



Shu-Te University
College of Information
Graduate School of Information Management

Master

Applying ISO 9000 standards on quality management in a
construction project: Building the Detergent Production
Factory of HASO .JSC - A case study

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Co-Adviser : Dr. Nguyen Thi Ngoc Bich

June 2011

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in
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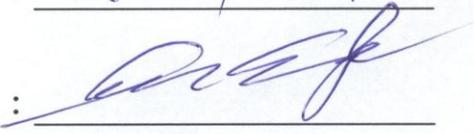
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Department of Information Management, Shu-Te University

Applying ISO 9000 standards on quality management in a
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ABSTRACT

In recent years, with the high-speed development of Vietnam, especially with the opening to the outside market, Vietnam has many opportunities and many challenges. It is getting more modern technologies from the outside to help us improve a lot in technology, especially in management field. It is also a big challenge when the big companies outside the country are also very excited to participate in the Vietnamese market. It requires Vietnam's companies must improve to competitiveness, survival and development in the current period. In the industry field, construction industry in Vietnam have long been considered as much more going backward to the other countries in the region as well as in the world. Major projects, whether done on Vietnam, has many advantages in many aspects from Vietnam, but the contractor still proved to be overshadowed by foreign contractors. The main culprit is the technology and project management capability of the foreign contractors proved superior to the contractor in Vietnam. The project management issues, particularly quality management in projects is

a big problem because we have just stepped out a long period of the subsidy period. In this period, the market was not open to the outside. It made the market meet difficulty in integration with the advanced management methods in other countries in the region and all over the world. Especially in the early stages of the opening period, the projects implemented in Vietnam did not have a specific management processes to provide effective quality management project. Quality management system ISO 9000 is now available in Vietnam and many companies used to manage quality in the projects they participated. In this study, I apply the ISO 9000 quality management systems in a specific project that I participate. I am responsible for building a quality management system effectively to make this project completed on the quality and progress as expected. The research was conducted through interviews with experts that they had previously responsible to evaluate the application of ISO 9000 standard in this project.

Keywords: Quality Management, Project Management, Factory Construction, ISO 9000 Standards.

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Through the course, I would like to express my deep thanks to Shu-te University, which made it so I can study this course. I have more useful knowledge to apply to my life and more opportunities for my further career as well.

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Moreover, I highly appreciate my classmate's aid due to these friendly and excellent students, I can easily understand teacher's lecture and finish the course.

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Chapter 1 Introduction

1.1 Research Background

Vietnam is a developing country and a element of the momentum of the world's economic integration. In recent years, with Vietnam's opening to world markets and become WTO membership. There are more and more domestic and foreign investors here. Especially in Ha noi, with a very large investment from government, this City were extended to Ha tay province and a part of Hoa binh province, Vinh phuc province. As a result, a lot of Apartment buildings, New urban areas, Trade center projects have been deployed around the City. Requirements need to be planned and adjusted to suit the city scale, and functions.

Currently, the center of Ha noi is being invested and planned for the service projects. The factories and small residential area will be pushed outside the city center to make place for Trade and Service centers... Factories are forced to relocate far away from the central area of the City.

The Detergents production factory of HASO .JSC is located along the center line of Nguyen Trai Street, Thanh xuan district of Ha noi capital and is producing of detergent products. HASO .JSC is an important partner of the Unilever Vietnam LTD Company. With production chains as Sunlight, Comfort nearly 30,000 tons per year, Soap Production chain gear almost 10,000 tons and plastic bottle production chains more than 10 million bottles per year, company tends to expand production in the next 05 years plan. According to these needs and the general planning of the city in coming

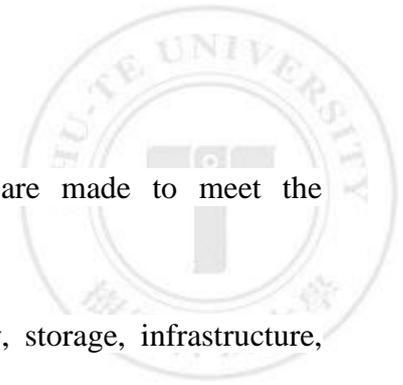


years, the factory was relocated in a new area to increase operating capacity, protecting the surrounding environment as well as ensuring transportation and selling is the urgent task.

Thach That - Quoc Oai, the Ha noi Industrial Zone was chosen as plan relocation. Far from Ha noi center 25 kilometers, located right on the Avenue of Thang Long, the Vietnam's largest boulevard. Transportation here is extremely convenient. Furthermore, this is a combined area of Industry factories, that makes convenience in management and production. Therefore, companies had to plan and implement the project "Building the Detergent Production Factory of HASO .JSC" on the Thach That-Quoc Oai, Ha noi Industrial Zone.

Currently, the company has completed the preparatory phase and the start of the implementation phase of the project work. The future work to be done is building the main construction and auxiliary items, moving, buying and installing new equipment in service production and operating manufacturing. Because the company planned plant will be relocated in the end of December, 2011, so the implementation requirement of this plan is very urgent. The relocation was only performed after the construction works of project are completed include workshops and auxiliary items to complete the building works.

The factory was built with total cost estimated is about 110 billion Vietnam DONG. The construction value is around 60 billion. Construction section includes many small items such as the Operator centre, Soap factory, Plastic Bottle factory, Sunlight factory, Comfort factory, Caustic Soda plant, Power Plant Engineering, storage of raw



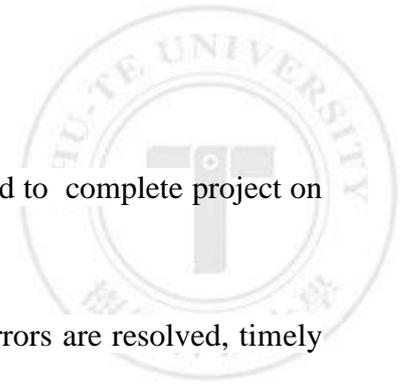
materials and finished products warehouse... The works are made to meet the requirements of a very tight schedule: 05 months.

With a variety of categories including civil, industry, storage, infrastructure, transportation, water treatment, power Items ... and with a shorter schedule requirements, it requires the contractors must be capable on machinery, equipment, manpower and finance.

The project is considered effective and successful when it met the requirements for quality, schedule, safety and achieving the reasonable cost. However, a project is completed only when it meets two minimum requirements of the quality and safety of the project. Not only that, these two factors also directly affect the schedule and costs of the project. Therefore, the construction quality is a key issue that should be studied and performed with a reasonable model for the management, control and implementation so that the project put into operation with satisfactory quality. To achieve this requires, not only the capacity of the contractor but also the capacity of investors that is represented by the Project Management Board was also set. Only such this project can be deployed and operated successfully and as efficiently as desired by the parties.

1.2 Research Motivation

To achieve the goal of quality of production moving project, it's necessary in the management task to be done with clearly plan because the works must be done and space is not large (16.000m²). It requires the preparation, implementation, inspection and control process to be planned and carried out scientific and not only with



contractors but both the investor and contractors to be combined to complete project on schedule and quality.

To implement the process was successful, problems, errors are resolved, timely and properly, requires a model of management and control reasonable and efficient.

1.3 Research Purpose

To find out a method that The implementation, management and control process are reasonable, scientific, effective highest for quality of the project.

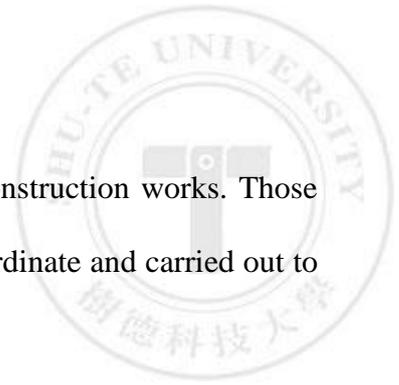
1.4 Research Methodology

I will learn from theory and practice. The first, conducted to learn the theory of quality management of the project especially in the construction of industrial projects to find out the methods of quality management and understand the causes of success to apply to this project.

From practice, interviews with leading experts that the managers have done with previous projects to find the cause of success or failure, obstacles, risks and corrective steps, the typical quality problems of the project to have lessons for this project.

After interviewing experts in the field of project management, along with understanding the methods of quality management of the project, we conducted a study selection and used options for a model that fits in Vietnam. That model will be used for this project and if successful, it will hopefully be used for other projects.

Through the research process, especially the consultation from the experts, the application of project quality management standards was recognized with appropriate adjustments to the environment in Vietnam. It is ISO 9000 standards and some



Standards of Vietnam on the management of the quality in construction works. Those Standards have been issued by governments and agencies subordinate and carried out to bring success to the last project.

1.5 The chapters in thesis

- Chapter 1: Introduction
- Chapter 2: Literature Review
- Chapter 3: Research Methodology
- Chapter 4: Research Analysis and Result
- Chapter 5: Conclusion



Chapter 2 Literature Review

2.1. Overview of Project Management

Project management has since appeared project concept. When the construction projects began in early 20th century, the project management has always belong to architects and civil engineers. Until the middle of 20th century, because the projects became increasingly complex, the project management was used to organize in system. However, the project management processes was first presented first in the 15th IPMA World Congress in May 2000. Currently there are many concepts of project management. May take a few examples:

- In The PMBOK Guide "A Guide to the project management body of knowledge", the "Project management is the application of knowledge, skills, tools, and techniques to project Activities to meet the project requirements. Project management is accomplished through the appropriate application and integration of the 42 project management processes comprising logically grouped the five Process Group. These five Process Group are: Initiating, Planning, Executing, Monitoring and Controlling, Closing "and" Balancing the competing project constraints including, but not limited to: Scope, Quality, Schedule, Budget, Resource and Risk” (PMBOK GUIDE. 2008).

- In the Information Management Syllabus Copyright © 2010 Pearson Education, Inc.. Publishing as Prentice Hall, able to understand project management as "Activities include planning work, assessing risk, estimating resources required, organizing the work, assigning tasks, controlling project execution, reporting progress, analyzing



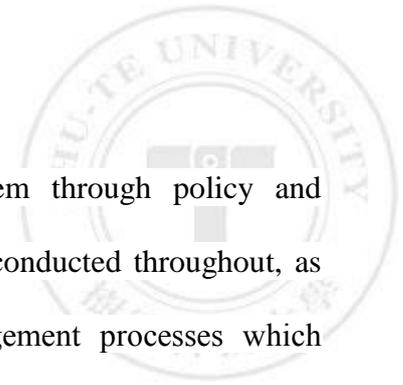
results. Five major variables: Scope, Time, Cost, Quality and Risk " (Shu-te University. 2010)

2.2. Overview of Project Quality Management

There are many definitions of quality. The ISO standards defines quality as a whole the small details of a product that it should satisfy the provisions set forth. I can see some of the concepts of quality in the article "Total quality management in the construction process" of David Arditi and H Murat Gunaydin as "Quality can be defined as meeting the legal, aesthetic and functional requirements of a project. Requirements may be simple or complex, or They may be stated in terms of the end result required or as a detailed description of what is to be done. But, However expressed, quality is obtained if the stated requirements are Adequate, and if the completed project conforms to the requirements ... " (David Arditi and H Murat Gunaydin. 1997)

In the article about "Quality management model for building projects" of TC Cornick, the "Quality is conformance to requirements, which is attained through project management for Improvement by all Participants, and this should result in Assurance by demonstration. Through every phase of a project, there are 'Customers' requirements and who have 'suppliers' who have to conform to those requirements, but the ultimate customer is the client and ultimate supplier is the team project" (TC Cornick. 1988).

Management of project quality in PMBOK Guide "A Guide to the project management body of knowledge", the "Management Project management includes the processes and Performing Activities of the organization that determine quality policies, Objectives, and responsibilities so that the project will satisfy the needs for which it was



undertaken. It implements the Quality Management System through policy and procedures with continuous process Improvement Activities conducted throughout, as appropriate”. “An overview of the Project Quality Management processes which include the following: Quality Plan, and Perform Quality Assurance Perform Quality Control” (PMBOK GUIDE. 2008).

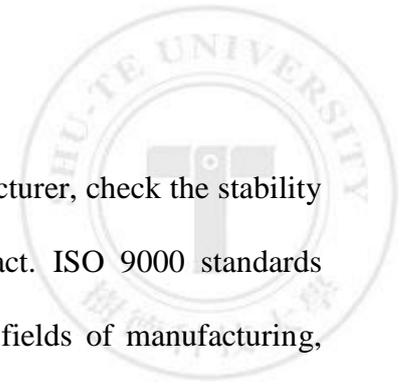
Quality management of the project is one of the basic variables of project management. This is one of two important factors to decide the project is finished or not, along with risk management. Therefore, the issue of quality control must be very focused.

World quality management of the project is highly focused and has been standardized by standards such as the ISO standards that are issued by organizations and the International Standard Organization's standards for each country separately.

2.3. Overview of ISO 9000 standards

Quality Management System according to ISO 9000 by the Organization Standardization International (ISO) issued the first time in 1987 is one of the best management solutions and today, it is acknowledged in so many countries around the world. It is not standard or technical regulations about products. ISO 9000 standards provides closely linked for quality management system to business objectives of a organization and can be widely applied in all fields of manufacturing, business and services.

ISO 9000 standards is extremely effective means that help manufacturer building and applying quality assurance system in their establishments, as well as the

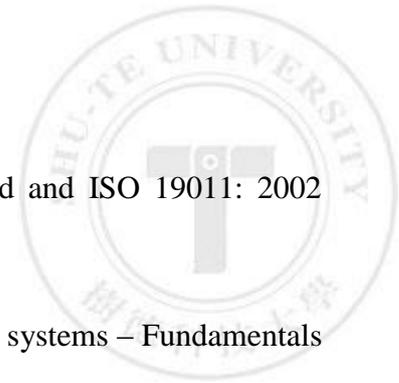


ways in which the buyer may be based on to check the manufacturer, check the stability of production and product quality before signing the contract. ISO 9000 standards provides a quality system and can be widely applied in the fields of manufacturing, sales and service. ISO 9000 standards guides the organization as well as businesses building an appropriate management model and documentation of the elements of quality system according to the model they chose.

The nature of management of ISO 9000 standards is “the products and services are good when the system of management and manufacturing are good”. If all organizations want to implement well, they must know what they need to do, must implement that things and test, control and continuously improve those processes. ISO 9000 standards includes eight basic principles:

- Customer focus
- Leadership
- Involvement of people
- Process approach
- System approach to management
- Continual improvement
- Factual approach to decision making
- Mutually beneficial supplier relationships

ISO 9000 standards has been in Vietnam since 1994. So far the General of Quality metrology standards of Vietnam introduced a series of the quality standard systems. The newest ISO 9000 standards is issued of Vietnam so far as ISO 9000: 2007



standard, ISO 9001: 2008 standard, ISO 9004: 2000 standard and ISO 19011: 2002 standard.

With the ISO 9000:2007 standard, Quality management systems – Fundamentals and vocabulary, that is the system that establishes a starting point to understanding the standards and explains the basic vocabulary that was used in ISO 9000 standards.

With the ISO 9001:2008 standard, Quality management systems - Requirements, that is the proposed requirements, which are used to prove the ability of organizations to meet the requirements of customers and the other requirements relevant. They are used in the evaluation and certification.

With the ISO 9004:2000 standards, Guidelines for improvement, is the introduction of guidelines for improving in the quality management systems frequently and taking the benefits to the parties by maintaining of customer satisfactions.

With the ISO19011: 2002 standards, Guide to assess the quality management system and/or the environment (under construction), is the guiding that shows how to validate the capabilities of the systems when they achieve quality goals. This standard can be used in the assessment of the first party, second party or third party.

2.4. The current status of Quality Management of Construction Projects in Vietnam

In the former Vietnam, as well as standardized quality management in the project is still restricted by the level of awareness and limited. Especially the quality of thinking is a simple matter of making frequent problems with the quality of the project as the problem of accidents caused by improper construction or complete design issues

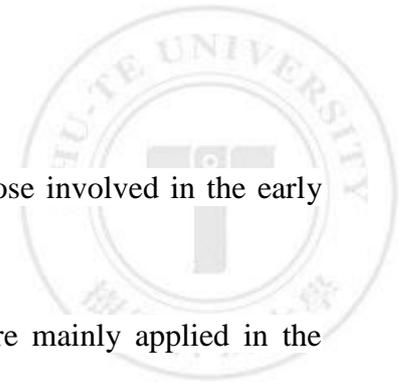
stopped delay the project by the quality profile of the project is not done leading to difficulties in the disbursement ...

ISO 9000 standards has been used the first time in Vietnam in 1994 by APAVE Group (France). After 16 years of presence in Vietnam, the quality management system has shown the advantages of its, and created landmark in benefits for economic development in many components in Vietnam, especially after Vietnam joined the WTO in 2006. The market opening made the Organizations in Vietnam become more professional in the management and implementation to compete with foreign enterprises with full of strength in Finance, experience, management organization.... Those make the level of awareness is improving the quality of projects in Vietnam. The date the company has applied ISO 9000 standards in quality management at the company as well as in the project. The application is no longer a factor forcing brands to ensure that a proper understanding of the advantages of the application of quality management systems on quality management in the project. The application has brought many benefits for the project and assist in implementing the project successfully.

2.5. Research methods to evaluate the application of ISO 9000 standards on quality management of specific construction projects in Vietnam

The process of project implementation include three stages: preparation (which includes design), construction and operation, maintenance stage.

In the three stages, construction stage is the most complex and important stage. It requires a clear management process and coordination between units: Owner,

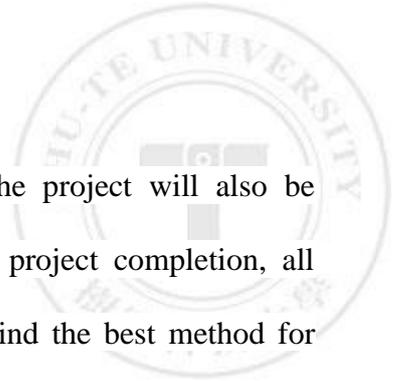


principal contractors, subcontractors, the and the designer (those involved in the early stages of the project).

The adoption of ISO 9000 standard in the project are mainly applied in the construction stage.

Here, we will consider the application the ISO 9000 quality management systems into the project. The common method is to conduct research through the questioning of experts in the field of project management, who directly perform tasks related to quality management of projects they participate. It is the Director of Project Management Board, Head of Technical - Management plans for those projects directly managing or directing the implementation of quality management of the project we analyze the success , failure of the project implementation. These are projects that use information systems in project management and are not used in information systems management. Which, together with the results refer to magazines at home and abroad, consulting analyst and finding a way to manage the quality and effectiveness of a successful project.

This thesis will focus on evaluating the impact of ISO 9000 standards on quality management of projects with specific cases applicable to the project “Building the Detergent Production Factory of HASO .JSC”. The analysis of the project that were done in the traditional way do not use the quality system of quality management and quality systems used in quality control of projects to get the analysis of the professional problem in quality control of projects. Then, analysis based on the article referenced in the analysis of experts gives us an overview of quality management methods applied to



individual projects. The impact of information system on the project will also be analyzed before the advantages and limitations occur. After project completion, all analysts will have the effect to apply to the next project to find the best method for quality control of projects.

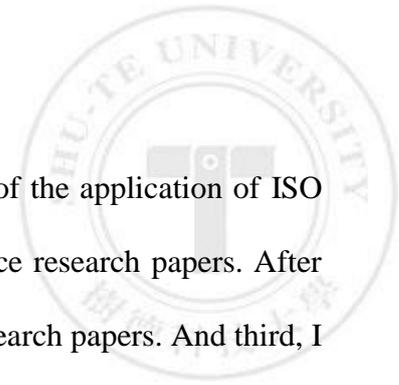
Chapter 3 Research Methodology



First, The object I selected to interview were the Head of Construction Project Management Board of Kim Dong Cinema, Head of Technical – Planning Department of the My Dinh - Me Tri Urban and Head of Construction Project Management Board of Ha noi Detergent Production Factory.

3.1. The reference articles

- ISO 9000 in construction: An examination of its application in Turkey by A.M. Turk.
- Applying the ISO standards to a construction company - a case study by Mohammed A. Salem Hiyassat*.
- Total quality management in the construction process by David Arditi and H Murat Gunaydin.
- Quality management model for building projects by T C Cornick.
- Integrating quality systems in construction projects: the Chilean case by Alfredo Serpell.
- ISO 9000 certification and construction project performance - The Malaysian experience by Sabariyah Din^{a,1}, Zahidy Abd-Hamid^{a,1}, David James Bryde^{b,*}.
- Integrating buildability in ISO 9000 quality management systems: case study of a condominium project by Low Sui Pheng^{a,*}, Belinda Abeyegoonasekera^b.

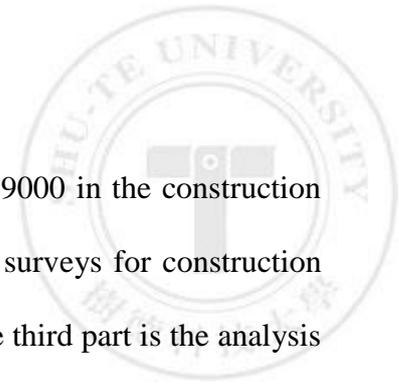


The model I chose for research, was the first analysis of the application of ISO 9000 standards in construction companies through the reference research papers. After that, I analyzed the quality management in projects through research papers. And third, I want to assess the feasibility of the application of ISO 9000 standards in project management in Vietnam. Finally, the applications of ISO 9000 standards in quality management of a construction project in Vietnam – A case study.

3.2. Summary of the articles:

3.2.1. ISO 9000 in construction: An examination of its application in Turkey.

This study papers assess the impact of ISO 9000 to build activity in Turkey and the suitability of this application in the construction industry, in particular in the construction companies of Turkey – a case study. The article mentioned three reasons for applying ISO 9000 in the construction industry of Turkey. The first, the construction industry is a key industry of Turkey, creating more jobs and increasing the GNP of Turkey as well as directly affecting the stability of the economy and creating more jobs for people. The second reason, Turkey is located in a place that earthquake occurs up to 93% area. Therefore, the application of advanced construction technology and professionals management processes help construction quality to be improved significantly, reduce damage by natural disasters. Ultimately causes, the Turkey is in the European Union region, an area where the application of ISO 9000 has become popular and widespread. So for the contractor in the country can compete with contractors in coalition and the construction industry can integrate with the construction industry sector, need to implement ISO 9000 into construction management industry. The first



part of the article is an introduction to the application of ISO 9000 in the construction industry of Turkey. The second part is up questionnaires and surveys for construction companies of Turkey, test their awareness about ISO 9000. The third part is the analysis and assessment of the perceptions of companies about ISO 9000 and finally is the conclusions and recommendations to improve the process of ISO 9000.

3.2.2. Applying the ISO standards to a construction company: a case study

The article research and analysis of the reaction of the employees in a construction company of Jordan when applying ISO 9000 in that company. In this paper, The questions are centered around the employees to understand how the ISO 9000 is, its the application helpful in their work yet, obstacles encountered when applying it; it's really necessary or is only required to perform; compared the change when applying ISO 9000 with the first time without apply ISO 9000, and that change is positive or negative. Through the questionnaire, the responses are compiled and analyzed to produce an assessment of the real benefits nature of applying ISO 9000 in a construction company of Jordan through which to some links conclusions and recommendations for the using ISO 9000 in another company to achieve more effect.

3.2.3. Total quality management in the construction process.

The article gives an overview of quality control during construction, the overall concept of quality, quality assurance and quality control in construction. It reviews about all of relationships, the affecting factors to the quality of the construction projects and an overview of ISO 9000 standards, quality system in construction quality



management. Thereby we can have a clearer view of the relationship between ISO 9000 and overview of quality management in construction.

3.2.4. Quality management model for building projects.

This study research about a model of quality management application for a building project. Here, the research model is divided project into different stages (06 stages) with four basic principles of quality, and implement the project quality management through the division of roles, scope of work of each stage, other factors related to the stage. This model analysis tasks of each phase, the inputs of each stage, the relationship between the stages through the objectives of the inputs and outputs of each stage. And success of the model is when the sequence of work in phases and between phases must be compatible with each other and there is no conflict.

3.2.5. Integrating quality systems in construction projects: the Chilean case

The paper analyzes about the problems of the application of quality systems in construction project management in Chile, the characteristics, limitations, benefits and problems they have to solve when integrating of quality systems on construction projects. The study was conducted through the questions for the experts in 05 projects in Chile. The analysis of the answers help us to understand the characteristics of implementation process, which are related to the organizational structure of works, to the incentives and the training; the restrictions, the barriers, the problems of implementation process, the benefits, success factors from the implementation process. And finally the paper offers recommendations and conclusions for investors, contractors



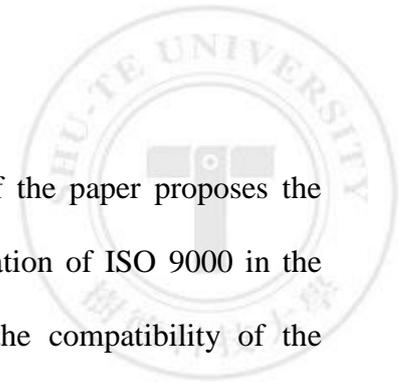
and other relevant units to improve the quality of construction projects through integrated quality system.

3.2.6. ISO 9000 certification and construction project performance: The Malaysian experience

The paper analysis and evaluate the implementation of projects under construction and ISO 9000 standards from the Malaysian experience. The study indicates an important role in improving the quality and success of projects in Malaysia. The first part of the study talked about the importance of ISO 9000 in Malaysia as it is required to have this certificate for construction companies in Malaysia in the bidding specifications. The study was conducted by sending the four types of questions to the construction projects in Malaysia. Those questions are about the practical issues of project management, financial management practices and success of the project. The feedbacks and analysis results shows the role of ISO 9000 in improving the quality of project management, financial management and the success of the project. The results also show the advantages of ISO 9000 in regulating of the relationships between project management, financial management and success of the project.

3.2.7. Integrating buildability in ISO 9000 quality management systems: case study of a condominium project.

The paper provides a case study for the integration of the ISO 9000 into the quality management system to ensure quality and productivity in construction. It proves the necessity of adopting ISO 9000 in the worldwide construction industry. The paper gives a perspective about the integration of ISO 9000 in the project quality management



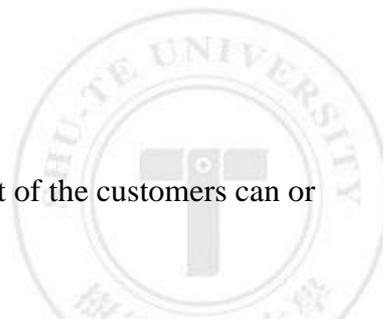
at the design phase and construction phase. The objective of the paper proposes the concept of efficiency in construction, highlighting the application of ISO 9000 in the construction industry and through a case study to check the compatibility of the integrated ISO 9000 to the principle of efficiency in the construction phase (design phase and construction phase). The paper also analyzes the main features of construction, barriers, limitations in the implementation process and the other influence of ISO 9000 to projects.

This model can be seen as a fairly consistent pattern to apply the research model for this thesis. According to the research scope of this thesis, I expect the application of ISO 9000 for construction of the project.

3.3. Models of quality management according to ISO 9000 standards

ISO 9000 standards are the very general standards, applicable to all organizations and all enterprises. In the ISO 9000 systems, the ISO 9001:2008 standard is the standard of quality management systems. The ISO 9001:2008 standard regulates the requirements for quality management systems of organizations and it can apply for internal organizations or be used to certificate to the organizations.

The ISO 9001:2008 standard focuses on the process approach that the satisfaction of the customer is the main point of the system. The diagram below describes the process approach. This diagram does not reflect in detail the process but the procedure is general for all of the requirements of the standard at which the customers are central in determining the requirements to be considered as inputs of the



system. The customers satisfaction is reflected in the assessment of the customers can or can not meet the requirements of customers.

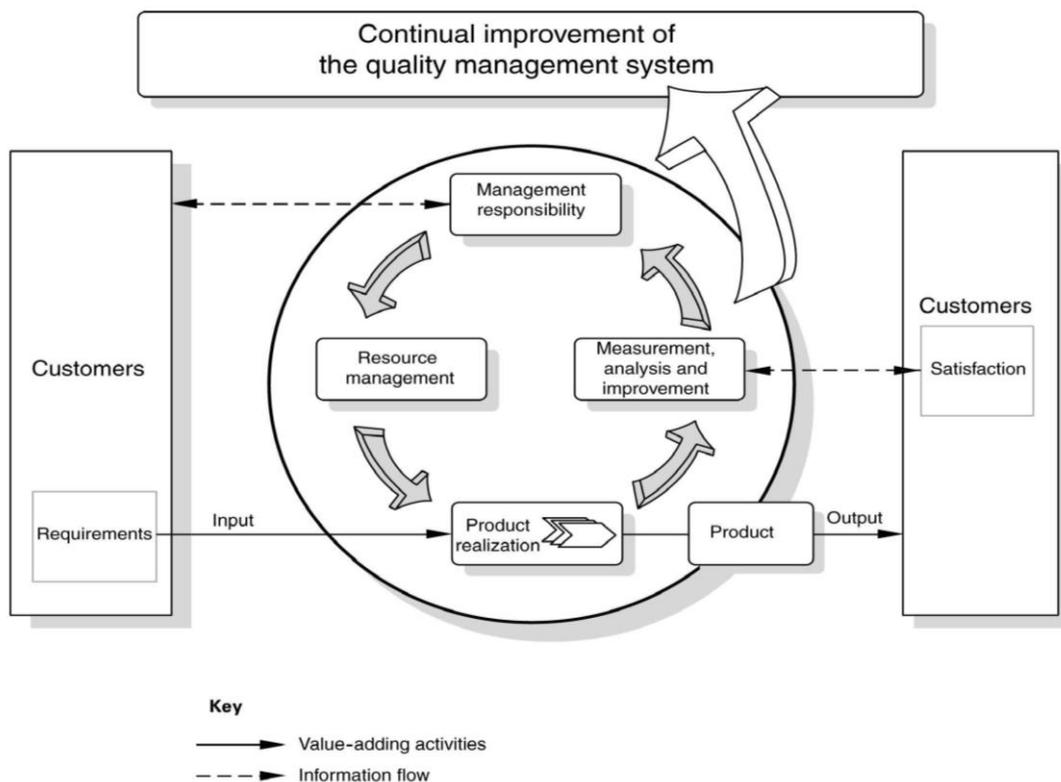


Figure 1. Model of a process-based quality management system

Source: The ISO 9000:2008 Standard

3.4. Project quality management model

The project is divided by many small works, such items have a relationship with each other. With each small items under a quality management processes as diagrams:

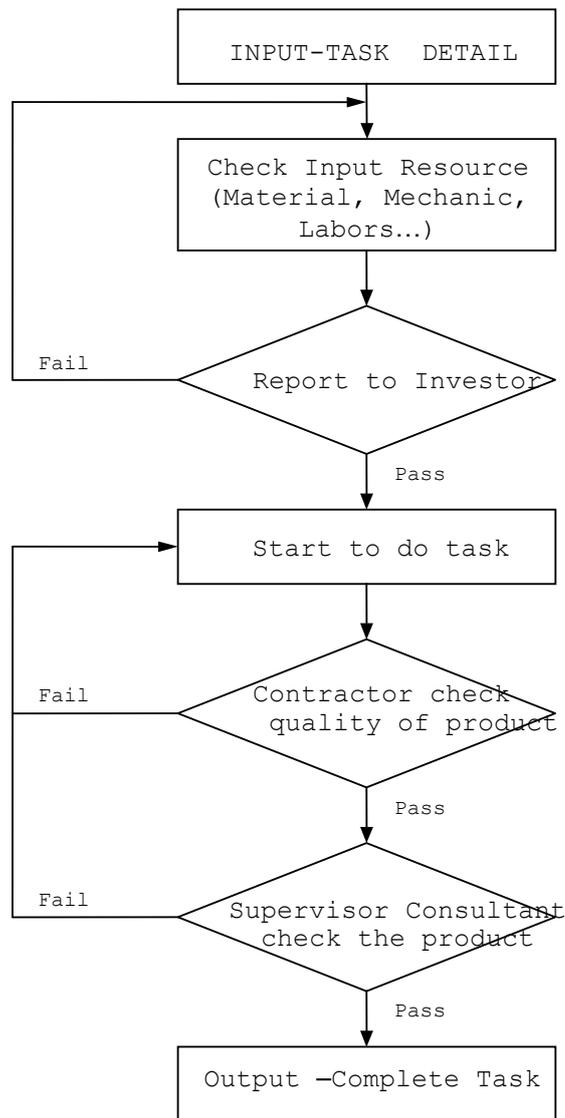


Figure 2. Process quality control and supervision of contractors



Chapter 4 Analysis and Results

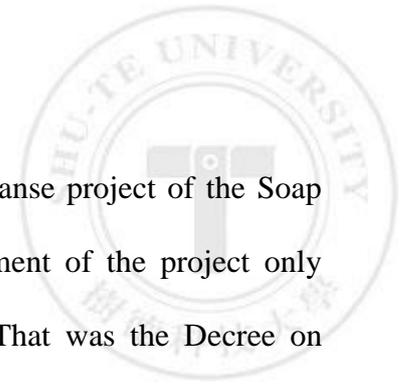
4.1. The content used to ask the experts

The experts I interviewed were: the Head of Construction Project Management Board of Kim Dong Cinema Project, the Head of Technical – Planning Department of the My Dinh - Me Tri Urban Project and the Head of Construction Project Management Board of Ha noi Detergent Production Factory Project. The research questions focused on the following topics:

- Evaluate the Project Quality Management in Vietnam in the late of 20th century to the early of 21st century following their projects (Two projects).
- Status of Project Quality Management in Vietnam today (One project).
- ISO 9000 and its application in project quality management in Vietnam – It's applying for this case.

4.2. The obtainment results and the evaluation of the experts about quality management in Vietnam through the projects that they were responsible

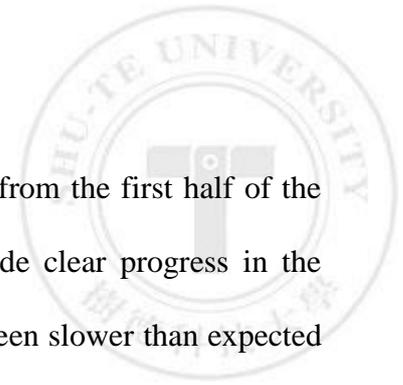
Through the interviews and summarize of the expert opinions, we can see that most of the projects implemented in Vietnam in the late 20th century to early 21st century did not follow a specific process and they did not apply any system of quality standards in project management. The model of management in these projects was mostly implemented in the form of experiences from previous projects and by some current state documents of quality management to apply in construction projects.



For example, with The renovation, upgrading and expanse project of the Soap Production Plant of Ha noi Soap .JSC, the quality management of the project only focused on the application of the current state documents. That was the Decree on construction quality management which promulgated acceptance sample of construction works, the conditions for acceptance of completed work. The contractors selection was just focused on finding the reputable contractors in the country and the performance of the contractors was restricted by the current decrees in construction quality management. The performance was so passive and the progress of the project has been extended by 24 months and there were a lot of work to be redone. The implementation diagram of quality management of the project can be summarized:

To select Design Contractor → To selected Construction Contractor → To supervise implementation progress of contractor → To redo that works (Did not repair) with fail works.

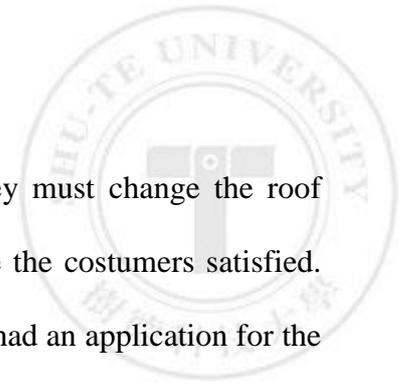
The project management was only implemented by following the circulars letter and decrees of the current state as: Decision No. 35/1999/QD-BXD on promulgation of regulations on Construction quality management, Decree No. 52/1999/ND-CP of the Government issuing the Regulation on Investment and Construction Management... Quality and implementation schedule management of the contractors were not relation with the costs. Therefore, the project completion was delayed by two years. Because the contractor did not perform as the progress they committed though they were provided full of financial.



With Song Da Urban Project: The project was started from the first half of the first decade of the 21st century, the implementation had made clear progress in the quality management of the project. However, the project has been slower than expected 12 months. The main used model was the management as part of the split item for many contractors to manage, non-focused such as the old projects before. The implementation diagram of quality management of this project can be summarize:

To selected Design Contractor → To selected Construction Contractors → To supervise Contractor's Progress through the documents of the State of Vietnam → with fail works → required to repair that works → if it still fail, redo that works.

The project management process adhered to the circulars documents, decrees and instructions of the State's current as The Decree of the Government No. 209/2004/ND-CP on construction quality management, The Decree No. 16/2005/ND-CP of the Government on construction investment project management .. And they were attached with the process models that was made by the supervising consultant and investor following the provisions of the current State. The quality and progress management of project was tied to financial with the contractors. In particular, the process of capital and payment of construction contractors related to the progress and quality of project which the contractor committed. For errors in quality, slow progress of the contractor they had taken measures to handle specific and contractors were not meet these fail later. However, the progress of the project has been delayed 12 months, the quality of the project was not as they expected. When the projects was in use, we still had to handle the problems of proof and waterproof of the roof floor. Roofing

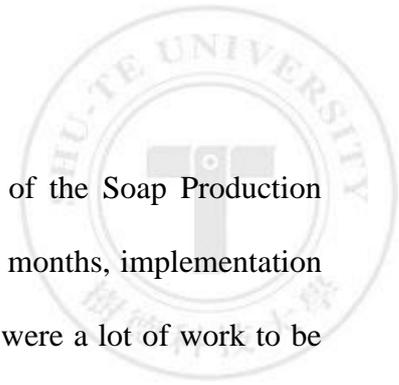


materials did not guarantee perfection, causing seepage. They must change the roof waterproofing materials. Landscape architecture did not make the costumers satisfied. The costumers only pleased the project location. Many people had an application for the renovation of their house after buying.

Two projects have shown that the problem of the projects implemented in the last time ago in Vietnam when they did not have a application for management systems to manage project quality. There was no link between the design contractor and investors. Between each other contractors and the quality management process of the investors did not have a scientific and clearly link; that was the cause of misconceptions and improper performance of the contractors. The result was a lot of work uncompleted and must be redo. That was affect to quality of project and it made the progress of the project slowly. Furthermore, in the implementation management process of the contractors did not have specific procedures and logic. It was difficulties in the implementation of the contractors, especially when there were a problem of design unclear. The performance of the contractor was not as requirement of design contractor cause the review process of the investors in the first stages was not focused. So the process examination of contractors at a later stages had a lot of problems.

When contractors were having problems, the handling was not clear and uniform, and a incorrect production was just discovered when it completed. It influenced badly to the quality and progress of the project.

The results:

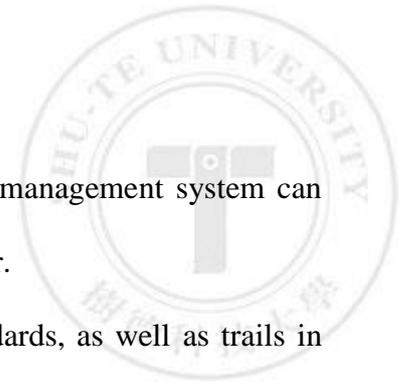


- For The renovation, upgrading and expanse project of the Soap Production Plant of Ha noi Soap .JSC, the progress had been extended 24 months, implementation costs had increased more than expected 20% . Because There were a lot of work to be redone by un-appropriate design and in fact construction of the contractors. So they made extend progress and increase costs to ensure quality requirements. And the project could be consider as unsuccessful.

- For Song Da Urban Project: Progress had been extended 12 months, increased implementation costs than expected, but did not increase with estimates. However, the project had been incurring processing waterproof roof task. Because the roof waterproofing material had been some problems (no guarantee of quality, construction difficulties, causing seepage of water down the roof and cement paste when wet roof leak and cause unsightly). The project cost was increased by 5% Total cost of project.

4.3. Evaluate of the experts on the status of project quality management in Vietnam today

The status of implementation of project quality management in Vietnam today can be start with the WTO events and the opening of integration with world markets, Vietnam's economy has made great breakthrough. In the field of management, especially the updates of the ISO system provided effective in management. For construction works, the application of ISO in the construction company has been focused in recent years. Most construction companies, designers, consultants have been updated and registered for ISO 9000, 9001 certification in their company. This is big advantage when the one wants to apply the ISO standard in this project. Because an

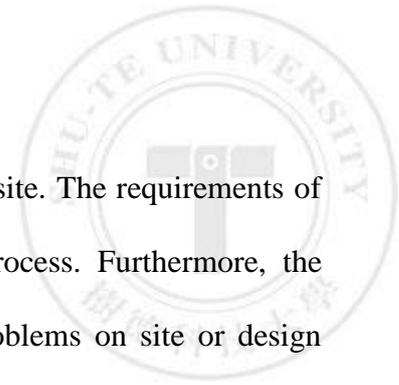


understanding of the contractors about the ISO 9000 quality management system can help the implementation process in construction becomes easier.

However, because of the new systems of quality standards, as well as trails in the minds of these old managers have a lot of experience, the application of ISO 9000 in managing meet so many difficulties. The application was only for face, put in use to have ISO certification for the brand and the performance as an advantage to participate in the project. And the application just stop at the administrative, as text documents using ISO form. But with most of the management works still follow the old way.

The implementation have many disadvantage. The first is the waste time of training ISO, the ISO-building work and the second is less effective, and may have the opposite effect when the application ISO only in the sample text. The performance follow the old way and they can create conflicts and make affective to the project quality.

An example is the Kim Dong Cinema project. The contractor that implement this project had ISO 9000 standards in quality management systems and the implementation process applied ISO 9000 standards, but only on paper documents. The management process was implemented by the manager who do following the old ways by many years experience in the implementation of previous projects. Thus, after nine months of implementation, the project had to adjust based staff second times cause the schedule and the cost of the project have been big changes. The reason was that managers do not measure all the risks that may occur during the implementation process. The implementation of the works in the site was not as ISO 9000 standards and still

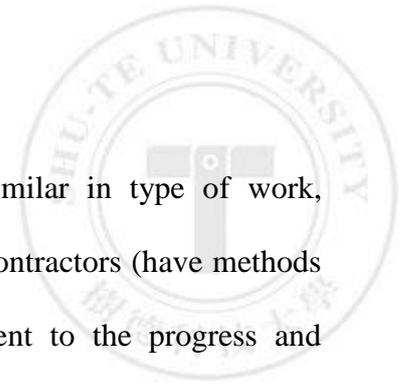


follow the old way, so there were no link between office and site. The requirements of site up to office were pay back by non-compliance due process. Furthermore, the implementation had been difficult, cause the handle with problems on site or design problems did not correctly follow the requirement process and they made delays in works as well as unexpected incurred cost. The project are completed on schedule on the site, but the incurred costs over ten percent. The finish works files unfinished. Thus the progress of the project was delayed nine months than expected.

4.4. Evaluate of the experts about the application of ISO 9000 standards in quality management of the project with a specific applicable case to the project "Building the Detergent Production Factory of HASO .JSC" on the Thach That-Quoc Oai, Ha noi Industrial Zone

The Project: "Building the Detergent Production Factory of HASO .JSC" on the Thach That-Quoc Oai, Ha noi Industrial Zone is a strategic project in the future development planning of Ha noi capital. Production areas will be relocated to the outside of the city centre to build commercial centers.

With 20 items and total cost of 60 billion VNĐ for construction, estimated completion time is 150 days. The total number of jobs on the site is about 5,000 jobs. A volume of work is not large but a lot of jobs is required to be done in a short time. That requests require the construction plans must make reasonable requests to ensure quality and progress of the project as expected. To achieve this, the Project Management Board has made some initial criteria. The first is the contractor selection process require clearly for the ability of the contractor (That's contractors are certificated ISO



certification, performed at least 02 construction projects similar in type of work, progress and cost equivalent), the technical requirements for contractors (have methods to perform these works and the detail progress is equivalent to the progress and requirements sequence for inspection).

The first requirement is the project complete in the shortest time possible to relocate the old factory and move to the new place where the construction process ensure quality and achieve progress as expected.

As a senior in the construction of this project, I am responsible for finding a quality control method for effective project to meet the requirements as well as to ensure the performance process management of the contractors. I would limit the scope by using the ISO 9000 quality management system. Because the first, we can not apply following the old way in the current period by the inadequacies of the old management style has been described above and the inappropriate management of the old way with the actual requirements for quality and progress of this project. The second, through the research of applying ISO 9000 standards in construction in countries around the world such as Chile (America), Turkey (Euro), Malaysia, Singapore (Asian), we can all see the effect of applying ISO 9000 standards in project quality management. The most important thing in the performance the ISO is the performers must be understand the importance and useful nature of the ISO 9000 certification in management. That help applying ISO 9000 standards in the project achieve the desired effect. Thus, the research focus is how to apply the ISO 9000 quality management system in this project to be

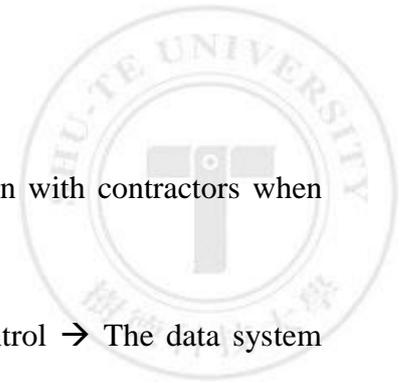


effective, to ensure the project quality without affecting to the expected progress of this project.

With the large amount of jobs (an average of more than 30 jobs perform in a days), The ideas of experts is necessary to have a system of science quality management from the overall of to the detail of this project. The first is the overall management system for the whole project, the performance sequence of the items in this project. Then, we split the management for each item and apply ISO quality management system on the part of items and pair them together to form a completing operation system to help investor to control the quality and progress of the project.

By the time of the thesis, the project has completed the design drawings and has done in choosing the construction contractors. To build the quality management system is to build the performance control and inspection system of contractors.

Almost the delaying in progress or poor quality projects in Vietnam had the main reasons. That were the contractor did not have specific plans for evaluating the work done at the site, unforeseen difficulties , the obstacles encountered on the site. They made the handle of those problems untimely. Moreover, when they had the problems causing of slow progress of the project, the contractor had no specific plans for further work to accelerated the progress and recovered the slow progress especially with the projects had high requirement of progress. To overcome this, in the process of managing the contractor has a stage. That is the controlling of implementation of the contractor and for monitoring, handling inappropriate products of contractors.



The Process of quality management in the construction with contractors when applicable ISO 9000 can be summarized by the diagram:

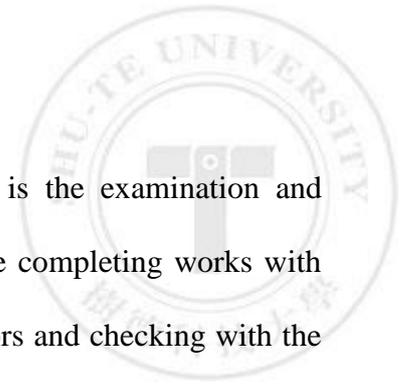
To Select construction contractor → The contract control → The data system control → To inspect and control process of contractor (Tools, machines, labors... of contractor) → To check and evaluation all activity of contractor → To control and handle all conformable production → To supervise the performance of the chain of continuous activity of contractor.

- The selection of construction contractors are considered to comply with the provisions of state law of Vietnam such as tender law documents, implementation guidelines on tender law...

- The contract control of a contractor follow the actual jobs of project and accordance with the implementation of construction contracts...

- The data systems control ensure the information and data relating to the project are prepared to provide for the contractors the implementation process of the project to ensure the quality, progress and the allowance budget sources of project.

- The inspection and control process of contractor is examination the problems relating to the contractor, the contractor's understanding of the construction of this project. The ways of implementation of the contractor to complete the project, how to raise capital, how to make records, perform site work. Inspection and control of equipment, mechanic, human resource that use for this project. The process of acceptance all of works, the completing works process

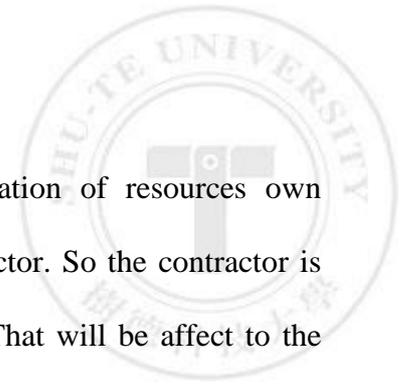


- Checking and evaluation all activity of contractor is the examination and evaluation the works that the contractor completed. Check the completing works with the Investors process requirements, the committed of contractors and checking with the current regulations of the state to switch to other works. The examination will be related to the payoff, or the requirements for the implementation to ensure with the requirements for the next or for the work we have done previously.

- Control and Handle all Conformable Production is the monitoring the performance of contractors with inappropriate products. There are the requirements on the implementation process to ensure that all inappropriate products will be handled and the work will be redone according to investor's quality requirements. The detection of inappropriate products from design stage help the implementation activity and no arising problems are out of investor's control. They make positive effects on the quality and progress of the project.

An unsuitable product that is detected and handled in the construction phase will be required to compliance with procedures and under the close supervision of the investor. For those unable repair product must perform again following with the approved design. Costs for implementation will be based on fault of any party, these party must take responsibility.

- Supervising the performance of the chain of continuous activity of contractor is supervision the contractors to be ensure that the contractor will performs the works sequence following with their commitments. This is a very important step because by the reality of site, contractors often do not fulfill the order as committed by the causes of



the contractor to ensure profitability as well as the utilization of resources own resources and cause of the transfer of resources of the contractor. So the contractor is often change in order to suit with the actual circumstances. That will be affect to the quality and especially the progress of the project. Therefore, They are necessary in supervision and checking the implementation of the contractor's compliance with the committed process to ensure that the project complete with quality, safely, on process and costs in allowance scope.

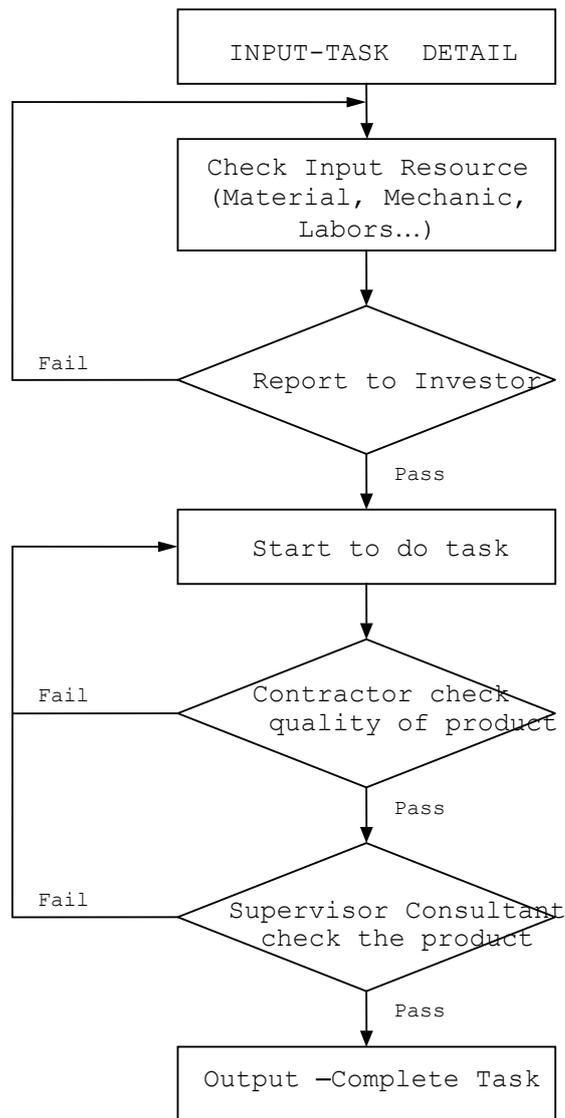


Figure 2. Process quality control and supervision of contractors

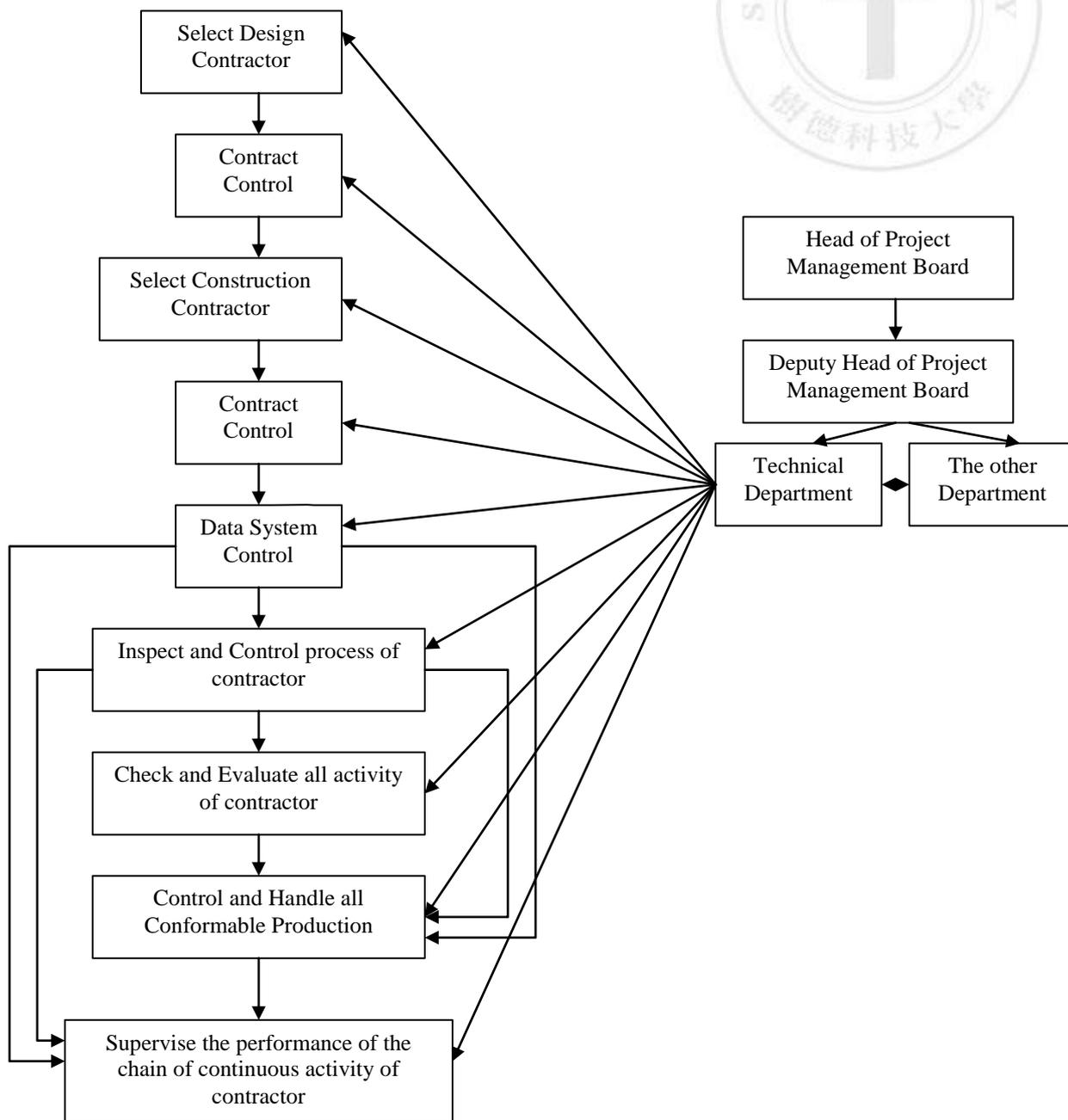
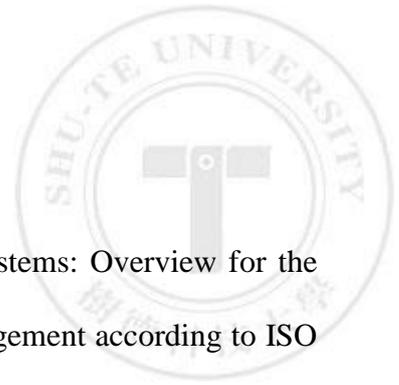


Figure 3. The Process of Quality Management of the project



4.5. Describe the model applying for this case

Research shows two modes of quality management systems: Overview for the project and details for each items. The models of quality management according to ISO 9000 is approached with a quality management system.

*, For the review management:

It is the contractor management from the beginning of the contract negotiate process to the implementation process. The construction procedure according to the process with major build is: The operator house and the factory houses → The Warehouses → The water treatment area → The auxiliary items → To build infrastructure and transportation → To build and install electrical and water systems of the items and the outside electrical item.

The building of management system in the items is done according to the procedures as in Figure 2. For example, in construction of the materials warehouse, the process is: To build foundation system → To install steel columns and beams system → To build brick walls → To complete the roof → To complete inside and outside of the house → To install equipments. The management model applied in the quality management system. The inspection and control of construction process are conducted at the work items. As foundation works according to the process is:

- The data systems control include: testing equipment (shovels, bulldozers, pumps, mixers machines ...) and labors (the labor requirements for jobs: to excavate foundation, formwork and steel jobs, foundation concrete jobs...). The involvement files and documents (supplier contract, subcontract, the quality documents...).

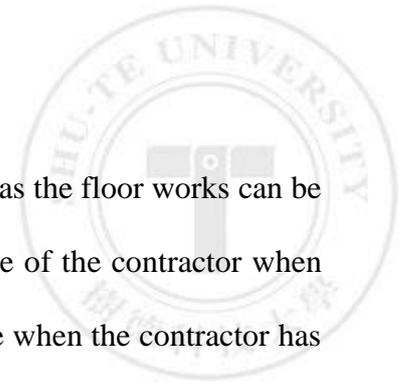


- The inspection and control process of contractor include: Check the implementation process is unreasonable or reasonable (order of implementation is according to the signed contract or not)

- Checking and evaluation all activity of contractor include: Checking the work of contractors to ensure the implementation following the current standards or not, can meet the requirements as the signed contract and according to the approved design or not?

- Control and Handle all Conformable Production are the assessment of the possible problems of works before making and treatment methods. For example in the foundation excavation job can landslide in the foundation hole and the remedy of the contractor. When it rains, cause of flooding and landslides, the contractor must have methods to drain off the water and to be against the landslides of the contractor, the contractor's remedies when the progress is slow by having to redo work.

- Supervise the performance of the chain of continuous activity of contractor is the supervising of performances of contractor according to commitment procedures. In the foundation works, the process of construction may be changed arbitrarily by subjective factors of contractor. For example: The commitment process of contractor is: The pressure of pile → Earth excavation → To break pile caps → To build foundation with the concrete and steel structures → To build brick foundation → To fill up foundation. For some reason to be mobilized machinery, contractor can change the process and implement the process without filling up foundation and have plan do it later. That changing is affect to the progress of other work later and affect to the



progress of the project that the contractor can not control, such as the floor works can be slow and affect to the items above +0.00 cos. The performance of the contractor when the commitment implementation process changes only be made when the contractor has submitted documents and valid on investor and is approved by investor.

*, For the quality management detail for each jobs:

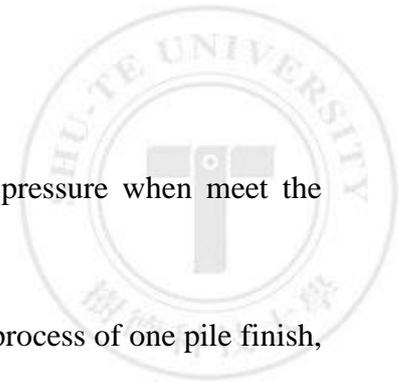
It is the quality control of each job according to the order are shown in Figure 1.

For example, with the foundation construction work: The construction procedure is The pressure of pile → Earth excavation → To break pile caps → To build foundation with the concrete and steel structures → To build brick foundation → To fill up foundation. When the contractor implement the piles pressure work, the contractor must implement with the process:

- Contractor must have a permission document that is commenced the implementation. The involvement documents is pursuant to the ground handover document, the approved design files and the other documents.

- Check input resources of materials, equipment, labor, construction technology: checking the ability of materials suppliers (Capacity, contract, providing commitment...), checking contractor's equipment and machinery (excavators, pile pressing machine), checking the relating files to equipment and by the fact the site. Inspection of the labors capacity (degrees, certificates, safety files and equipment protection ...)

- After being approved by supervising chief and investors, the contractor will transfer the next stage. The performance include: move piles on the site, positioning and installing pressure machine into pressed position → To pressure piles according to



the diagram and the process that was approved → To stop pressure when meet the design requirement.

- In the implementation process and when the pressure process of one pile finish, contractor carry out procedures for quality inspection of that pile. When the test results is satisfactory, contractor submit to supervisor to test. After that, when the supervising chief test and agree, contractor will move to implement the next pile.

In summary, the implementation process is built into a closed quality management system. All the problems are evaluated and predicted through knowledge and past experience and make plans for handling and the adjustment progress is required before doing a work and the performance will not meet problems that can not be controlled or unknown before. The performance also had limited if the incident was unprecedented or unknown. To deal with this problem when contractor make progress, the contractor is required to schedule earlier than 30 days to prevent such problems arising.

Chapter 5 Conclusions



5.1. The results

Currently, the project has completed the design and selection of construction contractors. We prepare to build the plant. Before going into the construction of the main items, some sub-main items was done. I was put into use this model for these items (transformer stations, drilling for geological survey items). The implementation has brought very positive results. The progress of constructors guaranteed as expected. The contractors have a plan for work scheduled before meet the problem with long rainy weather and a plans for further work to progress without delay. All the quality of works is accepted following the quality as prescribed and complete construction documents completed along with the site works. The costs is not over the approved estimates and absolutely no arise. The performance was calculated and planned very carefully from the contractors selecting stage. When rainy weather lasted one week, the contractor has adjusted the implementation plan and gave investor about the changing of the implementation jobs that can not do in rainy conditions (concrete work, plastering the outside); contractor was replaced by adjusting the work done in house (steel processing, plastered the inside, smooth background.) Progress has been adjusted to ensure the new progress as old progress. With a inappropriate product, the contractor handled reasonable. For example with the concrete structure of tank roof, after the lid does not satisfy the requirements of the concrete under compression, the product is cast again. The progress was also redone by the contractor with increase of equipments, machines



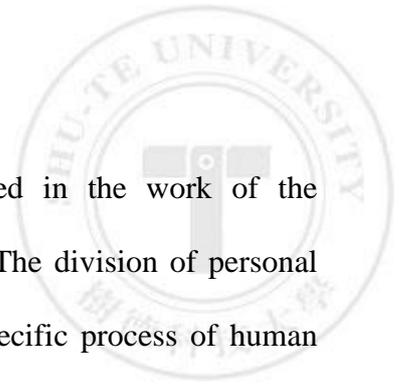
and labors and the Project Management Board agreed. So, the quality and progress had been made to ensure the request.

5.2. The limitations

The limitations of the study is in fact the capacity of the contractors. The contractor selection process has required very specific and clear about the capacity of contractors. However, in many ways, the contractor had made the project even though the ISO 9000 performance capacity still limited.

As presented above, the implementation status of projects in Vietnam, the contractor has not really keep up with the quality management models. Therefore the implementation is mainly deal and lack of initiative. Contractors just try to satisfy the requirements of investors and see it as the investor's requirement but does not understand the nature of the problem. That give facility for doing work to ensure the quality, progress and reasonable cost. In summary, the contractor has not really understand the importance and advantages of ISO 9000 standard. Therefore, with the transformer stations contractor, the investor has to be very difficult indeed to put contractors on the process for the project's expected progress. When the contact was implemented, the investor was extremely close to the contractor to request the contractor to comply with the requirement process. So the implementation followed the progress and quality assurance as expected.

More limited of the research is role of the project management board in monitoring the contractor performance. One of reasons, because of the requirements, responsibilities and powers of the Project Management Board sometimes went too deep



into each contractor's work. The performance was inhibited in the work of the contractor and the work did not achieve result as expected. The division of personal responsibility in the project was unclear. There was not a specific process of human resource management of project, it made the management of performance rather overlapping, a job could have several people involved in the monitoring of contractors. It led to the delay of the contractor cause the offer did not require in the same time.

5.3. The new research direction of this thesis

To achieve truly effective, The project need decentralize the quality management system to each component of the project. That is the problem of human resource management. In this research, I mainly refer to the problem of the works management of project to ensure quality and progress requirements. It must have once more a human resource management process for the project. Roles and responsibilities of each person must be clear.

In the contractor selection problem, it is necessary to be choose the contractors that have ability to perform this project. Just like this, the management and implementation are effective and reduce the pressure for the Project management board. This is still a difficult task in the current period in Vietnam. Because a company with more experience now is often from state-owned to privatized company or this company established from a long time ago. These companies often have the older staff and they carried out the work according to their experience without following the news information of social. And for young companies, they do not have much experience, but

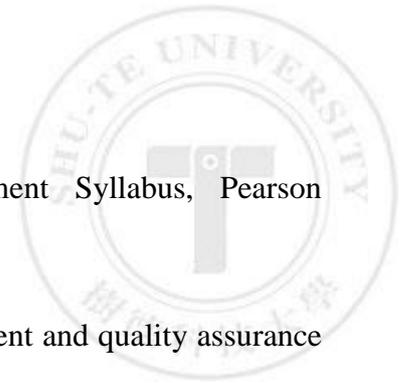
with many improvements in the management, keep on with social. But in management and implementation are lack similar experiences of projects.





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Appendix



The contents interview experts including four questions:

1. The model of project quality management in the projects that the experts did.
2. The main problems of these projects when They performed their projects according to that model (About quality, progress and cost)
3. The current status of project quality management in Vietnam.
4. The model of quality management should be apply in this case.

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