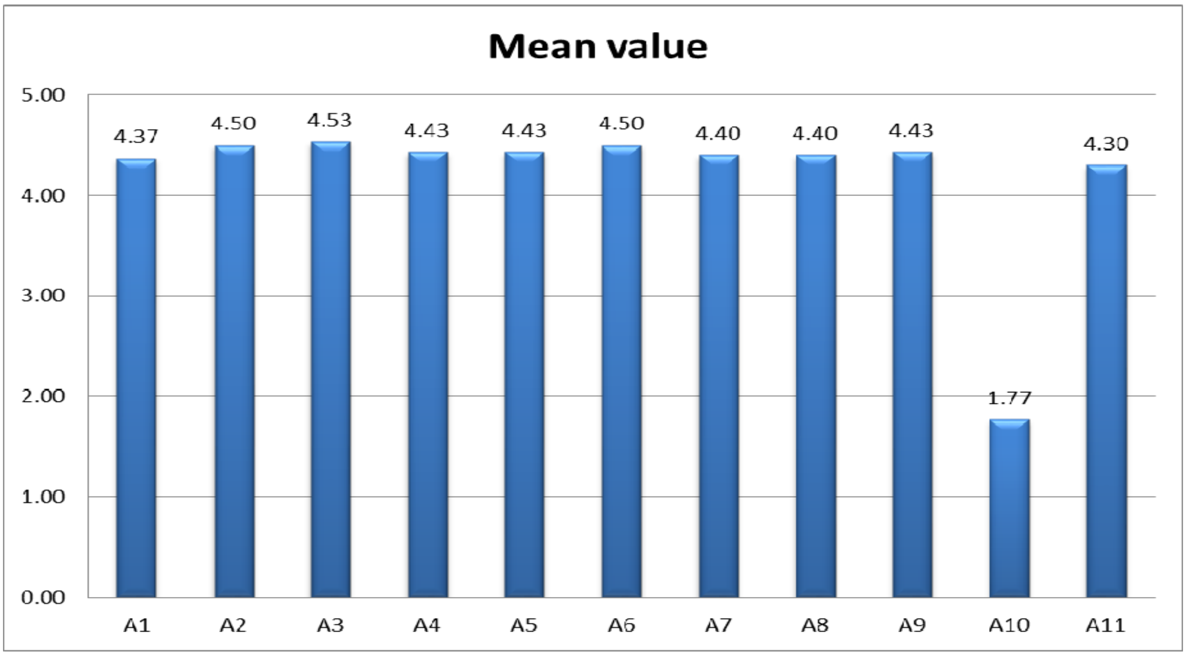

Figure 5-12 The mean value of CTS self -evaluations

According to the Pareto on feedbacks data below, we also see: more than 63.3% of the people believe CTS team have achieved team's business goal. 36.7% even strongly agree CTS team have contributed more than the goal required; meanwhile, majority of the people would like to stay in CTS team for further and deeper career path development. Along with team efficiency, cooperation, and effectiveness improvements, team spirit had been well developed; they have more intensive interactions than before and appreciate each other's job.

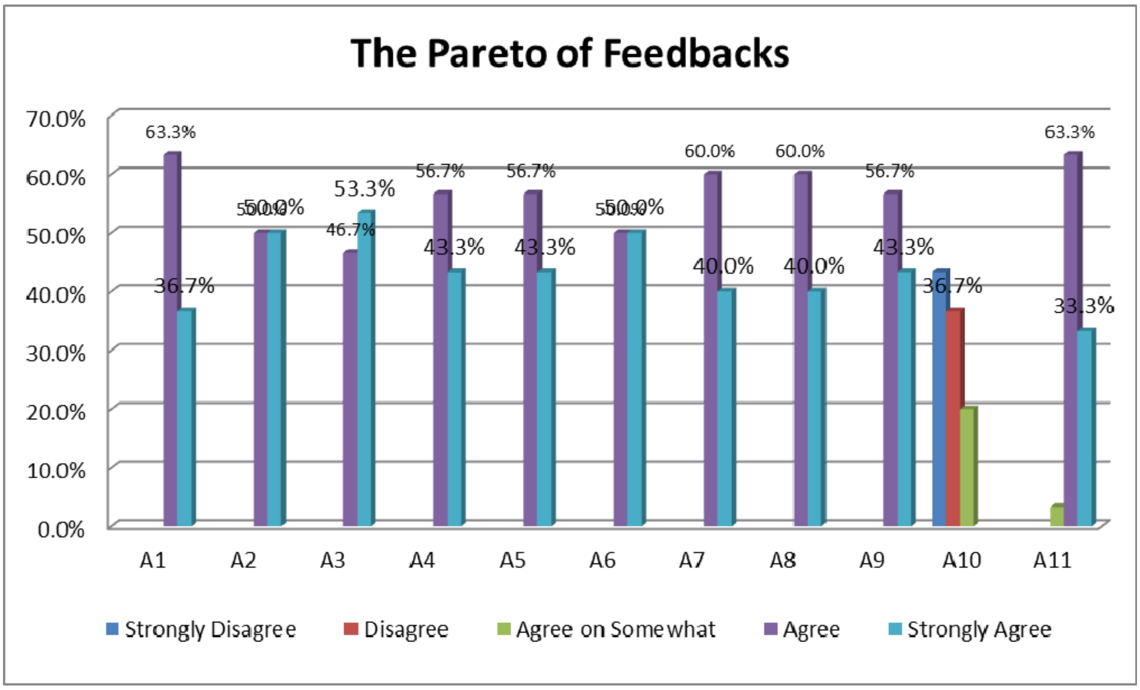

Figure 5-13 The pareto of CTS self-evaluation

By utilizing the statistics analysis software SPSS, we can get a full picture in terms of survey result characterization. The mean of 10 parameters are bigger than 4, At same time, their maximum and minimum value are 5 and 4, which means there is a consensus among the candidates; and both of the skewness and variance are lesser than 1 and close to zero. Meanwhile, the kurtosis is lesser than zero. It indicates parameters distribution is close to normal distribution and the parameters variation is small. According to the questionnaires' characterization, we can conclude that CTS team member's performance had been improved a lot along with the model implementation; which is also indicating that the performance improvement model and its mechanics were working effectively.

Table 5-2 The SPSS analysis of CTS self-evaluation

	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11
N Valid	30	30	30	30	30	30	30	30	30	30	30
Mean	4.37	4.50	4.53	4.43	4.43	4.50	4.40	4.40	4.43	1.77	4.30
Std. Error of Mean	.089	.093	.093	.092	.092	.093	.091	.091	.092	.141	.098
Median	4.00	4.50	5.00	4.00	4.00	4.50	4.00	4.00	4.00	2.00	4.00
Mode	4	4^a	5	4	4	4^a	4	4	4	1	4
Std. Deviation	.490	.509	.507	.504	.504	.509	.498	.498	.504	.774	.535
Variance	.240	.259	.257	.254	.254	.259	.248	.248	.254	.599	.286
Skewness	.583	0.000	-.141	.283	.283	0.000	.430	.430	.283	.441	.174

Std. Error of Skewness	.427	.427	.427	.427	.427	.427	.427	.427	.427	.427	.427
Kurtosis	-1.784	-2.148	-2.127	-2.062	-2.062	-2.148	-1.950	-1.950	-2.062	-1.160	-.535
Std. Error of Kurtosis	.833	.833	.833	.833	.833	.833	.833	.833	.833	.833	.833
Range	1	1	1	1	1	1	1	1	1	2	2
Minimum	4	4	4	4	4	4	4	4	4	1	3
Maximum	5	5	5	5	5	5	5	5	5	3	5

Similar to the survey conducted previously in Chapter III, the second parts in the questionnaire is the evaluations from customers (namely the customer frequent contact windows). There are 6 questions designed and 6 parameters assigned as well; B1: CTS team provides very good support; B2: Compared to other suppliers, this team has the best service quality; B3: There will be a big challenge during affected products called back and replacement; B4: There is very good regular interaction with CTS team; B5: There is a very good regular interaction with CTS team’s managers (supervisors, leaders); B6: Being satisfied with technical issue solved and questions answered.

There are 70 piece of questionnaires had been received. The chart is showing 5 of 6 parameters’ mean values are bigger than 4, which is reflecting that customer satisfaction is getting improved step by step in the past 1 year along with the model’s application. Besides, the majority of them noticed that regular communications between both CTS members and their local management team were in place and running well.

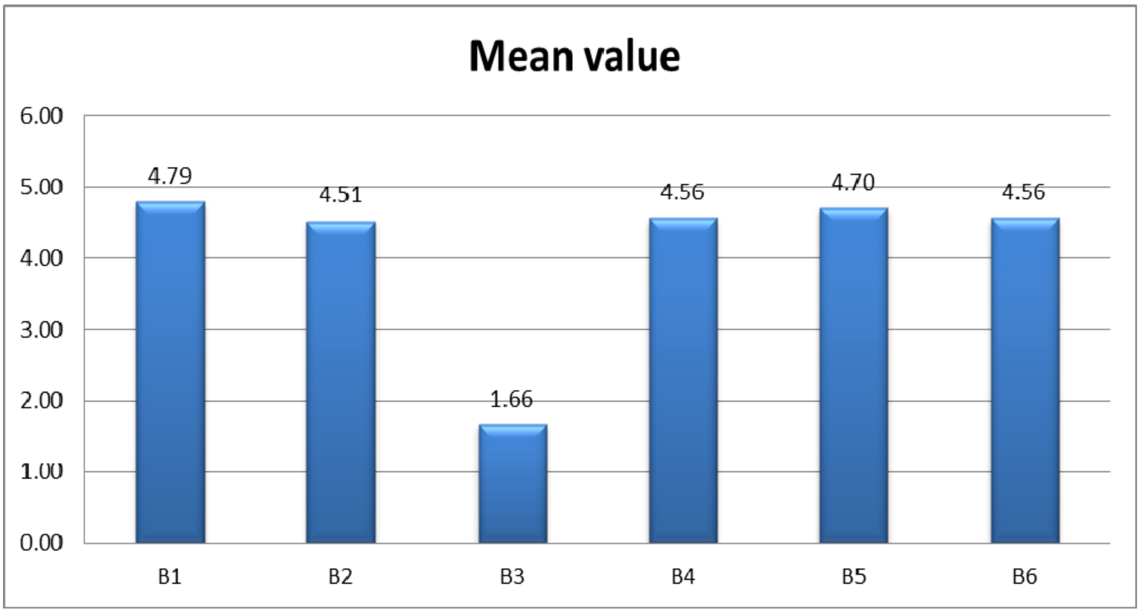

Figure 5-14 The mean of customer evaluations on CTS team

While to question B3, compared to the result in one year before, we also can see the inputs from customer on the quality concerned products callback is getting easier than before. The value here is lesser than 2, (previously is bigger than 4); From the pie chart analysis on the parameter B3; 48.6% of the people strongly agree that there was big improvement in front of them during the quality concerned products callback and 40% of the people believe the callback process has no more big challenge to them when they have quality concerned products needs to pullback. However, there is still room to improve since the mean is above 1 and 11.4% of the people are looking for further improvements.

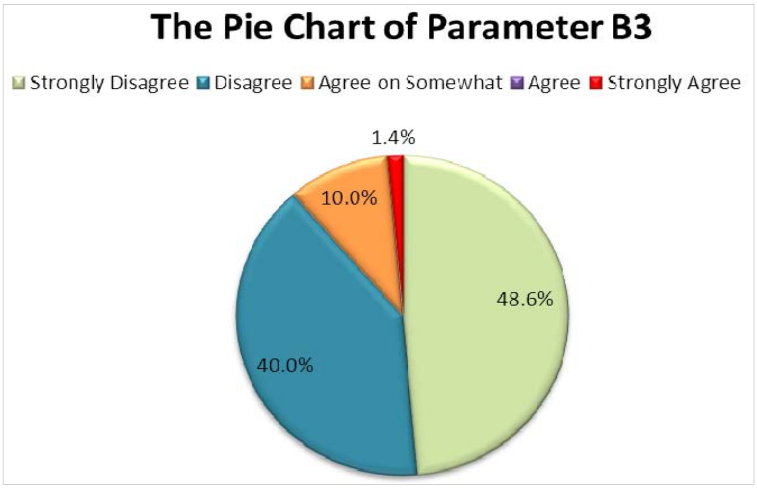

Figure 5-15 The pie chart of parameter B3

The Pareto analysis also indicates the improvements of CTS team from customer feedbacks. More than 70% people strongly agreed CTS team had provided the excellent supporting within the past one year and there was a very effective regular interlock meeting had been conducted with them.

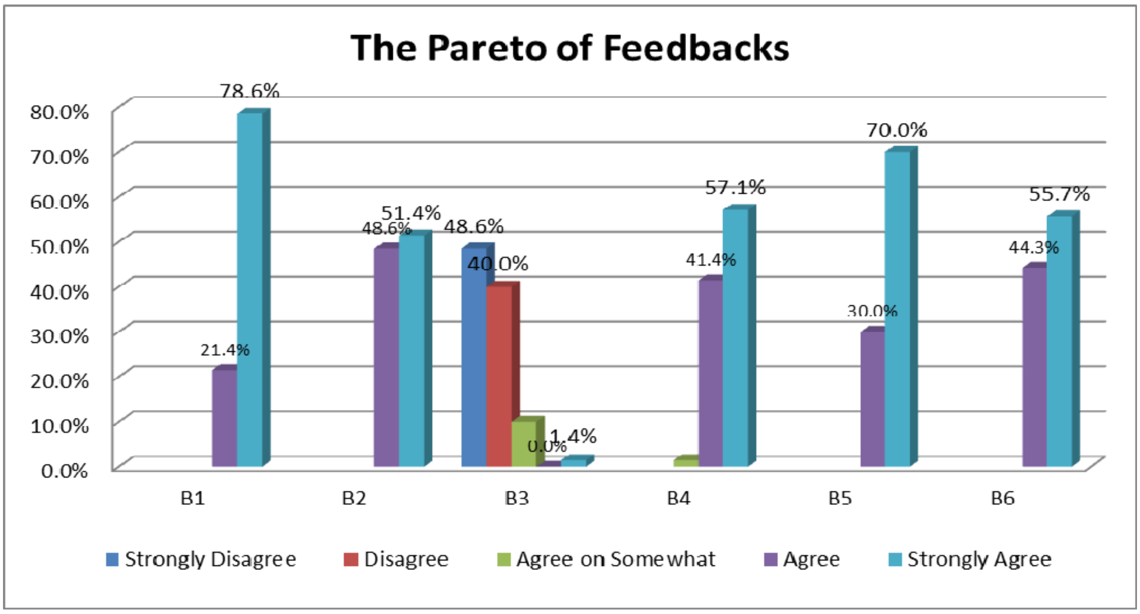

Figure 5-16 The pareto of customers evaluations on CTS Team

By SPSS analysis, we can get a summary table below about all parameters; despite of the B3 (which is anti-order rating question), rest of the parameters' mean value are all bigger than4, and mode is 5; and according to the skewness data, 4 of the 5 parameters a have negative skewness besides the kurtosis of 4 parameters are negative; this also indicates the distributions of these parameters are close to flat. It is a sign from customers that the inputs from them are consistent. It matches the Pareto analysis listed above as well.

Table 5-3The SPSS analysis on customers evaluations on CTS team performance

		B1	**B2**	**B3**	**B4**	**B5**	**B6**
N	**Valid**	70	70	70	70	70	70
Mean		4.79	4.51	1.66	4.56	4.70	4.56
Std. Error of Mean		.049	.060	.093	.063	.055	.060
Median		5.00	5.00	2.00	5.00	5.00	5.00
Mode		5	5	1	5	5	5
Std. Deviation		.413	.503	.778	.528	.462	.500
Variance		.171	.253	.605	.279	.213	.250
Skewness		-1.423	-.058	1.450	-.537	-.892	-.235
Std. Error of Skewness		.287	.287	.287	.287	.287	.287
Kurtosis		.026	-2.056	3.524	-1.065	-1.240	-2.003
Std. Error of Kurtosis		.566	.566	.566	.566	.566	.566
Range		1	1	4	2	1	1
Minimum		4	4	1	3	4	4
Maximum		5	5	5	5	5	5

The following part is the third segmentation in the questionnaire, which is the evaluation on CTS team performance from sales and marketing folks; there are 7 questions in the list and also has 7 parameters assigned; C1: CTS Team efforts has significant contribution to sales revenue; C2: Compared to competitors, job performance of CTS team of this firm better than others; C3: To improve the performance of CTS team, it needs to allocate more resources; C4: To improve the performance of CTS team, it needs to enhance team members capabilities; C5: To improve performance of CTS team, it needs to enhance internal teams collaboration; C6: It is very important to keep the regular communication with internal teams; C7: It is very important to keep internal team posted on the internal service feedback.

The mean value of the 7 parameters are bigger than 4, which indicates that most of the sales and marketing people are beginning to rely on CTS folks in terms of the technical issues consultancies based on timely and regular interactions. Especially on the question C1: sales and marketing folks are aware of the contributions from CTS team and strongly believe this team had helped a lot in the past year on business revenue growth and business quota accomplishment.

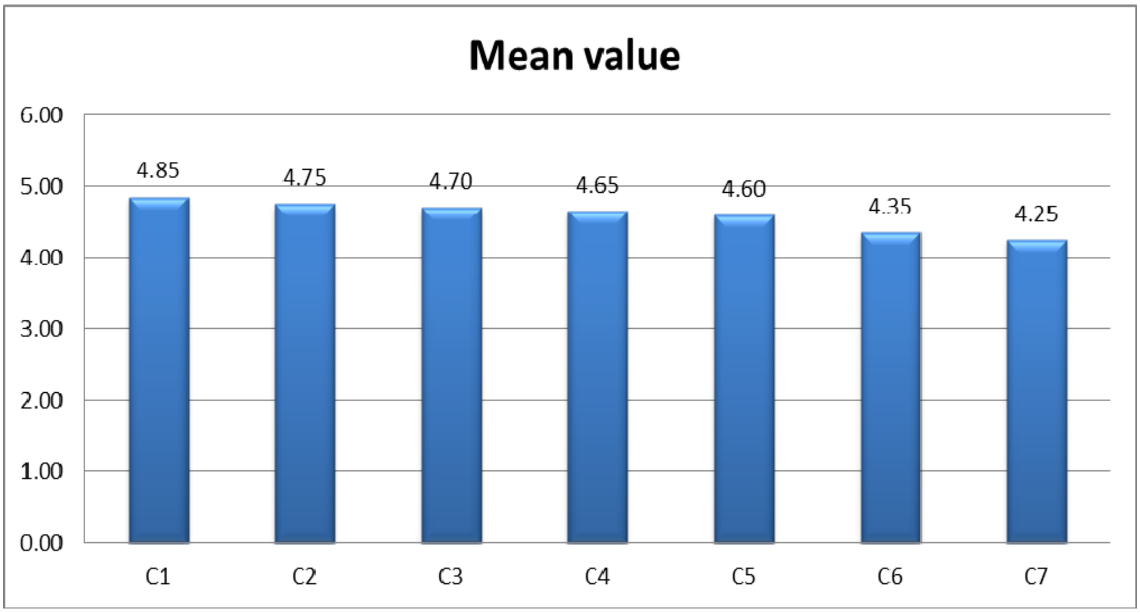

Figure 5-17 The mean value of sales and marketing folks inputs

Meanwhile, from the Pareto charts below, we can see that 85% of the people strongly believe that they had received a lots of helps during the revenue target achieving; and more than 60% of the people agreed that the resource allocated to CTS team and the improvements made by CTS team in the past one year is quite remarkable.

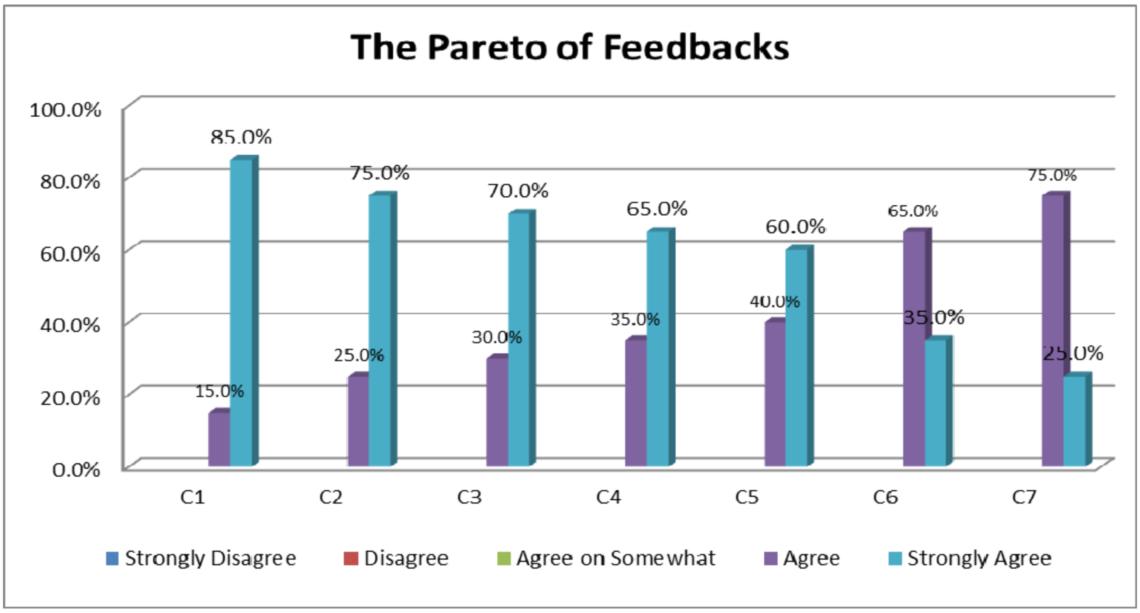

Figure 5-18 The pareto of sales and marketing folks evaluations on CTS team performance

Through the analysis by SPSS for further and deeper study, the overview of all parameters is listed as below, it’s easy to figure out the summary that 6 parameters’ kurtosis is less than zero, which indicates the distributions of them are more flat compared to normal distribution. And we also can observe that most of them have negative skewness and their distributions are flatter compared to normal distribution. It is a strong sign and a clear signal to us that sales and marketing forks are satisfied with CTS teams performance (namely along with CTS team performance improvements). Both teams’ communication quality and quantity are improved and they are appreciating each other’s job efforts more than before.

Table 5-4 The SPSS analysis on sales and marketing folks inputs on CTS team performance

		C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**
N	**Valid**	20	20	20	20	20	20	20
Mean		4.85	4.75	4.70	4.65	4.60	4.35	4.25
Std. Error of Mean		.082	.099	.105	.109	.112	.109	.099
Median		5.00	5.00	5.00	5.00	5.00	4.00	4.00
Mode		5	5	5	5	5	4	4
Std. Deviation		.366	.444	.470	.489	.503	.489	.444
Variance		.134	.197	.221	.239	.253	.239	.197
Skewness		-2.123	-1.251	-.945	-.681	-.442	.681	1.251
Std. Error of Skewness		.512	.512	.512	.512	.512	.512	.512
Kurtosis		2.776	-.497	-1.242	-1.719	-2.018	-1.719	-.497
Std. Error of Kurtosis		.992	.992	.992	.992	.992	.992	.992
Range		1	1	1	1	1	1	1
Minimum		4	4	4	4	4	4	4
Maximum		5	5	5	5	5	5	5

The last one is the evaluation from factory operation folks; there are 7 questions designed too and 7 parameters assigned as well. D1: It is necessary to have CTSs’ support to make sure factory solves the product quality issues timely; D2: Compared to competitors, Job performance of CTS team of this firm better than others; D3: To improve the performance of CTS team, it needs to allocate more resources; D4: To improve the performance of CTS team, it needs to enhance team members capabilities; D5: To improve performance of CTS team, it needs to enhance internal teams collaboration; D6: It is very important to keep the regular communication with internal teams; D7: It is very important to keep internal team posted on the internal service feedback.

From the mean chart below, all of parameters mean is bigger than 4. It means that factory operation folks acknowledge CTS teams efforts and their team performance at a high level. And compared to the competitors, factory operations folks noticed that the current CTS team is doing much better than one year before. They strongly believe that CTS team can help much more in terms of the production quality improvements and they also can get timely supports from CTS team. This is telling us the model's implementation does have the effectiveness in place and efficiency as well. It helps CTS team achieve much better evaluation score from factory operation folks after one year's implementation.

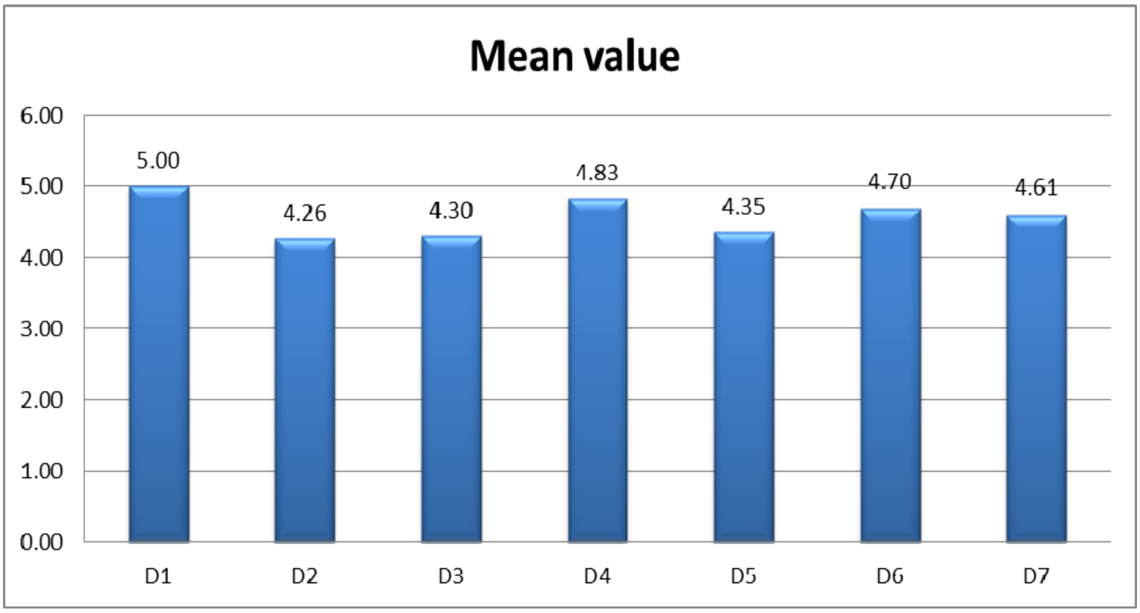

Figure 5-19 The mean value of factory operation folks evaluations on CTS team performance

And from the Pareto analysis below, we can see that factory operation folks are satisfied with CTS team job. Most of their inputs on CTS team performances are good or excellent. It indicates the model works very well in terms of team performance improvement. 82.6% of the people strongly agree that CTS team's performance improved based on team capabilities. And more than 69% of the people strongly agree that both teams' communication and timely interlock is very important to daily work.

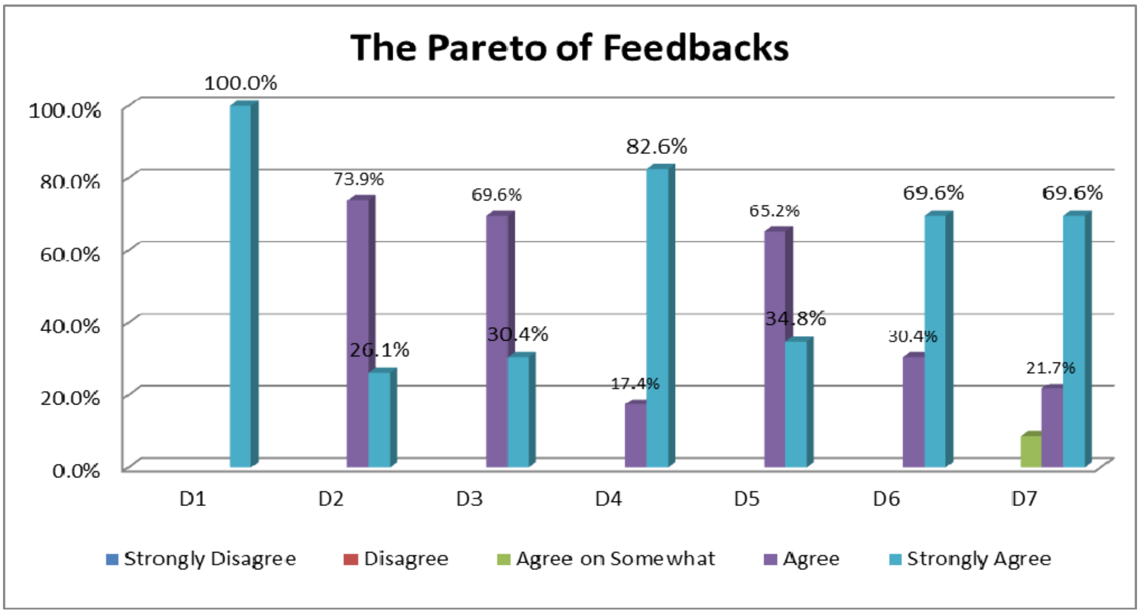

Figure 5-20 The Pareto of factory operation folks evaluations on CTS team performance

By SPSS analysis, we also can get a full picture of the parameters characterization, Besides the mean value is above 4, the range is less than 2; there are 4 parameters have negative kurtosis and their distribution is flatter. This is strongly indicating that along with model mechanism works, factory operations team are quite happy and satisfied with CTS team performance improvements. And they have the similar concerns and inputs on the evaluation as well.

Table 5-5 The SPSS analysis on factory operation folks evaluations on CTS Team performance

		D1	**D2**	**D3**	**D4**	**D5**	**D6**	**D7**
N	**Valid**	23	23	23	23	23	23	23
Mean		5.00	4.26	4.30	4.83	4.35	4.70	4.61
Std. Error of Mean		0.000	.094	.098	.081	.102	.098	.137
Median		5.00	4.00	4.00	5.00	4.00	5.00	5.00
Mode		5	4	4	5	4	5	5
Std. Deviation		0.000	.449	.470	.388	.487	.470	.656
Variance		0.000	.202	.221	.150	.237	.221	.431
Skewness			1.167	.911	-1.843	.684	-.911	-1.496
Std. Error of Skewness		.481	.481	.481	.481	.481	.481	.481
Kurtosis			-.709	-1.291	1.522	-1.687	-1.291	1.196
Std. Error of Kurtosis		.935	.935	.935	.935	.935	.935	.935
Range		0	1	1	1	1	1	2
Minimum		5	4	4	4	4	4	3
Maximum		5	5	5	5	5	5	5

5.3.4 A Quick Summary

By doing the in-depth interview and survey, we can conclude that the performance improvements model is working well in STX CTS team. Especially the evaluations from peers, counter parts and customers are very positive. This validates the models.

5.4 Brief Summary

This chapter had discussed about the team performance improvement mechanism building up as well as the actions what had been done during empirical study in STX China CTS team. The result from both in-depth view and survey are strongly correlated and validates the model's effectiveness and efficiency.

According to the model based on internal service theory, the empirical study had also developed the supportive service, hiring and development service and incentive service for STX China CTS team; By providing the internal service along with the cubic 3-dimension model's implementation, we received the positive result and remarkable team performance in STX China CTS team.

Chapter 6: Internal Service Based CTS Team Performance Management System Construction

As a matter of fact, the purpose of team performance management system construction is to improve the team performance so as to make sure the team's goal and firm's goal can be achieved successfully. CTS team performance management system can be built up based on several theories according to real practice; while the current cubic 3-dimensions model with internal service theories is an effective and efficient one which had been validated through actual practices.

6.1 The Values of Performance Management System Construction to CTS Team

6.1.1 Improve Employees Job Commitment and Loyalty through Performance Management

Job commitment is a result of a series of factors interaction in front of an employee, by which he or she will define the specific strategy to deal with his or her daily job. If there is a poor job commitment from an employee, himself and his team will have lower work performance delivered, and even have higher employee turnover rate.

The meaning of building up the performance management system is obvious. It will help CTS (customer technical support) team in IT firms to improve team performance and will benefit both internal peers and external customers. To get both well aligned at same time is not an easy thing; most of the current practices cannot cover both if just keep the goal as "customer is always right" and "customers always have the first priority". This is not going lead to "win-win" working behaviors. And it may add in tensions due to the wrong team performance management orientation. The key message we can learn from the cubic 3-dimension model performance management system is that: these practice will significantly benefit the employee's loyalty since their needs and requirements can be well understood and supported. This makes them feel that they are able to manage everything in front of customers. Their job satisfactions will be well on track. As such the team turnover rate will be minimized and well managed. To retain the talents and get them well developed will benefit the firms' core competencies, and it will help on the business share gain as well.

6.1.2 Improve Management Team’s Capability through Performance Management

Dealing with the customer is not an easy job; there is no shortcut which can go straightforward. The one who is working with customers as a manager of CTS team must take a note that his or her team performance management capability will result in the business share loss if their team cannot satisfy customers and sustain the satisfaction rate. Especially to those managers who just step in CTS management roles from outside of the functional team. They have lesser experience in terms of dealing with both internal and external customers.

The practice of performance management capability improvement is not a “one-stop shop” activity. It requires a series of management practices as well as the step by step implementations of those theories. It needs management team to set up the clear vision for team, improve their personal communication skillsets and interpersonal skillsets, and improve their leadership. All of those are fundamental requests to a member who is working in management team. Hence, through team performance management system set up, it will significantly improve the team performance management capability in terms of self-management team built up and managers (supervisors, leaders) capability improvement. Since the management system consists of systematic practices, management team will have more time to think about each action and each step for their personal capability improvement along with team performance improvement.

6.2 Internal Serviced Based Performance System Construction for CTS Team

6.2.1 Team Organization Chart Revamp and Self-motived Team Construction

To make sure the internal service based team performance management model works well, the backend teams’ supports are the prerequisites for the internal service based team performance system construction.

The first action at this moment is to set up the appropriate team organization chart which is a fundamental step for the rest of the actions; Compared to the traditional team organization charts, the new team organization chart should be an anti-pyramid charts. Managers should act as the service providers to his or her employees to enable them and energize them; meanwhile, the managers should have the capability to influence the entire team in terms of internal peers and counterparts as well as the internal customers’ teams to stay with his or her strategies and reach agreements on the specific practices. The backend teams from their top management teams to their working level staffs needs to be well aligned internally. Their supports to CTS team will be based CTS team members requests (namely from the external customers after they digested) as well as their influencing capabilities to get the entire team buy in their ideas and concepts; so as to make sure CTS team will have timely supports in terms of appropriate resources allocations, and the priority as well as the lead time to solutions on their customers issues.

Besides the team organization charts revamp from pyramid to anti-pyramid, the second key action is to build up the self-motivated team. The self-motived team construction will need management team to create the environment for employees to grow up in terms of the appropriate trainings and team building to energize them to be the self-motived employees.

Normally, self-motived employees will have 3 sure signs; 1: they are result oriented. Flexible work time and schedule will not lead them to abuse the time, while they may not show “physically” in the office. They will not be the purely money motived players in the team while devote themselves into the tasks and works without a frown; 2: they maintain a positive position. It's not easy to always have a positive outlook and it's not easy to always keep customer service level at its peak especially when the management team is constantly dumping a few more things on the already-full plate. Self-motivated employees are able to deal with this kind of stress effectively. They acknowledge that things will not always run according to plan without plan shattering. Self-motivated employees know that if they stress themselves out for something that is beyond their control, then they will be in the losing end - they will be the ones whose emotional and physical state will be affected. They simply take issues as they are, and find a way to make those glitches work for them. Through doing that, they'd still be able to keep a happy countenance, even if things are not going their way; 3: they are willing to take in more work. Self-motivated employees genuinely take on new assignments - usually not directly related to their official duties. While they should not be the kiss-ass employees who use additional work as a trophy - so they can then brag about them to gullible individuals.

Through the self-motived team construction, both individual performance and the entire CTS team performance will be more predictable. The organization performance will be improved as well.

6.2.2 Supportive Oriented Team Construction

The supportive oriented team construction means all level people are following with supportive strategies in terms of inside team communications and each level job’s redesign. This is a critical action for internal service based team performance management system construction.

As a matter of fact, there will be some exhibitors from each level during supportive oriented team construction as they may think they are being downgraded from management level (managers, supervisors, leaders) to working level, and will have the feeling that the activities within their team are not controlled by management team. Their feelings and their job satisfactions will be affected accordingly and even get demoralized somewhat. Hence, the supportive oriented team construction should be started from top management team by appropriate team goal and strategy setting up, and follow up by a pass down team organization construction (like anti-pyramid o-chart). This will help team member manage the conflicts during system construction. Through setting up teams’ goals with consensus and agreements, the discrepancies in terms of the goals understanding, planning, execution will be minimized and eliminated. Meanwhile, there should be cross-functional team trainings covering from new hire orientation training to in-depth technical expertise training and soft skills training. The training topics should be defined and developed as an open platform training, which can be leveraged for everyone’s real practice; when he or she meets issues or problems during work, he or she can reach the appropriate resources to solve the problems and provide solutions to customers timely. Cross-functional team trainings will offer a wider training scope to team and it will promote inside team communication as well as to maintain the self-motived teamwork spirits.

6.2.3 Internal Customer Oriented Team Culture and Firms Structure Construction

The team culture is a series of shared values, beliefs, and norms that influence the way employees thinking, feeling, and behaviors with each other and with the people outside the organization. In Schein’s (1900) view, culture is “a pattern of shared basic assumptions a group learns as it solves its problems of external adaption and internal integration that feel in relation to those problems”. Just as an organization’s structure can increase employee cooperation and motivation, the values and assumptions in an organization’s culture also can promote work attitudes and behaviors that increase organizational effectiveness. This is because the organization’s culture controls the way employee perceive and respond to their environment, what they do with information, and how they make decisions.

To get the right practice constantly show up, team culture needs to be optimized to make everyone in the team synchronized before making any decisions. This requires the team culture construction; otherwise, the appropriate practice might be given up or abandoned due to the managers’ changes or management leadership style changes.

The team culture can survive by organization structure re-building up. Sometimes, it cannot be easy to re-build the team structures. While if the entire team is aware of the benefits of this culture based on past practices, they will support it. Once the consensus has been reached, the internal supportive structure can be built-up.

Internal customer oriented culture is one of team culture. This culture will enable employee to create and offer internal customers excellent value added supports, meanwhile, improve product quality as well as to improve external customer’s satisfaction. This culture has two significant characteristics: 1) Set up top priority on customer value creating during team goal setting up; 2) Provide behaviors’ norm for team development. Under internal customer oriented team culture, a team will be running at the boundless status and keep consistently interactions with team and the unpredictable environments. The partnership within the team and between teams will promote each player’s accountability; meanwhile, everyone within the team will have capabilities to comment on the equity in terms of resources allocation and award issuing.

The highly consensus and agreement within the team and between teams will definitely promote spirits in terms of team collaboration, so as to improve team corporations of each level. The purposes on constructions of internal service oriented team culture and firm culture are defined to have common values within a team as well as vision planning and employees’ self-recognition. During team’s common value building, the team will achieve higher level cohesion. This will help team to capture opportunities as well as to minimize or eliminate potential risks. At same time, self-recognition will help balance benefits between each player’s and different teams. In the end of the day, it will help team to reach win-win corporations work mode. Team performance is relying on everyone and they will trust each other more than before.

Internal customer oriented culture will encourage everyone to speak up in terms of the team working status, organization’s efficiency and job effectiveness. This will help team keep up innovations and improvements. Team will have more capabilities to manage risks and utilize opportunities in front of them. This will help team to continue to develop more adaptive organization charts and focus more on customer’s value adding in terms of process reengineering and continuous improvements. Through culture construction within a team and a firm, the top level management team will enable working level staffs by servicing them instead of yelling them if there is something wrong during with the process re-mapping. Each working level staff will have a clear understanding on team chart and a big picture in terms of the particular internal customer chain and the specific support chain. This will help them improve their work efficiency and effectiveness quite a lot if there is something new to them. Only the working level staff knows their internal supporting team in place and works well. They will have higher work efficiency in front of customers.

6.3 Brief Summary

Firstly, the chapter discusses the value of performance management system for a team and a firm. This has two key values in place; 1) Performance management system construction will help improve employees’ job commitment and loyalty; 2) Performance management system construction will also benefit management’s skills improvement.

Secondly, this chapter also discusses about the internal serviced based team performance management system constructions, which can be done through three portions constructions. 1): Set up the anti-pyramid organization in a team and coach team to be self-motived ones; 2): Utilize supportive oriented team construction methodology; and flow up with a top down level team communication strategy for team building up; 3): Grow up the culture in terms of internal customer oriented for a team and a firm.

Along with the appropriate team performance management system construction based on internal service oriented in CTS, both internal CTS employees and CTS organization will have benefits in terms of self-development improvement and team performance improvement. It will be a win-win practice in front of team and individuals and this will help on firm’s performance improvement in the end.

Chapter 7: Peroration

This chapter is a peroration of this thesis. It will overview this thesis research work, the limitations, and the recommendations for further studies.

7.1 Overview

During the rapid economy development in China, IT firms are facing more and more fierce competition in terms of the talents recruitment and business share growth and sustaining. More and more IT firms are required to improve their local support teams' capabilities on technical issues solving and new business development. To improve current team's performance will be a fundamental requirements of management team for the next step's improvement so as to make sure the entire firm can achieve its' goals. Along with the internal marketing and internal service theories development in recently years, more and more firms are trying to utilize the concept for team performance management. This thesis had deployed the internal serviced theories for further and deeper analysis to try to figure out the appropriate performance management model and system construction for CTS team, so as to remove the exhibitors in front of this team's performance improvement.

The body of this thesis is from chapter III to Chapter VI, from the research problem refocusing and the concept model building up, through conducting qualitative and quantitative analysis on the CTS team performance in STX along with the action research methodology. It has systematically studied the mechanism between internal service and team performance improvement as well as the team performance management together with its system construction. The main works of this thesis are:

First of all, this thesis had set up a cubic 3-dimension model for CTS team performance improvement; three dimensions are: sales sense dimension; customer sense dimension; factory operation sales dimension. For each dimension, there is in-depth analysis in terms of the factors affecting on the team performance based on internal service theories, and characterized the detailed actions and requirements on behalf of team performance improvement.

Secondly, this thesis deployed the action research methodology and picked up STX CTS team for an empirical study. According to the team performance model mentioned in chapter IV, through in-depth interview and questionnaire, we received the evaluation result from both internal team and external team on CTS team performance. By doing thorough comparison with previous survey and in-depth interview under SPSS analysis, the model's effectiveness and reliability are well tested and validated.

Finally, based on the validation of internal service based team performance improvement model what we set up, the thesis also did a quick discussion and study on team performance management system construction under internal service theories. This can be done through anti-pyramid organization chat built up and self-motivated team building as well as the supportive oriented team construction and internal customer oriented team culture and firm culture building.

7.2 Limitations and Recommendations for Further Research

The contributions must be considered in light of its limitations. Key informant data is susceptible to cubic 3 dimensions only based performance management improvement model; yet the research design attempted to minimize this concern, and the action research techniques suggests the results cannot be accounted for by 3 dimensions model at somewhat since the writer is the member of the CTS team as well.

Besides, the CTS team was studied here only focus on the hard disk drive industry in China, which is a monopoly market; while , as a matter of fact, each industry has CTS team or similar team who is taking care of customer technical support roles and responsibilities, the divergences in terms of product and market should be considered accordingly.

Also, the study measures perceptions based on manager's assessments and peers assessments of their firm's CTS team performance and their relationships. Whereas this sector includes a vast array of providers associated with information and communication technologies and the customer organizations in the sample represented teams, formal technical standards and propagation of what represents “value” may be more widespread than in other service sectors.

Future research and study should extend customer technical support value performance modeling into other contexts and attempt to track perceptions longitudinally as of the complexity of business related groups’ performance improvement. Finally, though this study sampled teams in STX CTS team across China mainland, future studies should consider contexts such as developing markets, and a larger number of culturally-diverse markets as well as the customers' bases which may be varied from time to time. And it might be referred from cloud compute related IT players.

Besides the above, the culture difference may affect the model implantation and result what had been anticipated. As this thesis was carried out based on hard disk drive industry, it may not be applied to other industries as HDD is a high-tech products and China marketing is playing an increasingly important roles. Nevertheless, the Chinese culture is quite different from other countries in the world. It also reminds us to think about the cultural difference before copying the model and implementing it to your team. Hence, to get team culture well optimized and industry requirements as well as the country culture thoroughly analyzed are a fundamental homework for CTS team managers. Those works will help you eliminate and avoid any misconduct or mistakes during the model applying. The application path of this cubic 3-dimension model on performance management capability improvements may not be easy as it had been described within this thesis. While, the one who wants to leverage the experience from it can utilize the model and create his or her own practice as well.

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Appendix I

Team Assessment Questionnaire

Hello, Ladies/Gentlemen;

First of all, thanks for your time to read this questionnaire. Really appreciate your great support and cooperation to complete it.

The purpose of this survey is trying to investigate the team performance in terms of team efficiency and effectiveness, there is no right or wrong in terms of the options and its answers. It is used for purely academic study; your inputs are valuable to us. If you have any questions or queries about this questionnaire or this study, please feel free to let me know and it is our pleasure to discuss with you and share more detailed studies about team performance (efficiency and effectiveness).

Name:

Company:

Remark: For the question below, you can choose the answer of each option based on your understanding and your firms real practices, thank you！

1 Basic information

（1） Your department:①CTS ②Sales Marketing ③Factory Operation ④Others

Or: if you are from suppliers' team, please write down the company name:

（2） Gender:①Male ②Female

（3） Age:①<=25years old ②26-35years old ③36-45 years old ④46-55 years old ⑤56 -60years old ⑥>60 years old

（4） Education background:①Blow high school ②High school ③diploma ④Bachelor ⑤Master and the above

（5） Position:①Staff ②Entry level management ③Mid-level management ④Up-level management

（6） Work experience:①below 1 year ②1-3 years ③3-5 years ④5-10 years ⑤>=10 years

（7） Firm scale:①Big size ②Median-size ③Small size

（8） The main team performance influenced factors(multi-option):①Technical skillsets ②Team communication ③Management rules and regulations ④customer collaboration ⑤Manufacturing quality control ⑥Team spirit ⑦others

（9） The task team is the only one who needs to take care of its teams performance:① Agree ②Disagree

（10） The effective collaboration path between teams(multi-option):①Regular meeting ② Team leads communication ③Team member performance evaluation ④Task flow connection ⑤Team creativity ⑥Team atmosphere ⑦Group discussion and decision making

2 Team performance assessment survey

This questionnaire deploys Likert 5 point utility, Indicate your level of agreement with each statement using the scale Strongly Agree (5) - Strongly Disagree (1) (i.e Strongly Agree -5, Agree -4, Somewhat Agree -3, Disagree -2, Strongly disagree -1). After answering each item, place the numerical rating of your response in the "Rating" column based on your teams or companies' status, thank you.

Topics	**Items**	**Rating**				
CTS team self-evaluation	1 The team's business results are delivered					
	2 We would like to stay and work in this team moving forward					
	3 We have very high efficiency in terms of task accomplishing					
	4 We know the big picture(i.e. where the business is headed, the affected competition, and how we are doing)					
	5 We all devote ourselves into work to achieve the goal					
	6 We work as a team					
	7 We are capable to achieve team's goal					
	8 The job satisfaction is depending on other departments support					
	9 We collaborate with other teams very well					
	10 We have challenge to fulfill external customers' support requests					
	11 Each team member has strong technical expertise					

The evaluations on CTS from external customers	1 CTS team provides very good support					
	2 Compared to other suppliers, this team has the best in class service quality					
	3 There will be a big challenge during quality affected products callback and replacement					
	4 There is a very good regular interaction with CTS team					
	5 There is a very good regular interaction with CTS teams’ managers(supervisors, leaders)					
	6 Being satisfied with technical issues solved and questions answered					
The evaluations on CTS from Sales and marketing team	1 CTS team efforts has significant contribution to sales revenue					
	2 Compared to competitors, Job performance of CTS team of this firm better than others					
	3 To improve the performance of CTS team, it needs to allocate more resources					
	4 To improve the performance of CTS team, it needs to enhance team members capabilities					
	5 To improve performance of CTS team, it needs to enhance internal teams collaboration					
	6 It is very important to keep the regular communication with internal teams					
	7 It is very important to keep internal team posted on the internal service feedback					
The evaluations on CTS from factory operation teams	1 It is necessary to have CTSs’ support to make sure can solve the product quality issues timely.					
	2 Compared to competitors, Job performance of CTS team of this firm better than others					
	3 To improve the performance of CTS team, it needs to allocate more resources					
	4 To improve the performance of CTS team, it needs to enhance team members capabilities					
	5 To improve performance of CTS team, it needs to enhance internal teams collaboration					
	6 It is very important to keep the regular communication with internal teams					
	7 It is very important to keep internal team posted on the internal service feedback					

Appendix II

The detailed summary from in-depth interview in 2009

Customer Type		T1OEM		T2OEM					Channel	
Customer Name		Lenovo	Huawei	Haier	Tongfang	Inspur	Dawning	Founder	Hivision	Baidu
Date of Interview		2009-7-10	2009-7-17	2009-7-24	2009-8-5	2009-8-14	2009-8-20	2009-8-21	2009-8-28	2009-9-1
Interviewee (HoD of Customer HDD Team)		Jason G	Jason X	Wenlee,H	Andy Y	Cuinan,Y	Chaoqun,Sh	Lin Y	Weirong, Z	Wei,W
Interviewer		Harry	Harry	Harry	Harry	Harry	Harry	Harry	Harry	Harry
Avenue		Beijing	Shenzhen	Qingdao	Beijing	Ji'Nan	Beijing	Beijing	Hangzhou	Beijing
Topics		Feedbacks								
1	What’s the biggest challenge to you to deal with CTS members from Hard disk drive suppliers?	Sometimes, they cannot understand what we need. For example, they only focus on the issues which happened already which have no idea of prevent actions. Which indicates to us that they to improve	They have very limited experience on our products (RAID,Isteam, and Storage servers)	Too reluctant to have the appropriate support to us(ie dedicated Engineers)	Too reluctant to have the appropriate support to us(ie dedicated Engineers)	To have HDD vendors know about storage servers applications	To have HDD vendors know about storage servers applications	Too reluctant to have the appropriate support to us(ie dedicated Engineers)	To have HDD vendors know about storage surveillance applications	To have HDD vendors know about Online search applications requirements to storage devices.

		both technical skillsets as well as the result driving capabilities.								
2	How do you think Seagate current CTS support compare to the competitors?	Seagate team is better than the others, but still has much room to improve the individual capabilities (both at technical and management)	Seagate team is better than the others, but still has much room to improve their server storage technical support experience and knowledge	Seagate team is better than the others.	In Middle	Seagate team is better than the others	Seagate team is better than the others	In Middle	Seagate team is better than the others	Seagate team is better than the others
3	What’s the last painful thing you had on Seagate China CTS team?	Product Moose , which has the CE Log(Critical Event Log) overflow issues and gave our customers a big hit in terms of callback and replacement	Very bad experience on product Moose design as , which results in huge complaints from end users	Extremely high field return on product NH and Moose, while no root cause disclosed(in the past 6 months)	Longer FA Turnaround time on product SH	Product Moose , which has the CE Log(Critical Event Log) overflow issues and gave our customers a big hit in terms of callback and	Product Moose , which has the CE Log(Critical Event Log) overflow issues and gave our customers a big hit in terms of callback and replacement	Longer FA Turnaround time on product SH	Product Moose , which has the CE Log(Critical Event Log) overflow issues and gave our customers a big hit in terms of callback and replacement	Product Moose , which has the CE Log(Critical Event Log) overflow issues and gave our customers a big hit in terms of callback and replacement

						replacement				
4	What are your expectations on Seagate China CTS team?	To get professional talents with appropriate skillsets at technical and contingency management	To server system level application expertise as well as the local join qualification technical support expertise, this will benefit both firms.	To offer us the regular product roadmap review and technical exchange meeting.	To allocate more time to stay close to us on during new product launch phase	To have the regular technical exchange with in-depth server application knowledge	To have the regular technical exchange with in-depth server application knowledge	To allocate more time to stay close to us on during new product launch phase	To have the regular technical exchange with in-depth server application knowledge	To have the regular technical exchange with in-depth server application knowledge
5	How frequently did you talk about those topics with Seagate Local CTS management team? And did you get the answers and result what you were looking for?	Twice a year. There is no regular interlock meeting in place. And most of discussion are generic ones without following through after the meeting	Once a year, normally no technical review with us but for issues.	Seldom, and did not meet with CTS manager in the past one year	Seldom, and did not meet with CTS manager in the past one year	Once a year, normally no technical review with us but for issues.	Once a year, normally no technical review with us but for issues.	Seldom, and did not meet with CTS manager in the past one year	Seldom, and did not meet with CTS manager in the past one year	Seldom, and did not meet with CTS manager in the past one year

Appendix III

The detailed summary from in-depth interview in 2009

Interviewee		CTS Team	Sales Team	Factory Operation Team
Date of Interview		2009-7-12	2009-8-7	2009-8-27
Topics		Feedbacks		
1	What's the biggest challenge to you to deal with customers (or CTS team)?	calm down and reach an agreements with customer based on very limited internal support in terms of issues root cause and risk assessments	Very hard to convince to have the timely solutions if there is any revenue impact due to product quality issues.	Can to get them understood how difficult to get a CA in and even if there is bias (do not believe each other)
2	How do you think Seagate current CTS support compares to the competitors?	In middle	in Middle	in Middle
3	What's your suggestion to create on environment on" Easy to do business"?	To have Internal support team well aligned to provide the sufficient resources	To improve their skillsets and confidence level to deal with customers	To improve their skillsets and know how is going with the factory operation
4	How frequently did you talk about those topics with Seagate Local CTS management team? And did you get the answers and result what you were looking for?	Once a year on performance review, no regular discussion at all.	Talking by issues. No regular discussion at all	Talking by issues. No regular discussion at all