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TITLE OF THE MASTER'S THESIS:

**STRATEGY FOR DEVELOPMENT, MANAGEMENT AND USE OF HIGH-QUALITY
HUMAN RESOURCE IN KEY INVESTMENT PROJECTS OF PETROVIETNAM**

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After following the *Joint-training Program in Master of Public Policy and Public Finance Management*, I have been equipped with improved knowledge and skills, theories and practices of public policy and public finance management such as *Public Economics and Public Finance, Strategic planning and management in Public Sector, State and Local Government Budgeting, Public Sector Accounting, Statements and Auditing, Innovations in Public Finance and Strategic Public Finance, Information for financial decision making in the Public Sector, Public Policy and Programme Evaluation, Economics for Developing Countries, etc.* During the courses, I received attentive support and enthusiastic delivery from University of Tampere (UTA) and National Academy of Public Administration (NAPA) trainers as well as the coordination and support from my fellow students and colleagues that result in this thesis.

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Due to the limited time of the thesis and my modest experience, the thesis inevitably has shortcomings. All comments and suggestions are welcome so that I can improve my knowledge for serving my future work.

ABSTRACT

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This thesis aims to provide a strategy for development, management and use of high-quality human resource in key investment projects of PetroVietnam. As human resource management is very important to production and business activities in general and those of PetroVietnam in particular, human resource quality determines the development and success of every enterprise. Improvement of human resource quality is the foundation for improvement of corporate competitiveness. That is true for investment projects. The development process of PetroVietnam indicates that the progress, quality and effectiveness of its investments and project deployment depends enormously on its human resource quality. However, PetroVietnam has been usually in shortage of relevant high-quality human resource (i.e. managers and technical experts). The corporation has invested in and highlighted human resource development through, to name but a few, its Decision No. 2496/QĐ-DKVN dated 19 August 2009 on the Human Resource Training and Development Strategy of PetroVietnam, Period 2009 - 2015 and Orientation to 2025; Decision No. 363/QĐ-DKVN dated 24 February 2017 on the Human Resource Training and Development Strategy, period 2016 - 2025 and orientation to 2035; and, its strategic plans. However, PetroVietnam has got no consistent policies, sanctions, and measures as breakthrough solutions for development of its high-quality human resource or for identification of the relationship between development and human resource management. More notably, its focal projects have not addressed development of high-quality human resource adequately or systematically; merits have been neither attentively recognised nor given timely encouragement. This thesis on strategy for development, management and use of high-quality human resource in key investment projects of PetroVietnam thus aims to provide solutions for management and use of human resource by future focal projects of PetroVietnam. The research is based on qualitative method, analysis of the reality of management and use of human resource by PetroVietnam through its corporate reports and secondary documents, and especially my direct interviews of project managers, and documents collected from its PMBs and factory management

units. Based on the reality of its focal projects and the consultation of theories on human resource management and project management, this thesis will provide strategic solutions to overcome the current weaknesses and promote the current strengths in development, management and use of human resource at focal projects of PetroVietnam. Hopefully the solutions will bring about practical benefits in implementation and success of focal projects of PetroVietnam.

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION	1
1.1 Reasons and objective of research	1
1.2 Previous research	2
1.3 Topic and scope of research	6
1.4 Research questions	7
1.5 Research methodology	7
1.6 Significance and contributions of Research	7
1.7 Structure of research	8
CHAPTER 2: LITERATURE REVIEW	9
2.1 Human resource management	9
2.1.1 Concept of human resource	9
2.1.2 High-quality human resource and human resource development	10
2.1.3 Human resource management	11
2.1.4 Strategic human resource management	15
2.2 Project management	17
2.3 Management and development of project human resource	18
2.4 Relevant perception of the importance and value of project management	20
CHAPTER 3: RESEARCH METHODOLOGY	23
3.1 Description of research scope	23
3.2 Research methodology	23
3.3 Process of research	23
3.4 Analysis of collected information and data	24
CHAPTER 4: DATA ANALYSIS AND RECOMMENDATION	26

4.1	Overview of PetroVietnam.....	26
4.2	Situation analysis of development human resource in PetroVietnam.....	30
4.2.1	The reality of human resource of PetroVietnam	31
4.2.2	The reality of human resource development of PetroVietnam	36
4.2.3	The reality of human resource management of PetroVietnam	37
4.3	Forecast of PetroVietnam's needs of human resource and training in the coming time	40
4.4	Some key investment projects of PetroVietnam.....	41
4.5	Situation of development, management and use of human resource in the key investment projects of PetroVietnam	45
4.6	Recommendations and strategy for development, management and use of high-quality human resource in key investment projects of PetroVietnam	54
4.6.1	Strategy for development, management use of high-quality human resource in key investment projects of PetroVietnam.....	55
4.6.2	Recommendations on development, management and use of high-quality human resource in key investment projects of PetroVietnam	63
CHAPTER 5: CONCLUSIONS		67
REFERENCES.....		70
APPENDICES.....		74

LIST OF FIGURES

- Figure 2.1 The goals of human resource management
- Figure 2.2 Human resource management activities
- Figure 2.3 Project human resource management and development
- Figure 3 Summary of the research process
- Figure 4.1 Management organization chart of PetroVietnam
- Figure 4.2 Summary of PetroVietnam's staff size, period 2009 – 2015
- Figure 4.3 PetroVietnam's human resource structure in areas in 2015
- Figure 4.4 PetroVietnam's total need of investment, period 2011-2015
- Figure 4.5 Flow-chart of recruitment and training of operating and maintaining personnel
- Figure 4.6 The level of separate project
- Figure 4.7 The level of cross-project
- Figure 4.8 The level of strategic portfolio alignment

LIST OF TABLE

Table 2.1	Core areas of the human resource management practice
Table 2.2	Maturity of corporate project management
Table 4.1	Summary of realization of PetroVietnam's major targets over the recent years and plan for the coming years
Table 4.2	PetroVietnam's human resource structure in production and business, 2009 - 2015
Table 4.3	PetroVietnam's employees as postgraduate degree holders between 2009 and 2015
Table 4.4	PetroVietnam's human resource by age, 2009 - 2015
Table 4.5	PetroVietnam's human resource development training, period 2009 - 2015
Table 4.6	Forecast of PetroVietnam's human resource need, period 2016 - 2025
Table 4.7	Forecast of times of training for PetroVietnam, period 2016 - 2025
Table 4.8	Forecast of training expenditure for PetroVietnam, period 2016 - 2025
Table 4.9	PetroVietnam's focal projects
Table 4.10	List of focal projects's human resources trained by PVMTC
Table 4.11	Numbers of engineers and technicians trained for plant operation and maintenance

LIST OF ABBREVIATIONS USED

CMS	Competency-based human resource management system
ECAs	Export credit agencies
EPC	Engineering Procurement Construction
FTA	Free Trade Agreement
HR	Human Resource
HRD	Human resource development
HRM	Human resource Management
NAPA	National Academy of Public Administration
OJT	On-job Training
PMB	Project management board
PVMTC	Petrovietnam Manpower Training College
PVN	PetroVietnam (International transaction name of Vietnam Oil and Gas Group)
PVU	PetroVietnam University
TPP	Trans-Pacific Strategic Economic Partnership Agreement
USD	United States Dollar
UTA	University of Tampere
VND	Vietnam Dong
VPI	Vietnam Petroleum Institute

CHAPTER 1: INTRODUCTION

1.1 Reasons and objective of research

With the objective of striving to make Vietnam become a modern industrialized country, the industrialization and modernization of the country requires adequate and overall necessary resources. In particular, human resource is always considered by Vietnam the most important resource that determines the socio-economic development of Vietnam.

A special ranked state-owned enterprise, Vietnam Oil and Gas Group with the international transaction name being PetroVietnam (PVN) has an important role and function, and operates in specific areas which have close ties and are very sensitive to the socio-economic development of the country. PetroVietnam has been operating in petroleum activities, petroleum research, petroleum exploration and processing, oil and gas storing, oil and gas services in Vietnam and other countries in the world; producing and sailing of petrochemical products; investing, manufacturing and trading of electricity etc. It contributes to guarantee of the national energy security and is a key economic organization for development of Vietnam.

To achieve the objective of sustainable development, PetroVietnam has been investing and implementing many key projects in various fields, in the context of domestic and international difficulties and challenges. At the same time, in parallel with the development and investment in the country, PetroVietnam is actively seeking and expanding investment overseas. Specific projects invested and implemented by PetroVietnam usually are those on a greater scale and with complex technology, deployed in many parts of the world with the participation of many international companies, experts and workers from different countries.

In order to complete its function, PetroVietnam as well as other organizations, must have human resources which are healthy, brave, professional, who have highly qualified management skills, excellent technical expertise, good foreign languages, to keep pace with the region and the world.

It is common knowledge that schedule, quality and efficiency of project implement and investment activity of PetroVietnam depends largely on the quality of human resources, especially human resources with high quality. However, its human resources in investment projects are often short of high-quality managers, technicians, engineers and economic or commercial experts. On the other hand, specific work in the field of project management in Vietnam in general, and that in PetroVietnam in particular, show that the current policies, sanctions, specific measures are

incomplete; there have not been really innovative solutions to develop, manage and use high-quality human resource, not even clear distinction between human resource development and human resource management. In particular, key projects that can bring new stature and position for PetroVietnam have problems of construction and high-quality human resource development; their investment and implementation have not been adequately and systematically addressed. Interviews and investigations in some key projects have found that, during the construction management of its key investment projects, PetroVietnam just focuses on implementation of their tasks without paying attention to the issues of training, development, management and use of human resources in general and high-quality human resource in particular. The current regimes and policies are not suitable for the long-term management, use and attraction of high-quality human resources for the projects: there are neither strategies nor rational policies for the employees when projects have been completed; not focus on suitable mobilization, appointment and use of project management personnel that create peace of mind for project managers' professional development, especially in the final phase of projects, etc. Every key investment project in PetroVietnam normally has its own project management board (PMB), which is neither specialized nor long-lasting. Therefore, those project employees with high quality, capacity and experience of such projects usually move to new projects or other companies with new or better opportunities when their current project enters the second half of its life. There has not yet been any specific or systematic scientific research so far to review the practices, develop, and complete the theories on high-quality human resource development for key investment projects of PetroVietnam.

Therefore, the research topic *"Strategy for development, management and use of high-quality human resource in key investment projects of PetroVietnam"* has been chosen because this is an urgent need theoretically and practically.

The purpose of this topic is to provide a study of both theoretical and practical issues, propose the standpoint and basic solutions of development, management and use of high-quality human resource in key projects of PetroVietnam.

1.2 Previous research

Human resource development has long been an interesting topic of many domestic and overseas researchers with many publications. With awareness of the increasing importance of human resources, research is focusing on human resources and high-quality human resources - the fundamental element to achieve fast and sustainability development in a wide range of organizations, companies and nations.

In Vietnam, various scientific works and articles with different approaches have mentioned different contents related to both theory and practice. Khai (2005) studied human resources in the process of industrialization and modernization in Vietnam. The author argued that the requirements of industrialization and modernization can only be met by effective use and development of human resources. In search of improving the quality of human resources for knowledge-based economy approach in Vietnam, Ngan (2005) reviewed the general theories of human resource, human resource quality, and its components and roles in socio-economic development, industrialization and modernization; and provided a systematic theoretical shortcut based on knowledge economy. Tiep (2006) discussed training and development of professional and technical workers - an important prerequisite for the effective using of human resources. He argued that such training and development are decisive to improvement of effectiveness in use of human resources. These activities promote development of knowledge, new skills and labor qualifications, and new scientific and technological achievements while ensuring active movement of both individual sectors and the whole society. The training process transforms the human resource quantitatively, qualitatively and structurally to promote human potentials; partly and wholly develops the personality structure; increases both material and spiritual capacity; and, builds and increasingly perfects both the ethics and skills, and both the thinking and behavior to higher and more comprehensive levels that meet new requirements of human resources for the cause of industrialization and modernization. Giao's dissertation (2011) discussed high-quality human resources in the period of industrialization and modernization. The author presented a number of urgent issues that need effective solutions because Vietnam's unskilled workers remain a bigger percentage and competition of attracting high-quality human resources are taking place seriously among businesses. Hoang and Hoang (2013) provided lessons for Vietnam from the practice of training and development of human resource in some countries. Every nation pays special attention to development of its human resources in the light of industrialization and modernization for realization of its socio-economic targets, and every nation identifies its strategies of socio-economic development and human resource development for a given period. Hoan (2015) discussed human resource development in Vietnam, period 2015-2020 to meet the requirements for promotion of the industrialization, modernization and international integration. The author argued that during the acceleration of industrialization, modernization and international integration, human resource development is considered one of the three strategic breakthroughs for transformation of the national socio-economic development model; he added that human resource development has become the foundation for sustainable development and better national competitive advantage. Huynh (2016) also wrote an excellent thesis about human resource practices and improvements in

public sector: the perspective of administrative civil servants in the People's Committee of District 2, Ho Chi Minh City, Vietnam; etc.

The scientific works and articles have discussed manpower, human resources, management and development of human resources. Although the concepts may differ in their approach, scope and purpose of study; but in general, the authors outline the main contents and the role of human resources, management and development of human resources in the world and in Vietnam.

Several authors have analysed the structure, position, and relationship between manpower and human resource; researched the human resource development experience of other countries in the world as well as the current status of human resources in Vietnam. Regarding the quality of human resources, the authors agree that it is the ability of the knowledge, skill and attitude in purposeful activity of people and organizations.

Based on analysis of the practice and the requirements of human resources in our country, the authors propose several solutions to build, manage and develop the human resources which are necessary for the process of industrialization and modernization in Vietnam. Several solutions have been outlined for Vietnam's human resource development in the near future.

There have been some articles and scientific research which mentioned the issues related to human resources in Petroleum industry. For example, PetroVietnam approved in 2009 its strategy for training and development by Vietnam National Oil and Gas Group, period 2009-2015 and orientations to 2025. Accordingly, to achieve its objective of sustainable development and to become a strong corporation domestically and regionally, PetroVietnam would provide strategies and policies to recruit, train, use, manage, and remunerate its employees in light of a learning organisation to reap most capacity and knowledge for its development. Hong (2011) wrote about Vietnam National Oil and Gas Group - Implementation of the strategy for training and development of high-quality human resources. The author believed the recent practice indicated that the quality and effectiveness of PetroVietnam's operation is dependent on its human resource quality. To further realize its objectives of modernization and international integration for accelerated development, one big decisive task facing PetroVietnam is to build and implement a development strategy of high-quality human resources that meet its future development. Hau (2012) wrote about continuing to breakthrough, modernize, integrate in order to accelerate development of the petroleum industry to 2025. The writer provided a number of fundamental breakthrough solutions to accelerate the development of management organization, investment and finance, market, science and technology, human resource training and development, safety, environmental protection, and national defense and security. Thuong (2015) stated training and development of human resources

is one of the innovative development solutions for PetroVietnam. Tuan (2015) studied how to improve the quality of human resources of Vietnam National Oil and Gas Group. The author argued that PetroVietnam's human resources are always given thorough training higher to the average national level but the corporate labor quality and lack of qualified experts remain yet a huge barrier against most of its activities, as seen in its expensive hire of foreign experts for a multitude of important stages within the value chain of the oil industry. As a result, PetroVietnam must build a strong contingent of scientific and technological managers and technicians qualified for covering a vast majority of its activities, both domestically and overseas, so that the corporation can gain highest possible economic results and become qualified to the regional and international standards. PetroVietnam (2017) approved its strategy for training and development by Vietnam National Oil and Gas Group, period 2016-2025 and orientations to 2035. Based on its achievements of the strategic objectives set for the period 2009-2015 and orientations to 2025, the Prime Minister approved, on 14 October 2015, its development strategy to 2025 and orientations to 2035. To fit that objective, PetroVietnam has made an overall revision of its resources, management system, etc. and provided an overall strategy for its new period.

Overall, the authors, with their deep understanding in business and production practices and implementation oil and gas projects, have contributed to confirming the important role of human resources in the Petroleum field. In particular, in the context of international competition with the limitation of physical capital, while infinite human capital with creativity provide competitive advantages between organizations and enterprises; and there should be emphasis on values that are generated by high-quality human resources. Based on their study and analysis of the current situation of human resources, human resource development and human resource management experience of international oil and gas groups; and based on the review and assessment of the achievements and the requirements in the next period, the authors clarified that one of the factors determining the success or limitation in implementing projects in the Petroleum industry is the human factor. Affirming the need to manage and develop human resources, the authors have presented a number of oriented solutions for PetroVietnam to ensure the proactive supply of qualified human resources of regional and the world level, capable of efficiently operating business and implementing domestic and overseas projects.

There have been plenty of international publications on human resource issues, human resource development and human resource management. Examples are Human Resource Management: A Contemporary Approach (Ian, Len & Tim, 2004), Human Resource Management, a Critical Approach (David & Geoffrey, 2009), Facilitating Project Performance Improvement - A Practical

Guide to Multi-Level Learning (Jerry, J., 2010), Dictionary of Human resources and Personnel Management (A & C Black Publishers, 2006), Human Resource Management - Key Concepts and Skills (Beaumont, P. B., 1993), People and Organizational Management in Construction, Shamil Noaum (Thomas Telford Publisher, 2001), Human resource management - Theory and Practice (John, B. & Jeffgey, G., 2000), Human Resource Management, a critical approach (David, G. C., & Geoffrey, W., 2009), Hand book of Human Resource Management Practice (Michael, A. & Stephen, T., 2014), Strategy and Human Resource Management (Peter, B. & John, P., 2011), Human Resource Development (Stephen, G., 2006), etc. Researchers around the world have tried to clarify the concepts of manpower, human resource management and human resource development which are according to general assessment the terms of almost "indefinite definition". However, the authors shared the view of the important role and decisions, as well as affirmed the necessity of human resources and their ability according to organizational level and national level. The authors analysed the relationship between individuals, the system of human resources and organization; between individuals with family and society environment; suggested on how to develop the present human resources on a world scale. The forms of the implementation of human resource development in terms of both individual and employee vary from skills development, education and training, teamwork, to expertise, particularly not only for the individual's need of employment, but more importantly, it has become the career development of employee, etc.

In summary, all researchers have had many studies and articles in various approach, extent, scope and purpose of studies so they gave different notions of manpower and human resource. They all confirmed however the role and the need to manage and develop quality human resources to meet the requirements of organizations, nations or communities, especially for Vietnam in the context of international integration and globalization trend which are quickly taking place. These works, article mentioned above are the important material, addressed many issues related to the research that may select, reference; create the basis, conditions and suggest the direction of research to inherit and develop. However, so far there is no scientific works studied specialized, comprehensive, systematic management and development issues of human resource for Vietnamese Oil and Gas industry as well as high-quality human resources in key investment projects of PetroVietnam in the present period of accelerated industrialization, modernization.

1.3 Topic and scope of research

The topic of research is *Strategy for development, management and use of high-quality human resource in key investment projects of PetroVietnam.*

The scope of research includes the fundamental problems concerning the strategy for development, management and use of high-quality human resource of PetroVietnam, within the key investment projects of PetroVietnam.

1.4 Research questions

- 1) What strategy is for development and use of human resource in the key investment projects of PetroVietnam, during their construction and investment management?
- 2) How is the current status of management and use of human resource in PetroVietnam, as well as key investment projects of PetroVietnam?
- 3) How do high-quality human resources affect the process of project implementation and the success of the projects?
- 4) What can we do in order to attract and maintain high-quality human resource in the key investment projects of PetroVietnam?
- 5) What are the solutions for development, management and use of high-quality human resource in the key investment projects of PetroVietnam?

1.5 Research methodology

The research methodology of thesis is based on the qualitative method: interviewing, investigation and collection in order to collect human resource management data of the projects. Based on the actual situation of project management, data and information are interviewed and collected to analyze and evaluate the development and use of human resource in those investment projects. In addition, secondary data from PetroVietnam's annual reports, general reports, etc. will be collected for the sake of the study.

1.6 Significance and contributions of Research

This research contributes to clarification of the concept and characteristics of strategy for development, management and use of high-quality human resource in the key investment projects of PetroVietnam. It will provide summary, situation analysis, overview of learned lessons from development, management and use of high-quality human resource in the key investment projects of PetroVietnam. This thesis studies the impact, propose synchronous and feasible solutions to develop, manage and use high-quality human resource in key investment projects of PetroVietnam in the future. Providing theoretical basis and practical summaries for guidelines and policies planning; developing strategies and plans for formulation, development, management and use of

high-quality human resource in key investment projects of PetroVietnam in the future. Research results can be used as references for studying, learning and teaching related to econo-politics, economics of energy, oil and gas, economic development, economic knowledge, practices in project management, administration of human resource, risk management, etc.

1.7 Structure of research

The research includes five chapters. The first chapter (Chapter 1) introduces research background information, reasons and objective of the research. The second chapter (Chapter 2) provides the literature review for this thesis. It discusses about concepts of human resource management and project management. The third chapter (Chapter 3) is concerned about research methodology. It describes research methodology of the thesis. The fourth chapter (Chapter 4) involves data analysis and recommendation. It focuses on analysis of the human resource development and management reality in PetroVietnam as well as in its key investment projects; and the strategy for development, management and use of high-quality human resource in key investment projects of PetroVietnam. And the last chapter (Chapter 5) is conclusions, based on the detail reasoning and objective of the research.

CHAPTER 2: LITERATURE REVIEW

2.1 Human resource management

2.1.1 Concept of human resource

Human resource (HR) refers to human physical strength and mental power. It involves human health, talent, aptitude, viewpoint, belief, dignity, occupational skills, etc. HR provide the society with material and spiritual wealth, and labor resources. They compose human forces, knowledge, perceptiveness and receptiveness. According to Tiep (2005), they are the most important and dynamic factor of growth and socio-economic development. They can be confined to a nation, territory or locality, and are different from other resources (i.e. finance, land, technology, etc.). HR involve creative labor activities that influence and change the natural world. The specific HR of a nation is its manpower or population for its labor supply that reflects the labor capacity of the society.

In a thesis about human resource management (HRM) and HR information systems of Shodhganga, HRs are defined as including total knowledge, skill, creative abilities, talents and aptitude of an organization's workforce as well as the values, attitudes, approaches and beliefs of the individuals involved in the affairs of the organization. It is the sum total or the aggregate of inherent abilities, acquired knowledge and skills, represented by the talents and the aptitudes of the employees in an organization. HR is so sensitive among all the factors of production and operations that their performance and behavior will determine and ensure the growth and fortune of the organization.

HRs are the people who make up the workforce of an organization, a business a sector, or an economy. Human capital is sometimes a synonym of HRs, although human capital typically refers to a narrower view (i.e. the knowledge the individuals and economic growth). Likewise, other terms, sometimes used as the synonyms, include manpower, talent, labor, personnel, or, simply, people. A HR department of an organization performs HRM, overseeing various aspects of employment, such as compliance with labor law and employment standards, administration of employee benefits, and some aspects of recruitment and dismissal. HRs play an important part in establishing a company or organization in the beginning or making a success in the end, due to the labor provided by employees. HRs are intended to show how to have better employment relations in the workforce and to bring out the best work ethics of the employees and therefore making a move to a better working environment (Wikipedia).

2.1.2 High-quality human resource and human resource development

As a concept, high-quality human resource (HR) refers to individual workers of good skills, high professional knowledge, and high adaptability to rapid changes of production and business technologies. In addition, such workers must be physically and ethically healthy while being capable of creatively applying their knowledge and skills gained through training to their work in order to achieve high productivity, quality, and efficiency. A high-quality HR comprise trained workers who hold high qualifications, ability, and practical experience to work as the core HR of an organization. Such a resource is decisive to the organizational development and growth because it can develop and apply science and technology to production and business so as to provide the organizational competitive advantage and effective sustainable development. One important cause of ineffective labor and low productivity is the low quality of a HR that fails to meet work requirements.

Effective development and use of HR determines organizational success. Human resource development (HRD) has been recognized even since Adam Smith's *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776). Human competence (i.e. professional knowledge, skills and experience) is formed and accumulated through a process of training, living and working. Whether people can contribute greatly to their organization depends on the HR quality and the strategy for using it. Organizational efficiency and effectiveness is determined by the qualifications, capacity, ethics and work efficiency of the HR, especially the high-quality one. HRD starts with recruitment that satisfies both the quantity and the quality requirements. The next steps are training and development for improved knowledge and experience for the current HR. To develop a HR of sufficient capacity that meet work requirements therefore requires proper attention to training of the existing HR and recruitment of highly qualified, competent and experienced employees.

To meet its set objectives, an organization must provide its HR strategy to develop that resource quantitatively and qualitatively for a given period or an area of its operations that consider recruitment, staff reduction, or training and development the existing HR. The organization then must have a proper strategy for management and use of its high-quality HR.

According to Richard and Elwood (2001), HRD is a process for developing and unleashing human expertise through organization development and personnel training and development for the purpose of improving performance. He identified that one of major realms of focus within HRD is organization development, the other is personnel training and development. Organization development primarily focuses at the organization level and connects with individuals, while personnel training and development primarily focuses on individuals and connects with the

organization. Stephen Gibb (2006) also defined HRD involves a process of observation, planning, action and review to manage the cognitive capacities, capabilities and behaviors needed to enable and improve individual, team and organizational performance in work organizations.

2.1.3 Human resource management

Human resource management (HRM) is the effective management and rational use of HRs based on organizational objectives. As defined by John, B. and Jeffgey, G. (2000), HRM is part of the management process that specializes in the management of people in organizations. It emphasizes that employees are critical to achieving sustainable competitive advantage, that HR practices need to be integrated with the corporate strategy, and that HR specialists help organizational leaders to meet both efficiency and equity objectives. HRM is a body of knowledge and a set of practices that define the nature of work and regulate the employment relationship.

According to John, B. and Jeffgey, G. (2000), HRM covers the following five functional areas:

- Staffing: the obtaining of people with appropriate skills, abilities, knowledge and experience to fill jobs in the work organization. Pertinent practices are HR planning, job analysis, recruitment and selection.
- Rewards: the design and administration of reward systems. Practices include job evaluation, performance appraisal, and benefits.
- Employee development: analyzing training requirements to ensure that employees possess the knowledge and skills to perform satisfactorily in their jobs or to advance in the organization. Performance appraisal can identify employee key skills and competencies.
- Employee retaining: the administration and monitoring of workplace safety, health and welfare policies to retain a competent workforce and comply with statutory standards and regulations.
- Employee relations: Under this heading may be a range of employee involvement/participation schemes in union or non-union workplaces. In a union environment, it also includes negotiations between management and union representatives over decisions affecting the employment contract.

HRM is the managerial utilization of the efforts, knowledge, capabilities and committed behaviors which people contribute to an authoritatively coordinated human enterprise as part of an

employment exchange (or more temporary contractual arrangement) to carry out tasks in a way which enables the enterprise to continue into the future (Michael and Stephen, 2014).

According to Beaumont (1993), the concept and practice of HRM are widely held to have evolved out of the prior area of personnel administration. The essence of this evolutionary process is that employees are now viewed as a valuable resource (rather than a cost to be minimized) which, if managed, rather than administered, effectively from the strategic point of view, will contribute significantly, *ceteris paribus*, to organizational effectiveness, and thus will be a source of competitive advantage to the organization concerned. Those most frequently mentioned include the following: i) the early practice of employment forecasting and succession planning has broadened into a concern with establishing a more explicit (two-way) linkage between HR planning and the larger organizational strategy and business planning of the organization; ii) the traditional, central concern of the personnel function (in a unionized organization) with negotiating and administering a collective agreement has expanded into a wider notion of workforce governance in which non-collective bargaining mechanisms (e.g. quality circles) are important in permitting employee involvement and participation in work-related decisions; iii) the traditional concern with the job satisfaction of individual employees initially led to an interest in the broader notion of organizational climate which has further evolved into a focus on the notion of organizational culture; iv) the idea of selection, training, performance appraisal and compensation decisions being heavily centered on the role of individual employees (with their detailed individual job description) has given way to the belief that effective team or group working is the route through which effective performance is achieved; and v) the relatively narrow focus of training on the teaching and learning of individual job skills has been broadened into a concern with developing (via both training and non-training means) the full, longer term potential of individual employees.

According to Peter and John (2011), HRM refers to all those activities associated with the management of work and people in organizations. It covers the policies and practices used to organize work and to employ people as well as encompasses the management of work and the management of people to do the work. They divided HRM into two categories: economic goals (cost-effective labor, organizational flexibility, HR advantage) and socio-political goals (social legitimacy, managerial power). It is identified in Figure 2.1.

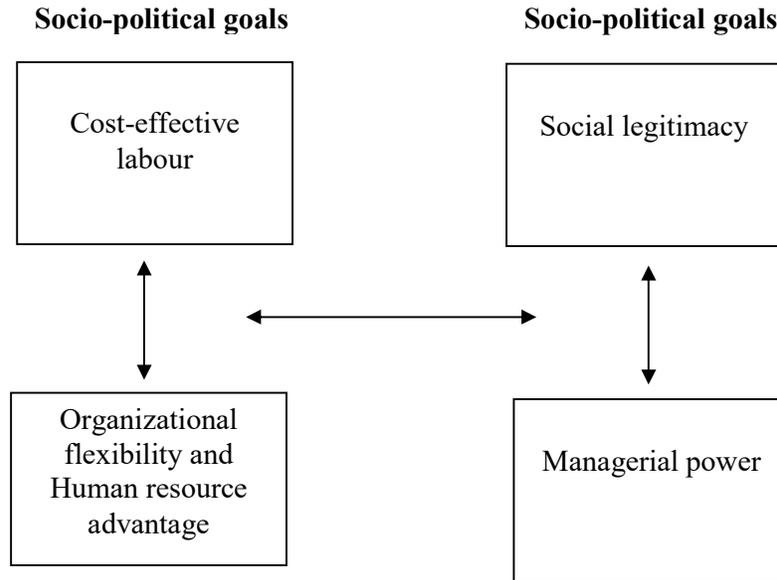


Figure 2.1 The goals of human resource management

Source: Peter and John (2011)

According to Armstrong (2006), HRM is defined as a strategic and coherent approach to the management of an organization's most valued assets - the people working there who individually and collectively contribute to the achievement of its objectives. HRM activities are generic processes or functions that are performed in all organizations: i) selection - matching available HRs to jobs; ii) appraisal - performance management; iii) rewards - the reward system is one of the most under-utilized and mishandled managerial tools for driving organizational performance, it must reward short as well as long-term achievements, bearing in mind that business must perform in the present to succeed in the future; and iv) development – developing high quality employees. HRM activities are illustrated in Figure 2.2.

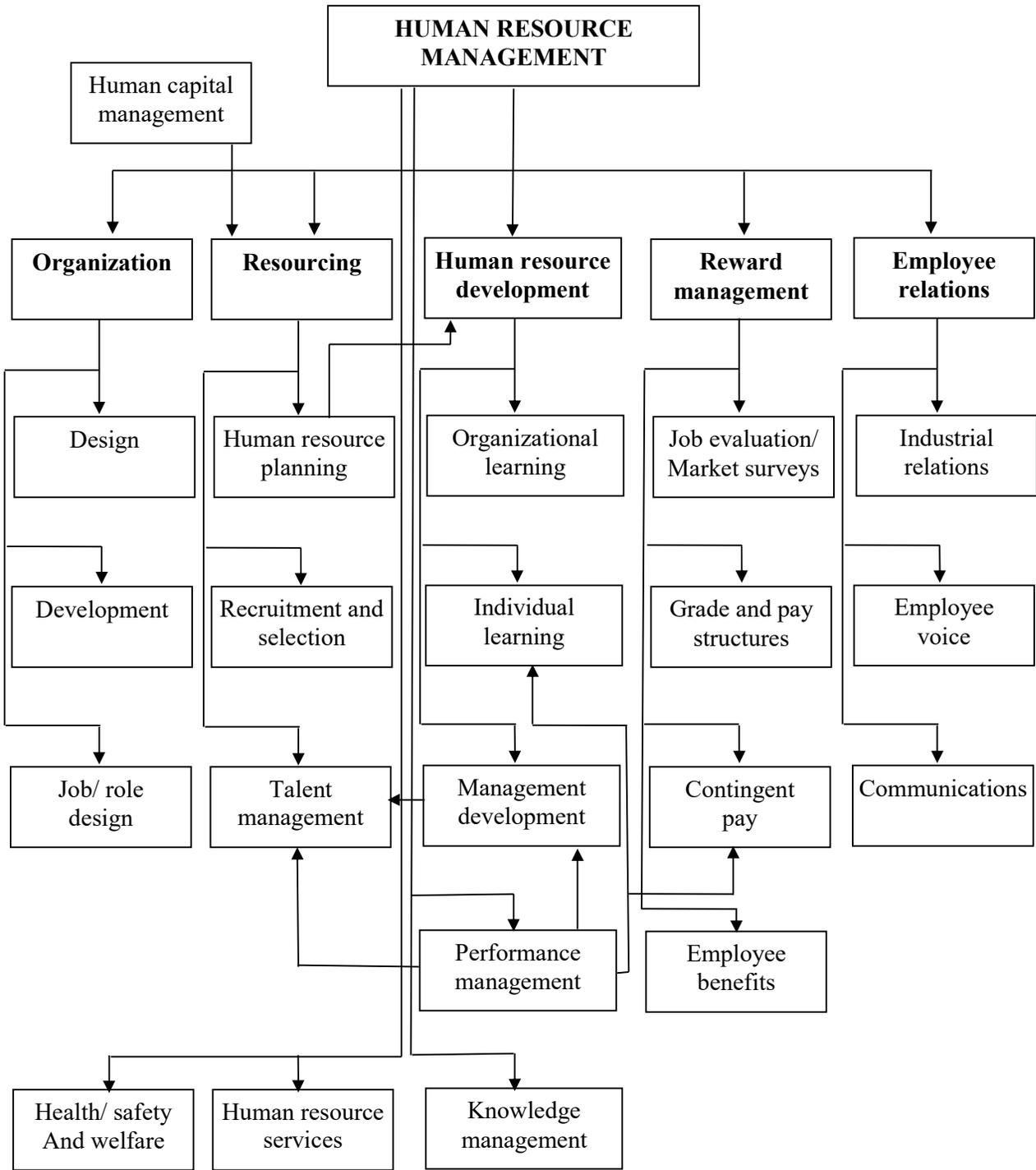


Figure 2.2 Human resource management activities

Source: Armstrong (2006)

HRM in an organization must attentively deal with the above-mentioned main issues of organization, resourcing, HRD, reward management and employee relations.

Karin (2006) listed the HRM processes and activities focused by these researchers and categorized them according to their main functions and purposes. As a result, the core content of the HRM practice, as perceived by the HRM field of research, can be summarized in core areas in the table below:

Managing human resource flows	Directed towards the selection, recruitment and deployment of human resources. Basically about managing in- and out flows of human resources.
Managing performance	Directed towards the design of work systems, appraisal and reward systems.
Managing participation and communication	Directed towards the individuals' influence on the organization's operations, communication and motivation, as well as relations with trade unions.
Managing and developing competencies	Directed towards competence planning, mapping, and development. Also about managing careers and career structures.
Managing change	Directed towards identifying needs for change and contribute to business strategy development. Also about facilitating change implementation.

Table 2.1 Core areas of the human resource management practice

Source: Karin (2006)

This overview of the core contents of human resource management practice does not attempt to be all-embracing. There may be aspects not yet covered by the existing literature and other researchers may choose to categorize them differently. However, it provides a useful theoretical basis for the analysis of the content of human resource management.

2.1.4 Strategic human resource management

Human resource (HR) strategies indicate what the organization wants to do about its HRM policies and practices and how they should be integrated with the business strategy and each other. They set out aspirations that are expressed as intentions, which are then converted into actions. The purpose of HR strategies is to articulate what an organization intends to do about its HRM policies and practices now and in the longer term to ensure that they contribute to the achievement of business objectives. Strategic HRM takes the notion of HRM as a strategic, integrated and coherent process

and associates it with an approach to management that involves adopting a broad and long-term view of where the business is going and managing it in ways that ensure that this strategic thrust is maintained. It is influenced by the concepts of strategic management and strategy (Michael and Stephen, 2014).

Strategic HRM focuses on the overall HR strategies adopted by business units and companies. It is a thought that integrates traditional HRM activities within a firm's overall strategic planning and implementation (John, B. & Jeffrey, G., 2000). It is the process of linking the HR function with the strategic objectives of the organization in order to improve performance. In a management context, the word 'strategy' has now replaced the more traditional term - 'long-term planning' - to denote a specific pattern of decisions and actions undertaken by the upper echelon of the organization in order to accomplish performance goals. Strategic management is considered to be a continuous activity that requires a constant adjustment of three major interdependent poles: the values of senior management, the environment, and the resources available. At the corporate level, the strategic management process includes activities that range from appraising the organization's current mission and goals to strategic evaluation. The strategic management process is typically broken down into five steps: i) mission and goals; ii) environmental analysis; iii) strategic formulation; iv) strategy implementation; and v) strategy evaluation.

According to Armstrong (2006), strategic HRM is an approach to making decisions on the intentions and plans of the organization in the shape of the policies, programs and practices concerning the employment relationship, resourcing, learning and development, performance management, reward, and employee relations. The concept of strategic HRM is derived from the concepts of HRM and strategy. It takes the HRM model with its focus on strategy, integration and coherence and adds to that the key notions of strategy, namely, strategic intent, resource-based strategy, competitive advantage, strategic capability and strategic fit. It is essentially an integrated process that aims to achieve strategic fit. A strategic HRM approach produces HR strategies that are integrated vertically with the business strategy and are ideally an integral part of that strategy, contributing to the business planning process as it happens.

Therefore, development, management, and use of HRs and high-quality HR is decisive to the effectiveness of an organization or a firm and requires proper attention and strategies of these areas, as well as suitable solutions for the organizational operating process.

2.2 Project management

A project is a collection of interrelated proposals, policies, and activities that realize the work partly or wholly to achieve an objective or requirement in a given period and with an identified capital. It is a process that involves coordinated and controlled activities, with commencement and completion dates, which is implemented within the limits of time, cost, and resources in order to achieve objectives in line with specific requirements. An investment project is a collection of resources and managerial instruments to realize the project's objectives. The resources include the project's HR, financial resource, equipment and machinery, materials, knowledge, information, time, managerial systems, and procedures and processes used by the project.

A construction investment project is a collection of proposals related to investment in new construction, expansion or rehabilitation of constructions for development, maintenance, or improvement of the quality of a construction, product or service in a given time. Implementation of a construction investment project involves such basic factors as its objectives, scope, progress, quality, and resources (including human, material, financial and other resources) to realize set objectives. Management of such factors is project management.

According to Turner (2009), a project is an endeavor in which human, financial, and material resources are organized in a novel way to undertake a unique scope of work, of given specification, within constraints of cost and time, so as to achieve beneficial change defined by quantitative and qualitative objectives. Project management is the application of a collection of tools and techniques to direct the use of diverse resources toward the accomplishment of a unique, complex, one-time task within time, cost and quality constraints. Each task requires a particular mix of these tools and techniques structured to fit the task environment and life cycle of the task. The management process is the management cycle that is followed to implement the work of each stage; there are basic processes: i) planning the work, ii) organizing the resources, iii) implementing by assigning work to people, iv) controlling progress, and v) managing and lead.

Project management is the discipline of planning, organizing, and managing resources to bring about the successful completion of specific project goals and objectives (Robert, 2011). Project management involves monitoring, direction, coordination, planning, organization, and application of measures to implement well the project's objectives of, for example, price, time, quality. Its contents include management of the project scope of activities, management of time and progress, cost management, HRM, etc. A project involves the aspects of managing risk, outline planning, estimating time and costs, scheduling, implementing the project, monitoring and control, organizing

the HR for implementing the project, etc. As a result, HRM is among the important factors of project management that ensure maximum promotion of the capacity, activeness and creativity of every project staff member in the most efficient manner. According to Vivien (2006), people are central to every aspect of a project. People commission and sponsor projects, agree to provide resources, support or challenge projects, and contribute their energy and intelligence to carry out projects. People take roles in delivering projects as leaders, managers and team members, and others influence projects as sponsors, stakeholders, mentors, coaches and expert advisors. With so many people involved, projects are strongly influenced by how these people feel and talk about the project and how people behave in relation to the project.

2.3 Management and development of project human resource

Human resource management (HRM) of a project involves a process of recruitment, selection, retaining, development and maximum facilitation of the HR's effective work to realize the project's set objectives. The management is based on the basic elements of recruitment/attraction of personnel; training and development of the existing HR; and, effectively retaining, managing, and using it. HRM and development of a project can be illustrated as follows:

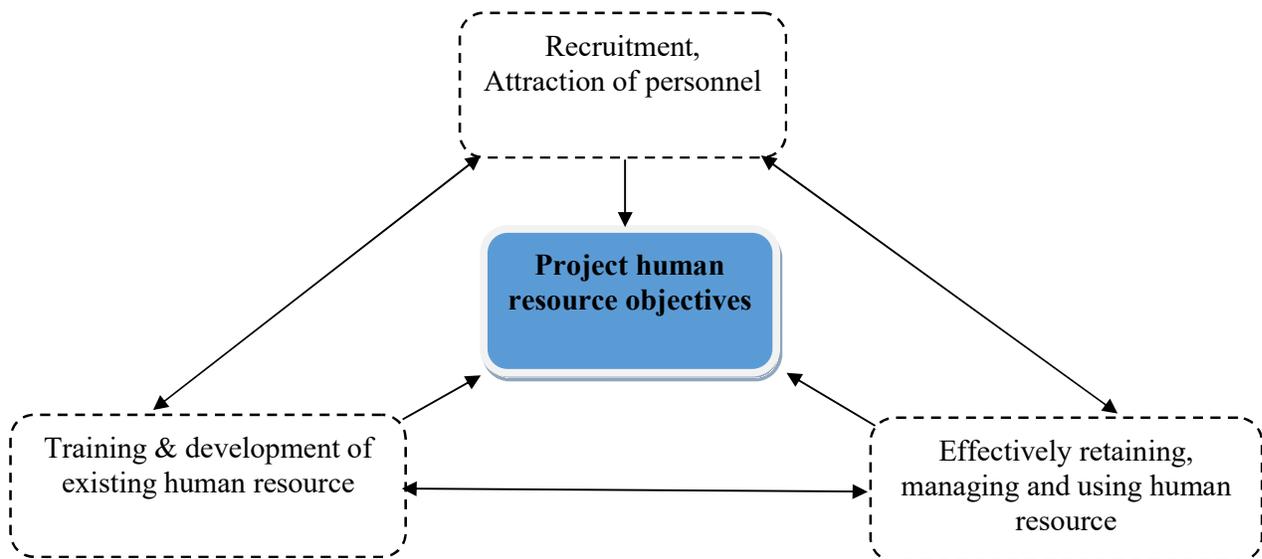


Figure 2.3 Project human resource management and development

The project management staff is usually developed through training. Project human resource training and development is decisive to successful implementation of a project, creation of a suitable cultural environment of project management, talent development, and standardization of

project management procedures. Such training and development can summarize both knowledge and practice for development, maintenance, and upgrade of standard procedures for project management that can be applied to the organization's other projects and, at the same time, provide different levels of project staff within the organization with necessary skills and instruments for deploying their work of project management. If an organization or a firm does not build and possess standardized databases and procedures of project management, then the knowledge, skills and experience gained through the staff training and development of a project will be wasted because they will not be applied to other projects. On the other hand, projects are characterized by such traits as limited life, a multitude of challenges and unpredicted changes, and a mixture of staff members from different specialties and areas who work together for the objectives of a project. As a result, training and development of project management staff must be a continuous process of proper coordination aimed at relevant trainees with suitable training contents. In addition, project human resource can be developed through recruitment of experienced, competent and highly-qualified candidates, etc.

Such development can be deployed in many different ways that fit the nature and characteristics of each project. Following is the Multi-Level Learning approach presented by Jerry (2010) to improve the effectiveness of project management, project implementation, cross-project improvement and portfolio alignment. Project managers and staff must conduct regular learning, adaptation and timely actions because every new project or every project phase has its own new challenges and opportunities while solutions are not always available for settling every issue or to grasp every opportunity of a project. Moreover, both the corporate order of priority for its projects and the markets may change during the project implementation. As a result, firms should provide a mechanism for adapting to the above-mentioned challenges so that projects are given timely attention, project management procedures are updated of effectiveness, and project staff have opportunities to learn and improve continuously from one project phase to the next and from one project to another.

According to Jerry (2010), the Multi-Level Learning approach as follows:

Level 1 - Continuous project improvement

The participants include the staff member/ the project management board (PMB). The objectives are to provide improvements for immediate application during the project implementation to reduce risks of project failure, promote the results of the project staff, and, at the same time, provide opportunities of development for the project management staff.

Level 2 - Cross project improvement

The participants are project managers, experts and those in charge of cross-project improvement (a group of related projects) of the firm. The objectives are improving and upgrading the firm's project management procedures and plans applicable to the projects in removal of cumbersome procedures, wastes, and delays.

Level 3 - Strategic portfolio alignment

The participants are the firm's high-ranking managers. The objective is to make timely adjustments of the corporate priority of investments and portfolio.

At these levels of learning, individuals and groups apply their talent to practical activities to settle challenges facing the firm, through which they share their own knowledge and experience.

2.4 Relevant perception of the importance and value of project management

Projects are very important for the development and success of organizations. It is argued by the Project Management Institute (PMI, 2015) that organizations/firms having investment projects should appreciate the importance and value of project management to improve the success percentage of their projects. Projects and programs are very important for the development, production and business results, and success of enterprises. Yet not every enterprise appreciates the value of project management and only some 55% of the interviewed ones believed that they do. The survey results in 2015 shows that for every billion US dollar invested in projects, enterprises suffer from a waste of 109 million US dollar. Those appreciating and conducting project management well showed less waste of money and higher gain in production and business. PMI has provided recommendations on improvement of project management results with the following factors:

Creating a suitable project management culture

The project management culture is created through sharing of the vision, mission and values of the enterprise; implementation of its strategies, policies, and regulations; application of its reward systems; establishment of decentralization and delegation; abiding by professional ethics; and, building the work environment. To create a suitable project management culture, PMI suggests that: All levels of corporate management must fully understand the value of project management. High-ranking executives of the enterprise should be committed to and have actual support to programs and projects. The enterprise should have highly mature project management (i.e. levels 4 and 5 in Table 2.2 below).

According to PMI, those enterprises that can create a project management culture have 71% of successful projects compared to 52% by those neglecting it.

	Level 1 - Initial process	Level 2 - Structured process	Level 3 - Institutionalized process	Level 4 - Managed process	Level 5 - Optimizing process
Overview	The project's situation is mostly unpredictable	Areas of project management are regarded, but their application varies from one project to another	The enterprise has established its controlled project management processes that are flexibly applied to specific projects	Results of projects and programmes have been integrated in the decision-making process to achieve better business targets	The enterprise has attentive continuous improvement of processes, conducts proactive & creative management to improve its performance evaluation & optimize its processes
Personnel	Project success tends to depend on individuals' efforts and training processes at work	Instructions on the project roles for individuals and training orientations	Formal training of project management. Individuals of proper experience & skills are used for the project	Capacity of project management is ensured. Projects are viewed as grounds for 'rapid' career development	Corporate-level training helps improve project management skills. Resources/ talents are distributed in value terms
Process	Processes are discrete and not yet standardized	Processes have been standardized at minimum level	Corporate processes produce consistent measured results with certain flexible degree	Processes have been tested in practice and used to measure/analyse benefits-costs, resources and project values	Project management & core business processes are fully integrated with regard to business value
Tools	Lack of PM tools; difficult to report project status	Tools are used to report project progress and costs	PM tools are viewed as corporate assets and used to measure performance	The integration of PM and business systems improve ability to predict, analyse, evaluate, and	PM and business tools are fully integrated and used at all corporate levels

	Level 1 - Initial process	Level 2 - Structured process	Level 3 - Institutionalized process	Level 4 - Managed process	Level 5 - Optimizing process
				compare	
Corporate project management	Projects are separately managed with limited corporate management	Big projects are viewed as strategic, but project data have not served high-ranking management	Corporate project data are available, but active analysis and decision-making remain limited	Project targets are managed quantitatively to support decision-making by high-ranking management	Projects are managed as strategic portfolios. Support/investment priority is led by corporate vision

Table 2.2 Maturity of corporate project management

Source: Project Management Institute (2015)

Talent development

The term talent development is widely used to denote individuals' career development, career management and organizational development. Fully understanding of the importance of talent is also a major factor for enhancing the corporate culture of project management.

PMI argues that when firms invest in training and development of profession project managers, they gain very high project performance (71% compared to 54% of those firms not interested in talent development). As a result, corporations must: Identify the career development roadmap for project managers within the corporation; otherwise, those managers may seek another firm with guaranteed career development for them; develop a high-quality HR, techniques and tools for project management, leadership skills, and knowledge of business management to fit the current globally competing economy.

Standardization of project management processes

PMI notes that firms that applied standardized processes to project, program and portfolio management gained 89% of project success, against 34% in those who did not. As a result, corporations must pay attention to the following factors of project management processes: Development and standardization of processes, procedures, and instructions on project management that are applicable throughout the corporation; provision of a mechanism for regular updates and improvements of corporate project management processes through practices of projects.

CHAPTER 3: RESEARCH METHODOLOGY

Based on the rationale and objective of the research, the objective and scope of the research, and the research methodology are identified. The data and information collected from its interviews and survey are analyzed and solutions are provided for research questions.

3.1 Description of research scope

The scope of research covers the on-going key investment projects of PetroVietnam, the fundamental problems concerning with the strategy for development, management and use of human resource (HR) of PetroVietnam and the key investment projects of PetroVietnam.

3.2 Research methodology

The research methodology used for this research is qualitative method. It based on interview, investigation and collection; and the actual situation of project management, interview and collection of data and information to analyze and evaluate the development and use of HR in the investment projects; and, collection of secondary data from annual reports, general reports of PetroVietnam, etc.

Use of statistical method for summary of the project and HR data. Use of expert method to interview project manager as well as specialists in management and use of HR in the key investment projects of PetroVietnam; use of interviewing investigation and collection, the qualitative method to collect data of management and use of HR from the project management boards.

Forecast of personnel demand for key investment projects of PetroVietnam in the future, based on the project implementation of PetroVietnam is used to analyze and evaluate HR for projects.

3.3 Process of research

Following is a description of the process of this research. Relevant research questions, and subsequently strategies and solutions for development, management and use of high-quality HRs for focal projects of PetroVietnam, have been based on the reality of practice in the field by PetroVietnam in general and by its focal projects in particular, secondary data sources collected from its topical and general reports on human resource management (HRM) and the data collected from the author's interviews of the staff of the project management boards and factories, and relevant theories on HRM and project management.

The research is based on the reality of PetroVietnam’s projects and the data of its focal investment projects. The primary data of the research come from the author’s interviews of 05 Project Managers/ General Directors, 10 Line Managers and 20 staffs of the PMBs and the factories. The interviews of Project Managers are the main source of information to collect necessary data of the projects and HRM; thoughts and wishes of the PMB staff, their experience and views, and the challenges. For detail information of interview questionnaire, please see Appendix 2 of this thesis. Apart from those, the data collected from PetroVietnam’s reports can show the reality of its HR for its existing projects.

The actual research process has undergone the steps of i) Analysis of difficult aspects of a number of focal projects to find out their common and specific issues; ii) In-depth investigation for the practice of their management and use of HRs; iii) Data collection and description to increase understanding of the role of management; iv) Expansion for sampling to collect and analyses in order to find out similarities and differences between different groups.

The summary of the research process is illustrated in Figure 3 below:

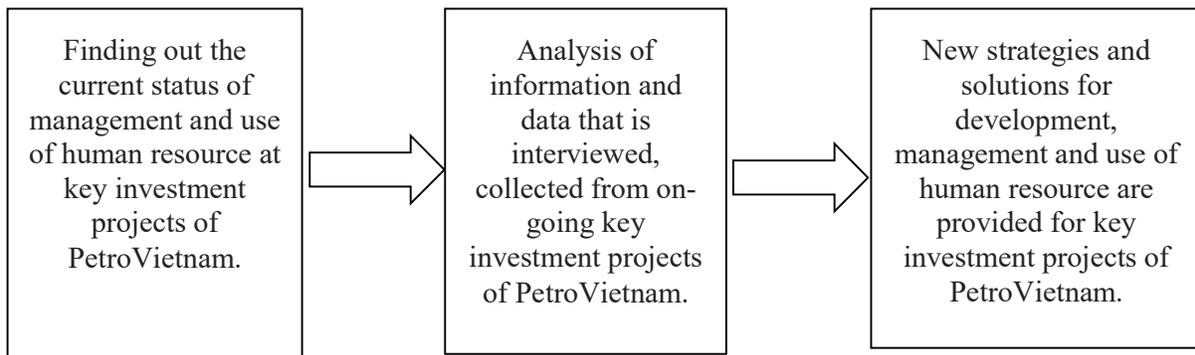


Figure 3 Summary of the research process

3.4 Analysis of collected information and data

Because the main method of this thesis is qualitative method, the data are collected mainly through direct interviews for analysis that describes individuals’ experience and explains the relationships between such experiences. Based on information and data of management and use of HR which is collected through interviews and statistics at the on-going key investment projects of PetroVietnam, the analysis focus on the actual situation of HR development for the projects, and management and

use of HR in the projects. The personnel demand for key investment projects in future of PetroVietnam will then be forecast. From the results of the analysis, new strategies and solutions for development, management and use of HR are provided for future key investment projects of PetroVietnam, in order to meet the requirements of progress, quality, safety and effectiveness of those projects.

CHAPTER 4: DATA ANALYSIS AND RECOMMENDATION

4.1 Overview of PetroVietnam

Vietnam Oil and Gas Group is a state-owned company. On June 18th 2010, the Prime Minister of Vietnam issued the Decision No. 924/QĐ-TTg accepting that it is the State-owned Single-Member Limited Liability Company whose international transaction name is Petrovietnam (PVN). PetroVietnam is a strong economic group in Vietnam which is known worldwide (more detailed in Appendix 1).

Because PetroVietnam operates under the law on single-member limited liability company (LLC), the Government of Vietnam manage all of its business activities, and own every of its equity, property and value as well as its products. PetroVietnam has been manufacturing and trading for profit purposes in accordance with the Vietnamese laws.

PetroVietnam is now focusing on some core businesses structured around the oil and gas sector, namely: oil and gas exploration and production, refinery and petrochemicals, gas, power generation, and petroleum services. The main functions and tasks include investment in its subsidiaries and affiliates; control of the subsidiaries in form of the percentage held in the registered charter capital of PetroVietnam; based on the Vietnam Petroleum Law, implementation of petroleum activities and signing of petroleum contracts with organizations and individuals operating in the field of petroleum; management and supervision of the petroleum/ hydrocarbon exploration and production activities following contracts with petroleum contractors and subsidiaries, organizations and individuals. In addition, the corporation directly conducts business in accordance with Vietnam's related laws for profitability. The economic relations between PetroVietnam and its subsidiaries and affiliates are stipulated in respective economic contracts. PVN also conducts investment, generation and trading of electricity, etc. It contributes to guarantee of the national energy security and functions as a key economic organization for development of Vietnam.

Established in 1975, PetroVietnam is among Vietnam's leading economic groups with contribution to Vietnam's economy. The PetroVietnam's total revenue is equivalent to around 20% of Vietnam's entire GDP. Its payment to the state budget accounts for approximately 30% of the national budget. According to its Annual Report 2014, the total assets of PetroVietnam was about USD 35.00 billion, USD 18.00 billion of gross sales; and, USD 3.30 billion of gross profit from sales. In 2017, PetroVietnam plans to reach a total revenue of USD 47 billion. PetroVietnam's annual contribution

is about 25% to 28% of the total state budget revenue of Vietnam, and its export is on average 10% to 15% of the total national export per year (PVN Index, 2015).

The major business activities and strategy of PetroVietnam are as follows

In terms of oil and gas exploration and production: PetroVietnam is currently operating many oil and gas fields in the country and some others abroad. It is cooperating with various international petroleum companies in the implementation of about 60 petroleum contracts at home and 17 contracts in 14 countries. In the future, PetroVietnam will continue to conduct more oil and gas exploration activities over the entire continental shelf of Vietnam and, at the same time, invest further in overseas exploration ventures.

In the refinery, petrochemicals and bio-fuel sector: PetroVietnam plans to expand refinery and petrochemicals capacity and building supporting storage and supply systems of equal size. The Dung Quat Refinery of PetroVietnam (located in Quang Ngai Province, Vietnam) is now supplying 30% of the domestic demand. In the coming year, PetroVietnam will make more investments in expanding the Dung Quat Refinery and in constructing the Nghi Son Refinery (located in Thanh Hoa Province, Vietnam) and Long Son Refinery and Petrochemical Complex (located in Ba Ria - Vung Tau Province, Vietnam) to raise the total refining capacity to 30 million tons per year by 2025.

As for the gas industry: PetroVietnam will develop an integrated industry with a focus the development of the national gas industry infrastructure of Vietnam. The completion of the gas industry infrastructure in the South and the formation of the infrastructure for the gas industry in the North and Central regions will provide sufficient gas supply to industry and for public consumption. PetroVietnam's objective is to produce from 22 to 29 billion m³ of gas and 3 to 4 million tons of LPG by 2025.

In the power generation sector: PetroVietnam will continue to participate in power generation and be the second largest power producer in Vietnam (after the Electricity of Vietnam Group). Its focus will be gas and coal fired power generation in parallel with the gas industry development program mentioned earlier so that by 2020 the total power generation capacity of all power plants will be over 13,000 MW, accounting for approximately 20% of Vietnam's total power production.

With regards to petroleum technical services: PetroVietnam will continue to develop its capability to better address the demand of the domestic petroleum services while making firm steps towards the regional and international markets by 2020.

PetroVietnam's organizational structure

PetroVietnam's organizational structure is illustrated in Figure 4.1.

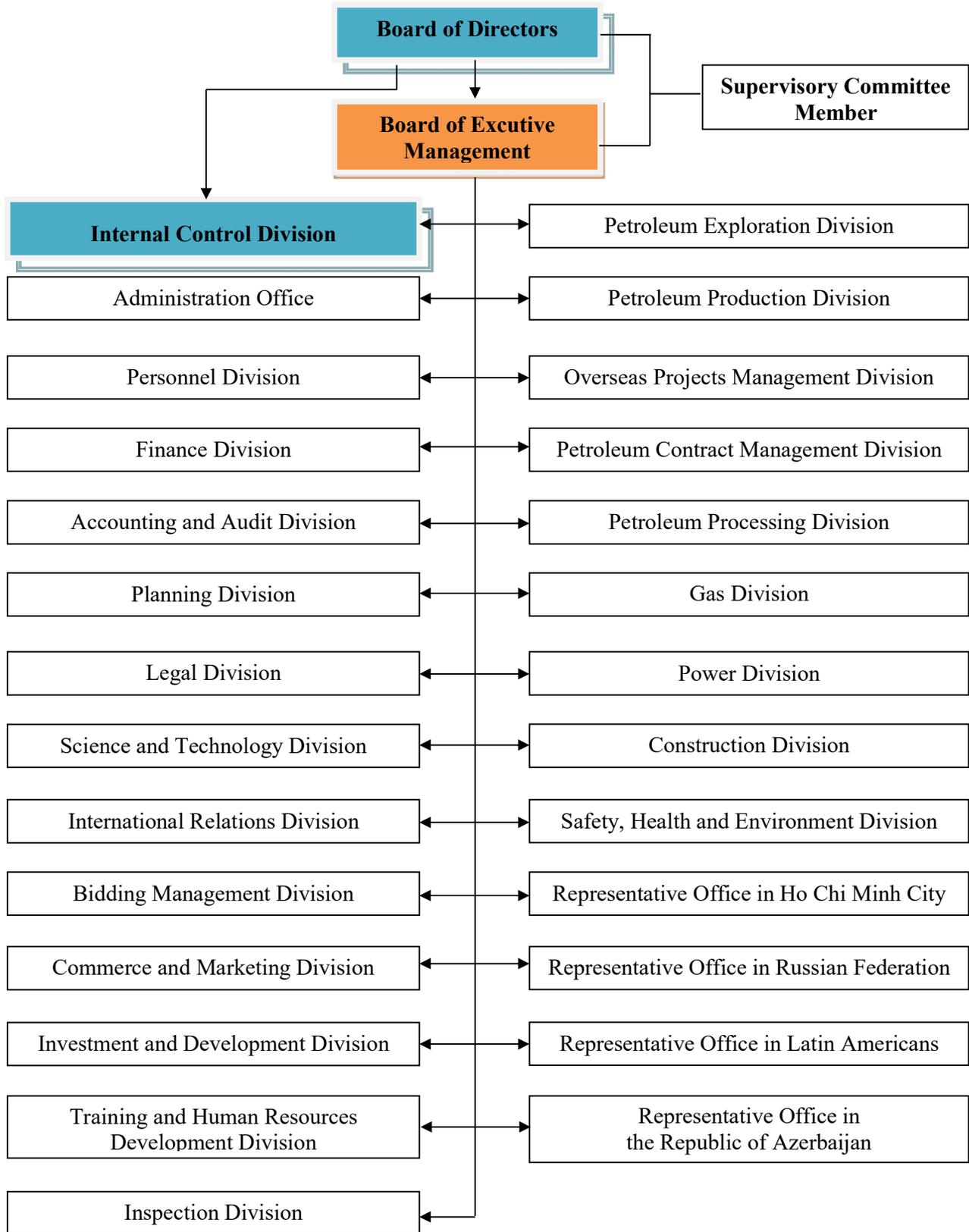


Figure 4.1 Management organization chart of PetroVietnam

The realization of the main targets of PetroVietnam

The realisation of PetroVietnam's main targets over the recent years and its plan for the coming years are summarized in the following table:

No	Criteria	Unit	Results 2006-2010	Results 2011-2015	Plan 2016-2020
1	Production				
1.1	Increase of reserves	million tons of oil equivalent	330.00	208.3	40.00
1.2	Exploitation of oil and gas	million tons of oil equivalent	118.24	133.47	135.00
	Crude oil	million tons	79.47	84.80	80.00
	Gas	billion m ³	38.77	48.69	55.00
1.3	Other products				
	Urea	thousand tons	3,70	7,17	7,800.00
	Electricity	billion Kwh	25.53	83.54	150.00
	Oil-refinery products	million tons	8.16	33.74	54.00
	Petrochemical products	thousand tons	47.30	709.00	5,000.00
2	Finance				
2.1	Total turnover	thousand billion VND	1,452.00	3,518.00	3,400.00
2.2	Profit before tax	thousand billion VND	176.40	296.50	300.00
2.3	Profit after tax	thousand billion VND	124.00	198.10	200.00
3	Investment value	thousand billion VND	305.60	413.00	732.00

Table 4.1 Summary of realisation of PetroVietnam's major targets over the recent years and plan for the coming years

Source: Annual Report 2015 of PetroVietnam

4.2 Situation analysis of development human resource in PetroVietnam

Since its establishment, PetroVietnam has had great development steps and considerable contribution to the country's industrialisation and modernisation. PetroVietnam has developed a highly qualified and firm HR who have thorough training, dynamics, and creativity to cover their tasks. This stage of development and international integration, with the deployment of such free-trade agreements as Trans-Pacific Strategic Economic Partnership Agreement (TPP) or Free Trade Agreement (FTA), bring about both possible benefits and great challenges including increased competitiveness as being faced by PetroVietnam due to the impacts of international integration and economic globalisation. Besides, the world's oil and gas industry has been undergoing various changes. The oil and gas crisis between 2014 and 2016 came from economic, political, technological and other causes. The price of crude oil, forecast to remain low, will further negatively affect PetroVietnam's production and business. On the other hand, PetroVietnam is still facing such difficulties as the reduction of its revenue, an enormous pressure against capital arrangement for acceleration of high investment projects, a huge difficulty in borrowing from export credit agencies (ECAs), and implementation of projects in regions of difficult terrain and climate. As a result, improvement of competitiveness becomes a vital issue for every business and the HR quality is being one important factor determining the success of Vietnam's oil industry. Apart from improvement of its product and service quality, and management; reduction of costs; renovation of technology, etc. improvement of its HR quality – the foundation of formulation and improvement of its competitiveness – is increasingly decisive to the success of PetroVietnam. Therefore, HRD strategy is among the important production and business strategies of PetroVietnam.

Realising the importance of HRD activities, PetroVietnam approved and issued Decision No. 2496/QĐ-DKVN dated 19 August 2009 on “the Human resource Training and Development Strategy of PetroVietnam, period 2009 - 2015 and orientation to 2025”. After eight years of active implementation of the decision, the group has developed a contingent of managers, technicians and workers with sufficient number and basically satisfactory quality that contribute to its achievements of the targets set in “PetroVietnam's Development Strategy to 2015 and Orientation to 2025” approved by the Prime Minister in 2006. Its training and development and HRM system also have been gradually improved towards standardization and organisational consistency.

To realise PetroVietnam's development strategy, the Prime Minister issued Decision No. 1749/QĐ-TTg dated 14 Oct 2015 approving “PetroVietnam's Development Strategy to 2025 and Orientation to 2035”, which set, among other things, the objectives of improving the qualification of its

management, development of experts in leading areas, highly-qualified technicians, and, the important solution of building an HRD strategy.

Based on the requirements of the development strategy to 2025, the overall reassessment of its HR, its HRM system, the recent development and the summary of implementation of its training and development strategy between 2009 and 2015, PetroVietnam has provided its HR Training and Development Strategy for the period 2016 - 2025 with orientation to 2035, which is closely based on the requirements of the development strategy to 2025, suitable with the tendency of advanced HRM, and is the basis for successful deployment of its development strategy to 2025. On 24 February 2017, PetroVietnam issued Decision No. 363/QĐ-DKVN approving its “Human resource Training and Development Strategy, period 2016 - 2025 and orientation to 2035”.

According to Decision 363/QĐ-DKVN, the reality of HR and HRD of PetroVietnam is as follows:

4.2.1 The reality of human resource of PetroVietnam

The staff size

For the first few years since its establishment in 1975, PetroVietnam had only some two thousand employees. However, its staff has increased considerably over the recent years. By 2015, PetroVietnam is staffed by 58,423 people, an increase of 67.8% compared to that in 2009 (34,808 people). Its staff size increased at more than 20% on average in 2010 and 2011, the highest increase within the six years while the staff size went through relatively slight increase between 2012 and 2015 to meet the requirements of its production and business.

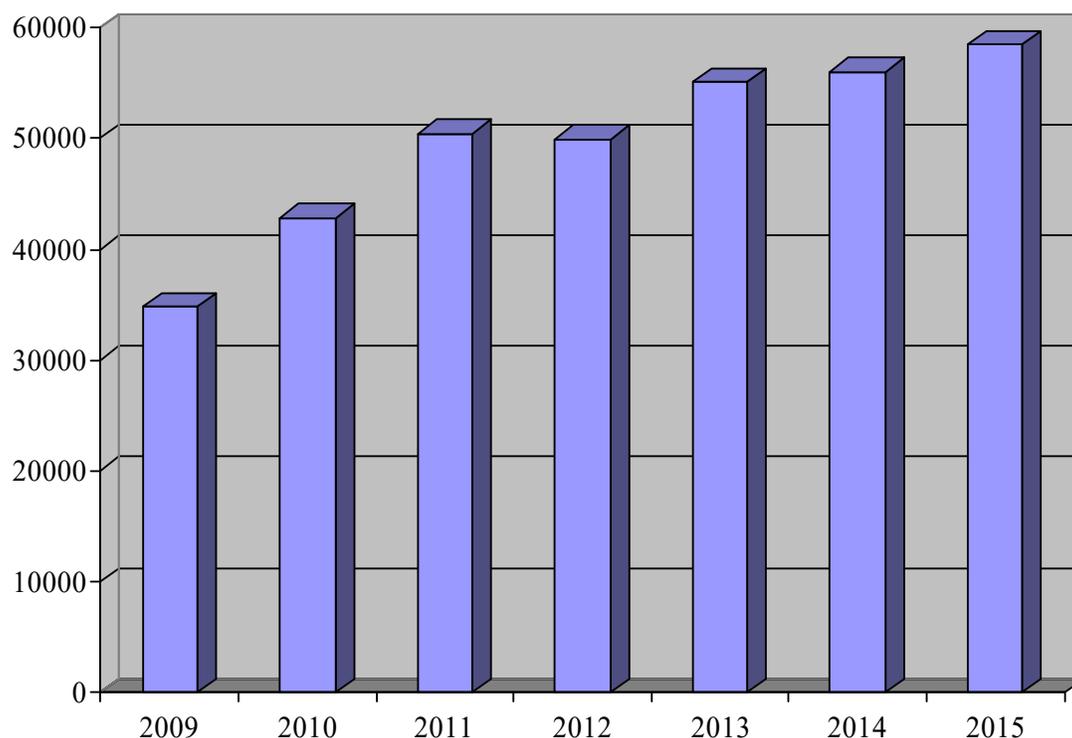


Figure 4.2 Summary of PetroVietnam’s staff size, period 2009 – 2015

Source: PetroVietnam’s Human resource Training and Development Strategy

Human resource structure

PetroVietnam’s Human resource (HR) structure in its production and business areas has changed remarkably and thus somewhat influenced its HR quality. For example, in 2015, the staff in technical services increased by 3.3% to 26.6% of its total staff size; that in exploration and exploitation decreased by about 3.8% to 15.5%; and that in oil refinery and petrochemistry went up by 1.8% to 9.5%, compared to those in 2009.

Unit: Person

Area \ Year	2009	2010	2011	2012	2013	2014	2015
Exploration & exploitation	6,704	7,295	8,678	9,072	9,195	9,153	9,075
Oil refinery & petrochemistry	2,667	2,753	3,741	4,931	5,565	4,728	5,578
Gas	2,483	2,715	3,172	3,386	3,245	3,606	3,812
Electricity	1,192	1,328	1,504	1,617	1,612	1,612	2,317
Technical services	8,115	11,184	14,808	14,410	13,501	15,702	15,561
Research & training	1,337	1,504	1,598	1,683	1,653	1,680	1,440
Other	12,310	16,050	16,944	14,804	20,313	19,519	20,640
Total	34,808	42,829	50,445	49,903	55,084	56,000	58,423

Table 4.2 PetroVietnam's human resource structure in production and business, 2009 - 2015

Source: PetroVietnam's Human resource Training and Development Strategy

Table 4.2 shows that by 2015, the staff working in PetroVietnam's five major areas was 36,343 people or about 62% of its staff size. Specifically, the staff in exploration and exploitation was 9,075 people or 16%; that in oil refinery & petrochemistry, 5,578 people or 10%; that in the gas area, 3,812 people or 6%; that in electricity generation, 2,317 people or 4%; and, that in technical services, 15,561 people or 27%.

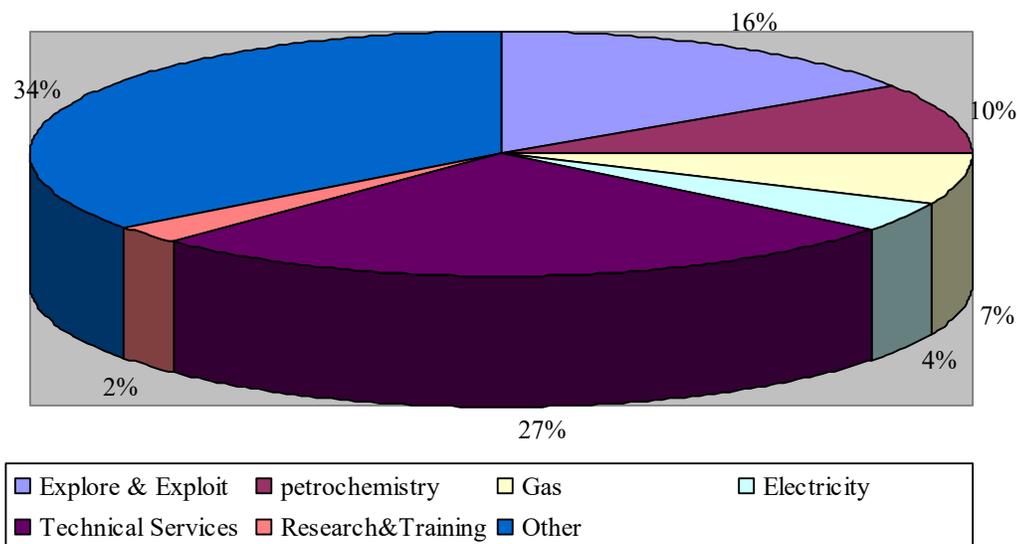


Figure 4.3 PetroVietnam's human resource structure in areas in 2015

Source: PetroVietnam's Human resource Training and Development Strategy

Human resource qualification

The human resource (HR) qualification and quality of PetroVietnam kept increasing gradually between 2009 and 2015. Its HR of graduate and especially postgraduate degree-holders increased sharply as seen in the following table.

Unit: Person

Area \ Year	2009	2010	2011	2012	2013	2014	2015
Exploration & exploitation	266	333	452	513	591	632	665
Oil refinery & petrochemistry	82	99	123	142	155	147	194
Gas	75	90	140	148	149	171	183
Electricity	57	85	100	96	104	104	130
Technical services	122	337	372	416	410	495	506
Research & training	337	408	492	559	620	642	606

Other	362	482	478	563	804	877	908
Total	1,301	1,834	2,157	2,437	2,833	3,068	3,192

Table 4.3 PetroVietnam’s employees as postgraduate degree holders between 2009 and 2015

Source: PetroVietnam’s HR Training and Development Strategy

HR age structure

The statistics for the period 2009 – 2015 indicates that the average age of PetroVietnam’s HR did not change remarkably, with the younger workers accounting for a large percentage. The employees aged under 40, currently 42,667 people or 73% of its staff size, is the potential HR of good health and passion that have access to the development of information technology and modern science and technology. However, the group became short of experienced staff and leading experts in its major areas of production and experience. As a result, there must be a relevant HRD strategy to meet the development requirements of PetroVietnam.

Unit: Person

Year \ Age	2009	2010	2011	2012	2013	2014	2015
Under 30	12,459	18,390	22,326	20,227	20,966	19,808	19,442
31 - 39	11,179	12,535	15,470	16,927	19,960	21,295	23,225
40 - 49	7,262	7,247	8,191	7,629	8,803	9,323	10,096
50 - 55	2,730	3,110	3,408	3,791	4,064	4,157	4,147
Above 55	852	1,049	1,050	1,329	1,291	1,417	1,513
Total	34,482	42,331	50,445	49,903	55,084	56,000	58,423

Table 4.4 PetroVietnam’s human resource by age, 2009 - 2015

Source: PetroVietnam’s Human resource Training and Development Strategy

Productivity

According to the statistics, the average productivity of PetroVietnam between 2009 and 2015 is 11.7 billion VND or 0.53 million USD per person per year. This productivity is considered much higher than that of Vietnam's other economic groups such as the Vietnam Electricity Group (EVN) or the Vietnam National Coal and Mineral Industries Group (Vinacomin), but yet lower than that of other regional oil and gas groups such as the Petroleum Authority of Thailand (PTT) from Thailand or the Petroleum Nasional Berhad (PETRONAS) from Malaysia.

Technicians

PetroVietnam's contingent of technicians is more qualified in many aspects than those working for other enterprises in Vietnam because they are well trained. Yet, the technicians still have limitations in command of foreign languages, science and technology, so its competitiveness on the regional and international oil and gas labour markets remain modest.

In summary, the current HR of PetroVietnam is considered sufficient in number and quality to meet its current development strategy of production and business, but the corporation should have, among other things, a strategy to develop, manage and use of its high-quality Human resource, in order to improve its competitiveness and development in the regional and the world through provision of better products and services, improvement of its production and business efficiency, and sustainable development.

4.2.2 The reality of human resource development of PetroVietnam

PetroVietnam has always attached importance to human resource development (HRD) recently. Its human resource (HR) training has been invested both deeply and widely, ranging from basic training, retraining, to support to its employees' postgraduate education, etc. The total training participations increased from 39,862 in 2009 to 112,927 in 2015; the total training expenditure, from 257.17 billion VND in 2009 to 394.37 billion VND in 2015; and, the average annual training participation, from 1.15 times per person in 2009 to 1.93 times per person in 2015; specifically as follows.

Year	Number of trainees (person)	Total training expenditure (billion VND)	Total staff size of PetroVietnam (person)	average annual training participation (times)
(1)	(2)	(3)	(4)	(5) = (2)/(4)
2009	39,862	257.17	34,808	1.15

Year	Number of trainees (person)	Total training expenditure (billion VND)	Total staff size of PetroVietnam (person)	average annual training participation (times)
2010	63,128	346.98	42,829	1.47
2011	70,452	379.04	50,445	1.40
2012	86,720	398.89	49,903	1.74
2013	99,273	370.90	55,084	1.80
2014	114,170	466.43	56,000	2.04
2015	112,927	394.37	58,423	1.93

Table 4.5 PetroVietnam’s human resource development training, period 2009 - 2015

Source: PetroVietnam’s human resource Training and Development Strategy

The statistics from Table 4.5 indicates that PetroVietnam’s huge annual investment in HRD training supports its employees through various training forms such as postgraduate education, indepth technical, technological or managerial training courses under direct cooperative agreements with the corporation or its subsidiary and affiliating units, especially for solving practical demands and contributing to improvement of its HR quality.

However, the training and HRD of PetroVietnam still have a number of shortcomings: for example, its HR Training and Development Strategy has been neither comprehensively developed nor consistently applied by its subsidiary and affiliating units, or the potential of the trained staff has not been fully promoted, especially in its core business areas.

4.2.3 The reality of human resource management of PetroVietnam

To develop and manage the HR for production and business in line with its objectives of sustainable development, PetroVietnam has always appreciated the HRM activities over the past years. Its HR Training and Development Strategy for the period 2016-2025 and orientation to 2035, attached to Decision No. 363/QĐ-DKVN dated 24 February 2017, shows its HRM activities as follows:

Personnel management and organisation

PetroVietnam has established a specialised division for personnel management to cover the HRM and HRD affairs such as HR planning, recruitment, personnel management, career development management, wages and rewards, and other HR policies.

Development and issuance of documents related to personnel management

PetroVietnam has developed and issued regulations and instructions for personnel management, HRM, wages and benefits for workers. Examples are the following: Regulations on personnel management, recruitment, appointment, etc.; regulations on training and HRD, management and use of the training fund, selection and management of financially supported trainees; regulations on payment of wages, rewards and incomes; and, regulations on policies to attract and use of highly-qualified employees.

Development and implementation of the human resource development strategy

Realizing the importance of HR over its sustainable development of production and business, PetroVietnam has issued specific periodical training and HRD strategies for implementation: the Human resource Training and Development Strategy, period 2009-2015 and orientation to 2025, attached to Decision No. 2496/QĐ-DKVN dated 19 August 2009, and, the HR Training and Development Strategy, period 2016-2025 and orientation to 2035 attached to Decision No. 363/QĐ-DKVN dated 24 February 2017.

It is reported by its website¹ that PetroVietnam, based on the approved HR Training and Development Strategy, period 2009-2015 and orientation to 2025, has actively promoted implementation of its HR training and development plan through provision of detailed in-depth or expert training programmes in the areas of geology, exploration, exploitation, etc. in collaboration with its member units such as Vietnam Petroleum Institute (VPI), PetroVietnam University (PVU), Petrovietnam Manpower Training College (PVMTC), etc. The corporation also asks its member units to prepare their HR through providing them with technical and foreign language courses so that their staff members are ready for its in-depth long-term training programmes. Its solutions for HR development and improvement are as follows: Provision of standard specialised training programmes for its employees; development of its training system; promotion of its development of an effective, modern, and scientific HRM system; promotion of its career development orientation for its employees based on individual and organisational capacity and objectives; strengthening its cooperation with oil and gas contractors and foreign joint ventures in HR training and development; proper arrangement of the existing HR; promotion of its internal training activities; application of

¹ <http://www.pvn.vn/Pages/Daotao-phattriennhanluc.aspx?NewsID=23e5ba88-594d-4a6e-9e6d-8c82c08676d9>

information technology in its HR training and development; issuance of relevant regimes and policies such as on talent attraction, training priorities, wages and benefits, etc.; and, renovation of its overseas training for employees through socialisation and diversification of the overseas training expenditure.

Development and application of competency-based HRM system

A competency-based HRM system (CMS) has been developed by PetroVietnam to realise its HRM activities, recruitment, arrangement, assignment of tasks in line with employees' qualifications and competence, and payment of wages and rewards in line with employees' contribution to production and business results. The CMS has been introduced in the mother company since 2014, but the system has not been fully effective due to various reasons.

Evaluation of the HRM system

Evaluation of PetroVietnam's human resource management (HRM) system is based on such related aspects as follows:

Recruitment: PetroVietnam's HR mainly comes from domestic sources. The recruitment is conducted mainly through consideration of candidates' training qualifications and work experience plus examination and interview. It also can be done through introduction of candidates by those having relations with PetroVietnam, except for some posts compulsorily subject to recruitment or hire of foreign experts due to the inadequate qualifications of the domestic HR, which is conducted mainly in its joint ventures with foreign partners.

HR planning: PetroVietnam's HR plans are developed mainly based on the demands proposed by its direct units of production and business. Its plans of employee career development and managers planning are closely associated with their capacity and degree of fulfilling production and business objectives.

Wages, rewards, and incomes: The distribution of wages, rewards, and incomes is fundamentally based on employees' fulfilment of tasks. Although evaluation and reward is regularly cared, they have not exactly reflected the reality.

HR training and development: PetroVietnam's subsidiaries basically provide their annual training plans for their production and business activities in line with their development strategy. However, their HR training and development mainly serve short-term strategies in absence of long-term ones for sustainable development.

4.3 Forecast of PetroVietnam's needs of human resource and training in the coming time

Based on its business and production activities and development situation, PetroVietnam is predicted to have the following needs of HR and training in the coming time:

Period	2016 - 2020	2020 - 2025
Main area	(person)	(person)
Exploration and exploitation	9,190	9,270
Gas industry	4,699	6,160
Electricity	4,137	4,750
Oil refinery	8,155	8,415
Other areas	37,641	37,641
Total	63,821	66,235
<i>Including new recruitment in replacement of retirement, resignation, and corporate growth:</i>	<i>5,812</i>	<i>3,077</i>
- Exploration and exploitation	241	311
- Gas industry	1,019	1,662
- Electricity	1,871	690
- Oil refinery	2,681	414

Table 4.6 Forecast of PetroVietnam's human resource need, period 2016 - 2025

Source: PetroVietnam's Human resource Training and Development Strategy

Period	2016 - 2020	2020 - 2025
Area	(times)	(times)
Exploration and exploitation	15,945	16,084
Gas industry	14,491	18,997
Electricity	7,382	8,477

Oil refinery	25,675	26,493
Other areas	99,499	99,499
Total	162,992	169,549

Table 4.7 Forecast of times of training for PetroVietnam, period 2016 - 2025

Source: PetroVietnam's HR Training and Development Strategy

Area	Period	2016 - 2020 (million VND)	2020 - 2025 (million VND)
Exploration and exploitation		101,534	102,418
Gas industry		53,207	69,752
Electricity		14,538	16,693
Oil refinery		56,367	58,164
Other areas		288,701	288,701
Total		514,347	535,728

Table 4.8 Forecast of training expenditure for PetroVietnam, period 2016 - 2025

Source: PetroVietnam's HR Training and Development Strategy

The abovementioned forecast of training needs does not include those of the operators of the specific projects, each of which will provide operating training for 500 to 1,500 people at a cost of 50 to 150 billion VND).

4.4 Some key investment projects of PetroVietnam

To realise its development strategy, PetroVietnam has, apart from improving its core production and business activities, continued to promote investment in large-scale focal projects. Its development plan between 2011 and 2015 approved by the Prime Minister indicate a total need of investment at approximately 1,090,298 billion VND or 52 billion USD, specifically as follows.

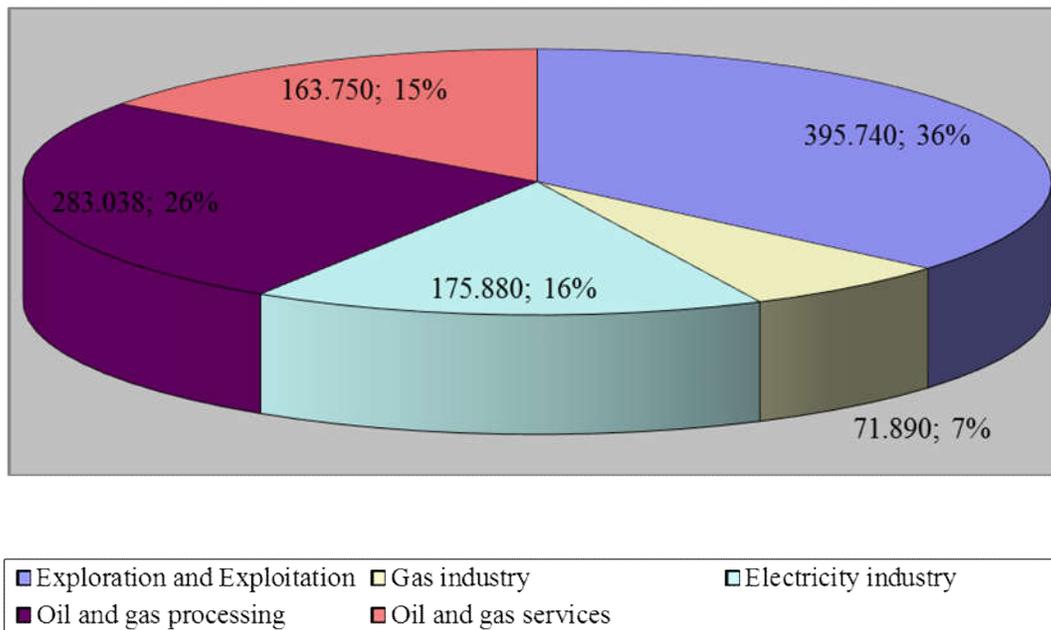


Figure 4.4 PetroVietnam’s total need of investment, period 2011-2015

Source: PetroVietnam’s investment plan, period 2011-2015

It is a fact that the completed value of PetroVietnam’s investment projects from 2011 to 2015 was 414,000 billion VND or 19.71 billion USD. PetroVietnam completed investment and put into operation 121 constructions and commenced 26 other constructions, including operation of 34 new oil and gas constructions. Its focal investment projects that were put into commercial operation during that period included the Ca Mau Nitrogen Fertilizer Plant, the Vung Ang 1 Thermal Power Plant. The big projects commenced during the period included the Song Hau 1 Thermal Power Plant project, the Long Phu 1 Thermal Power Plant project, the Thai Binh 2 Thermal Power Plant project, the Nghi Son Oil Refinery and Petrochemistry Complex.

PetroVietnam’s total need of investment between 2016 and 2020 is 782,000,000 billion VND or 35.57 billion USD, for the following major production areas:

Exploration and exploitation: Because this is a core business area, PetroVietnam has focused much resource on it. The total need of investment in this period is approximately 348,143 billion VND or 15.82 billion USD for domestic and external projects to increase the reserve at approximately 35 to 45 million tons of oil equivalent per year, to exploit some 16 to 17 million tons of crude oil per year, and to exploit some 10 billion m³ of gas per year.

The gas industry: PetroVietnam’s total need of investment for its projects in this area is approximately 116,007 billion or 5.27 billion USD during this period, mainly for implementation of some gas pipeline projects.

The electricity industry: PetroVietnam needs a total investment of 147,827 billion VND or 6.72 billion USD, mainly for investment in a number of thermal power plants.

Oil and gas processing: The total need of investment for this area is 107,903 billion VND or 4.90 billion USD in this period, mainly for oil and gas products plants.

Oil and gas services: PetroVietnam’s total need of investment for this area is 62,952 billion VND or 2.86 billion USD in this period, mainly for investment projects of oil drilling rigs, crude oil and oil product tankers, and service ports.

The list of a number of PetroVietnam’s focal projects is as follows.

No	Project Name	Location	Description of project implementation	Total investment
1	Expansion of Dung Quat Refinery	Quang Ngai, Vietnam	<ul style="list-style-type: none"> - PetroVietnam will invest in expansion of Dung Quat Refinery from the capacity of 6.5 million tons per year to 8.5 million tons per year, or 192,000 barrels of oil per day. - The project is expected to put into commercial operation in 2022. 	Approx. 2 billion USD
2	Nghi Son Refinery and Petrochemistry Complex	Thanh Hoa, Vietnam	<ul style="list-style-type: none"> - PetroVietnam in joint venture with Kuwait Petroleum Europe B.V. (KPE), Idemitsu Kosan (Japan), Mitsui Chemicals, Inc. (Japan) implement this investment project at an annual capacity of about 10 million tons of products of oil refinery and petrochemistry. - The project is expected to put into commercial operation in 2018. 	More than 9 billion USD
3	Southern Petrochemistry Complex	Ba Ria - Vung Tau, Vietnam	<ul style="list-style-type: none"> - PetroVietnam in joint venture with SCG Group (Thailand) will implement the project of a capacity of some 3 million tons per year. - The project is expected to put into commercial operation in 2022. 	Approx. 4.5 billion USD
4	Gas Pipeline, Lot B - O Mon	Hau Giang, Vietnam	<ul style="list-style-type: none"> - PetroVietnam is implementing the project of an annual capacity of some 7 billion m³ of gas. - The project is expected to put into commercial operation in 2020. 	Approx. 2 billion USD

No	Project Name	Location	Description of project implementation	Total investment
5	Gas Pipeline Nam Con Son 2 (Phase 2)	Ba Ria - Vung Tau, Vietnam	<ul style="list-style-type: none"> - PetroVietnam is implementing the project of an annual capacity of some 7 billion m³ of gas. - The project is expected to put into commercial operation in 2019. 	Approx. 1.2 billion USD
6	Vung Ang 1 Thermal Power Plant Project	Ha Tinh, Vietnam	<ul style="list-style-type: none"> - PetroVietnam is implementing the project of a total capacity of 1,200MW, including two power stations, 600MW each. - The project was completed and put into commercial operation in 2015, current at the final phase of its two years of guarantee. 	1.6 billion USD
6	Thai Binh 2 Thermal Power Plant Project	Thai Binh, Vietnam	<ul style="list-style-type: none"> - PetroVietnam is implementing the project of a total capacity of 1,200MW, including two power stations, 600MW each. - The project is expected to put into commercial operation in 2019. 	Approx. 2 billion USD
7	Long Phu 1 Thermal Power Plant Project	Soc Trang, Vietnam	<ul style="list-style-type: none"> - PetroVietnam is implementing the project of a total capacity of 1,200MW, including two power stations, 600MW each. - The project is expected to put into commercial operation in 2020. 	Approx. 2 billion USD
8	Song Hau 1 Thermal Power Plant Project	Hau Giang, Vietnam	<ul style="list-style-type: none"> - PetroVietnam is implementing the project of a total capacity of 1,200MW, including two power stations, 600MW each. - The project is expected to put into commercial operation in 2020. 	Approx. 2 billion USD
9	Long Phu 3 Thermal Power Plant Project	Soc Trang, Vietnam	<ul style="list-style-type: none"> - PetroVietnam will implement the project of a total capacity of 1,800MW, including three power stations, 600MW each. - The project is expected to put into commercial operation in 2022. 	Approx. 3 billion USD
10	Nhon Trach 3 & Nhon Trach 4 Thermal Power Plant Projects	Dong Nai, Vietnam	<ul style="list-style-type: none"> - PetroVietnam will implement the project of a total capacity of 1,500MW, including two power stations, 750MW each. - The project is expected to put into commercial operation in 2022. 	Approx. 1.5 billion USD
11	Blue Whale Gas Field	Quang Nam,	- PetroVietnam in joint venture with ExxonMobil (the USA) will implement the	Approx. 10 billion

No	Project Name	Location	Description of project implementation	Total investment
		Vietnam	project of an annual capacity of some 820 million m ³ of gas. - The project is expected to put into commercial operation in 2022.	USD
12	Central Region I & II Gas Power Plant Projects	Quang Nam, Vietnam	- PetroVietnam will implement the project of two power plants at a total capacity of approximately 1.500 MW, 750 MW each. - The project is expected to put into commercial operation in 2023 - 2024.	Approx. 1.5 billion USD
13	Kien Giang I & II Gas Power Plant Projects	Kien Giang, Vietnam	- PetroVietnam will implement the project of Plants I & II at a total capacity of approximately 1.500 MW, 750 MW each. - The project is expected to put into commercial operation in 2022 - 2023.	Approx. 1.5 billion USD
14	The Son My II Thermal Power Plant Project	Binh Thuan Vietnam	- PetroVietnam will implement the project of 03 power plants at a total capacity of approximately 2.250 MW, 750 MW each. - The project is expected to put into commercial operation in 2023 - 2025.	Approx. 2.25 billion USD

Table 4.9 PetroVietnam's focal projects

Source: PetroVietnam's Investment Summary

4.5 Situation of development, management and use of human resource in the key investment projects of PetroVietnam

It is stipulated by the law of Vietnam that to implement management of a construction investment project, the investor shall, based on the project size, nature, source of capital, and conditions, decide application of one of the following forms of project management board (PMB):

Specialized construction investment PMB or regional construction investment PMB is used for projects using state-budget investment, specialized projects using non-state capital of state economic groups or state corporation;

One-project construction investment PMB is used for projects using state capital of Group A for special-level constructions; with application of high technology that is certified in writing by the Minister of Science and Technology; projects of defence and security of state secret;

Project management consultants are hired for projects using non-state capital, other capital and projects of specific or single nature;

The investor shall use its technical machinery of sufficient conditions and capacity to manage implementation of small-scale renovation or repair projects, or participatory ones.

To organize management of implementation of its focal projects, PetroVietnam have selected the form of one-project construction investment PMB, for example, for the following focal projects:

- 1) PetroVietnam Vung Ang Power Project Management Board for management of construction investment of the Vung Ang 1 Thermal Power Plant Project.
- 2) PetroVietnam Thai Binh 2 Power Project Management Board for management of construction investment of the Thai Binh 2 Thermal Power Plant Project.
- 3) PetroVietnam Long Phu 1 Power Project Management Board for management of construction investment of the Long Phu 1 Thermal Power Plant Project.
- 4) PetroVietnam Song Hau 1 Power Project Management Board for management of construction investment of the Song Hau 1 Thermal Power Plant Project.
- 5) Nghi Son Refinery and Petrochemistry Complex Project Management Board for management of construction investment of the Nghi Son Refinery and Petrochemistry Complex.

In addition, PetroVietnam is going to establish other PMBs for management of other big future projects such as the Southern Petrochemistry Complex, the Expansion of Dung Quat Refinery, the Blue Whale Gas Field, the Long Phu 3 Thermal Power Plant Project, the Nhon Trach 3 & Nhon Trach 4 Thermal Power Plant Project, the Central Region Gas Power Plant project 1 & 2, the Kien Giang gas power plant Project I & II, the Son My II Thermal Power Plant Project, etc.

Every PetroVietnam PMB is staffed by some 150 to 200 members. Most of the staff members of the PMBs are recruited new with different levels of qualification. They are basically of inadequate qualification and experience because they are mostly fresh university graduates having little experience of project management. Yet, those having more capacity and experience of project management, having worked for previous projects, have not been effectively used due to a lack of mechanism for use and career development. Some are transferred from PetroVietnam's direct

subsidiaries and other focal projects mainly to hold a number of key positions within a PMB. A PMB tends to be established before deployment of a new investment project, and PetroVietnam only pays attention to assignment of some key positions such as PMB Director, Vice Directors, and Chief Accountant while positions of lower-level management and professional titles are authorised by PetroVietnam to the PMB Director's recruitment and assignment. As a result, a PMB is mostly staffed by a completely new HR which is recruited from the other units or among new graduates, who will be trained and developed, and who will accumulate experience during their work. However, large-scale focal projects of modern technology require a specialized management staff and many excellent experts of high qualification and much experience.

Another typical characteristic is that the number of employees, engineers, and managers of satisfactory command of English is a mere percentage of the PMB staff. Therefore, this is a burden for training in form of courses or learning by doing, because the necessary skills and knowledge for good performance takes a long time of training while a project life is between only five to seven years. The good point of younger staff members is that they tend to be more enthusiastic, eager to learn and contribute to the projects.

Another negative point is that each PMB sets up its own management process and system, while there is no consistent or standard one applicable throughout PetroVietnam. Their project management is therefore conducted traditionally and manually with low application of science and technology, and lack of the tools and software of professional project management to measure, analyse and assess the project performance.

Consequently, every PetroVietnam PMB has to hire a foreign project management consulting unit, mainly from a developed country, at a cost of some tens of million USD to support its technical and interface management during the project implementation. It is a fact that the project management currently conducted by the PMBs is mainly conducted with individuals' intuition and experience, and, for most of the time, subject to administrative orders. Although the PMB even have agreed with such related units as the EPC Contractor or the project management consultancy about some project procedures, its personnel may sometimes follow their habits and experience during their work other than following the agreed procedures.

Because PetroVietnam has been implementing many focal construction investment projects of large scale and modern technology, the corporation therefore needs a relevant HR strategy for those projects. On the other hand, while the oil and gas industry has been facing various challenges when the world price of oil keeps decreasing; the exploration and exploitation become increasingly difficult, etc. a massive implementation of such projects will require the size, structure and quality

of the workforce to be increasingly bigger, more suitable and higher. The current approach of project management by PetroVietnam in particular and by Vietnam in general tends to use a huge low-paid workforce of low quality. In contrast, project management in more advanced countries tend to use high quality personnel of high performance and high wages.

The reality and strategy of HR development are always attached special attention to by PetroVietnam. Despite being among the leading corporations in Vietnam that always appreciate and invest enormously in annual, mid-term, and long-term training and HRD activities, PetroVietnam still have certain shortcomings and limitations. One possible reason is that, as the leading economic group of Vietnam, the corporation has to accept a sizable workforce of low qualification, inadequate performance and insufficient productivity which is introduced to it by the related civil servants working for state management agencies. Consequently, PetroVietnam has to use a mixed HR that has not completely satisfied professionalism or international qualifications as its strategies propose.

Besides, although PetroVietnam's focal projects are deployed in difficult terrains and harsh climate, their staff members face a risk of unemployment when the projects are completed and the PMBs are dissolved. Because the merits of the PMB staff have been neither attentively recognised nor given timely encouragement and deserving benefits, most of the staff seek new jobs in new organisations when their projects reach the second half of their life; otherwise, they may miss their opportunity and have to restart after the project and thus suffer from limited benefits. Even qualified and experienced staff members have to restart as ordinary office workers in new projects because the posts similar to their current ones have been filled by other people.

One example is found from the PetroVietnam PMB for Vung Ang 1 Power Plant. Since the project was completed and the Vung Ang 1 Power Plant was put into commercial operation in 2015, the PMB has been left with merely monitoring the final phase of guarantee and drawing the final account of the construction investment; therefore, it will complete its tasks in an early date and dissolve. The PMB thus has to terminate its labour contracts with many of its staff members, including competent and experienced ones holding high positions, but PetroVietnam cannot give them work in its PMB of the on-going projects because the positions in those PMBs have already been filled, even when the personnel of those PMBs have lower qualifications and less experience than those working for the PMB of Vung Ang 1 Power Plant. Neither can the staff members of the PMB of Vung Ang Power Plant work for the power plant because its personnel has already been recruited and trained for its positions.

The analysis above indicates that the high-quality HR for PetroVietnam's PMBs has not been paid adequate attention to. Many PMB staff members of high qualifications and much experience from

their work are not reused; the development, management and use of PetroVietnam's HR for its focal projects have not been adequately cared for. As a result, identification of the strategy for development, management and use of PetroVietnam's high-quality HR for its focal projects is a key solution to realise its objectives of modernisation, international integration, acceleration, and sustainable development.

The abovementioned reality of the PMBs' personnel has been collected from PetroVietnam's reports and seminar documents on one hand, and from the author's direct interviews of the staff working for the PMBs including the project management, the line managers and staff members on the other, especially the interviews of the Power PMBs (i.e. PetroVietnam Vung Ang Power PMB, PetroVietnam Thai Binh 2 Power PMB, PetroVietnam Long Phu 1 Power PMB, Petro Vietnam Song Hau 1 Power PMB) and the Nghi Son Refinery and Petrochemistry Complex PMB. The interviews of PetroVietnam Vung Ang Power PMB show that both the project and line managers were concerned of their future after the project completion, fearing that they would have to accept jobs of specialties and experience different from theirs. The professionals expressed their worries of unemployment after the project completion, assignments of unexpected jobs, unsatisfactory welfare, misplacement of their capacity and experience, etc.

Apart from the personnel for the focal projects during the management of investment construction, the recruitment, training and development of the HR for operation and maintenance of the factories during their commercial operation is also extremely important. The recent personnel preparation and training for commercial operation of PetroVietnam's focal projects includes two parts:

Firstly, the affiliating companies of PetroVietnam prepare the organisation and machinery of production. For example, PetroVietnam Power Corporation has been preparing for its thermal power plants. They will recruit and appoint key managerial positions, and setup the management machinery of a plant that includes the Director, Vice Directors, Chief Accountant, linear managers and the managerial staff, the office staff in exclusion of the engineers and technicians who directly operate the plant;

Secondly, the engineers and technicians directly operating a plant are entirely recruited and trained by PetroVietnam Manpower Training College (PVMTC), the training division under the direct umbrella of PetroVietnam. The training is different from the popular forms in Vietnam because the trainees are engineers, graduates and workers from universities, colleges and vocational schools.

To study the reality of those operating the plants after completion of the investment projects, the author has conducted interviews of the staff of PVPower, PVMTC and the plants. The interviewees

all stated that they had already been graduates from schools of similar specialties but with limited command of foreign languages. Their dissatisfaction with the training mainly stemmed from the slower-than-planned progress of the investment projects, the improper coordination between the training progress and the project progress that made them wait such a long time (one to two years) after graduation before they are given the operating job that many were too discouraged to continue. In addition, the investors had to pay for training of unrelated skills and knowledge or to retain trained trainees. Or, the training was long and repeated, etc. Following is the training content, curriculum and process:

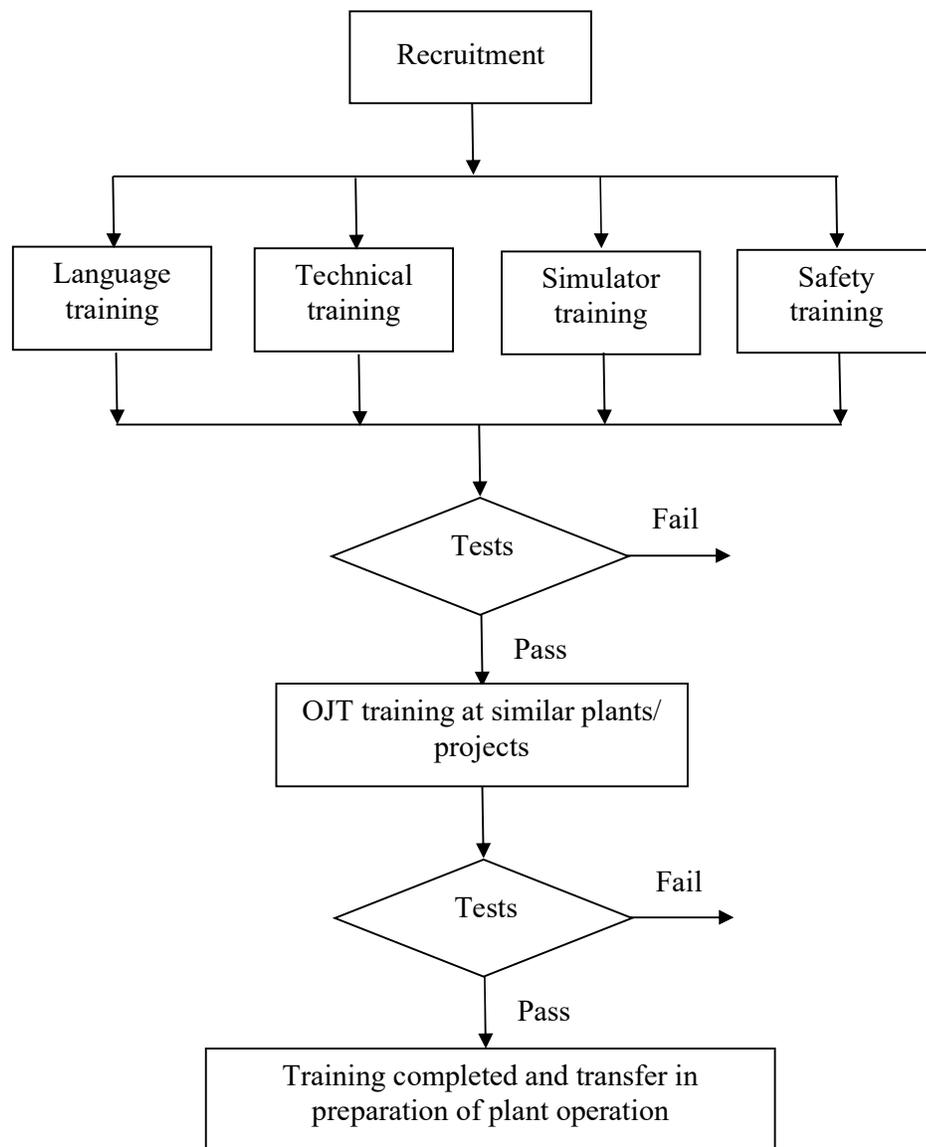


Figure 4.5 Flow-chart of recruitment and training of operating and maintaining personnel

The recruitment and training of operating engineers and workers include the following:

The first, Recruitment: Candidates are selected through examinations in line with the needs and titles. There are multiple-choice tests of professional knowledge, foreign language (i.e. English), and direct interview.

The second, Training of foreign language: The trainees are trained of both general English to enhance their language skills and English for specific purposes that enables them to read technical documents, describe and settle situations during operation and maintenance. After the language course, the engineers have to pass TOEIC 450 or 500 and the workers TOEIC 300.

The third, Technical training: The purpose is to provide systematic and in-depth training of title-based knowledge of operation or maintenance in terms of technology, mechanic equipment, electricity and automation, such technical documents as PFD, P&ID, ...

The fourth, Simulator training: The training is conducted with automatic models that simulate the operation of the actual plants. Trainees of operation of technology and electricity-automation are trained of such contents as procedures of activating the plant, procedures of normal operation, procedures of finding and settling problems, procedures of normal and urgent stops, procedures of checking, tuning, operating, and maintain such automatic systems as PLC, DCS, etc., and the logical reasoning method for operation and settlement of problems.

Next, Safety training: The purpose is to provide the trainees with the knowledge of fire prevention and fighting, industrial labor hygiene and safety, electricity safety, work safety, and practice of safety procedures for working in the plant.

Then, On-the-job (OJT) training, or title-based training, is designed to equip the trainees with title-based skills. The training curriculums and durations are designed in line with every title and respective requirements at work. The trainees have access to actual equipment and can apply their learnt knowledge to actual work as the starting point for most effective and safest way of taking up their work in the plant. The curriculums are designed with even every minor skill for every title at work, and the training has three steps of Observing, Simulating, and Performing.

PVMTC's recent recruitment and training of the HRs for operation and maintenance of PetroVietnam's focal projects in the fields of oil refinery and chemistry, gas processing and transport, gas electricity, etc. are summarized in the following tables:

No	Project	Recruitment	English language training	operation & maintenance training	simulator training	OJT training	EPC training
1	Condensate Processing Plant	+	+	+		+	
2	Dung Quat Oil Refinery	+	+	+	+	+	
3	Ca Mau Gas Plant	+	+	+	+	+	
4	Phu My Fertilizer Plant	+	+	+	+	+	
5	Ca Mau Fertilizer Plant	+	+	+	+	+	
6	Dinh Vu Polyester Fiber Plant		+	+	+	+	+
7	Dung Quat Bio-Ethanol Plant		+	+	+	+	
8	Phu Tho Bio-Ethanol Plant		+	+	+	+	
9	Phu My Plastic and Chemical Plant	+	+	+			
10	Ca Mau Power Plant 1	+	+	+	+	+	
11	Ca Mau Power Plant 2	+	+	+	+	+	
12	Nhon Trach Power Plant 1	+	+	+	+	+	
13	Nhon Trach Power Plant 2	+	+	+	+	+	
14	Vung Ang Thermal Power Plant 1	+	+	+	+	+	
15	Phu Quy Wind Power Plant		+	+			
16	Steel Mill		+	+			

Table 4.10 List of focal projects's human resources trained by PVMTC

Source: PVMTC

No.	Project	Training duration (month)	Engineer (person)	Technician (person)
1	Condensate Processing Plant	5	15	25
2	Dung Quat Oil Refinery	9	415	467
3	Ca Mau Gas Plant	12	35	21
4	Phu My Plastic and Chemical Plant	7	30	40
5	Phu My Fertilizer Plant	11	117	283
6	Ca Mau Fertilizer Plant	20	188	206
7	Dinh Vu Polyester Fibre Plant	10	60	380
8	Dung Quat Bio-Ethanol Plant	8	45	100
9	Phu Tho Bio-Ethanol Plant	8	33	---
10	Ca Mau Power Plant 1	20	82	44
11	Ca Mau Power Plant 2	20	105	---
12	Nhon Trach Power Plant 1	12	121	77
13	Nhon Trach Power Plant 2	14	78	60
14	Phu Quy Wind Power Plant	2	10	---
15	PV-PIPE Mill	2	---	20
16	Vung Ang Thermal Power Plant 1	19	131	351
	TOTAL		1,465	2,074

Table 4.11 Numbers of engineers and technicians trained for plant operation and maintenance

Source: PVMTC

It can be seen from the tables above that PVMTC has successfully provided recruitment and training of 1,465 engineers and 2,074 technicians for operation and maintenance of PetroVietnam's

focal projects, contributing to putting its constructions in safe and effective operation with cost saving and optimization of PetroVietnam's production and business activities.

Yet the recruitment and training still have such limitations. The material facility and training staff of PVMTC have not always caught up with the focal projects' requirements of high technology and regular updates; its OJT training still has shortcomings, especially in connecting with plants of similar technology. Because most plants have not had sufficient infrastructures for OJT training, some title-based skills cannot be fully trained as planned because of the differences in technology and the safety regulations that do not allow practice over actual equipment during operation but observation and simulation. On one hand, the training duration is bound to the projects' progress. On the other, the work requirements lead to the training of such a relatively big amount of new knowledge (i.e. foreign language, technology, skills, safety) that there were inevitable pressures on trainees, some of whom failed to follow the training. As a result, the numbers of enrolled trainees were always higher than the necessary one for the projects, which caused wastes to the investors. Additionally, that the progress of some projects were slower than scheduled by their contracts led to unemployment or misplacement of many graduates while some other trainees caused economic losses to the investors by breaking their contracts. Because the enrolled trainees did not have the same qualifications, especially the command of foreign language, the training took longer time and the trainees had difficulties in reading English technical reference documents provided by PVMTC. The training could make little use of the capacity and experience of those PMB staff members who wanted to work for a long time for the plants although they had had access to, study and evaluation of the design documents, operational procedures... or, in other words, those PMB engineers had the best knowledge of operation and maintenance of those plants. Yet, they had little opportunity to operate the plant because the training was conducted in parallel to the project management activities; the staff for operating the plants was already available when the constructions were about to complete; and, PetroVietnam used to send the key PMB staff members of experience and capacity to new projects.

4.6 Recommendations and strategy for development, management and use of high-quality human resource in key investment projects of PetroVietnam

The above analysis of the reality of human resource management (HRM) of PetroVietnam in general and that for its focal projects in particular indicates that the corporation has paid attention to its HRM and invested much in the corresponding strategy. However, the focal projects still face various shortcomings of inconsistency and cannot promote the specific advantages of their

investment areas. To limit the weaknesses and promote the strengths of its focal projects, PetroVietnam should, based on the reality and theories of HRM and project management, provide practical strategies and solutions to develop, manage and use high-quality HR to optimize the projects' benefits starting from investment management, operation management, in order for the most success and effectiveness of its projects.

Strategic viewpoint: HRs are the most important factor in management of investment construction projects and management of project operation; training, development, management and use of HRs must be consistent with both PetroVietnam's investment and development strategies, and the common trend of the region and the world.

Strategic objective: PetroVietnam must have a high-quality HR of professional knowledge and experience for both periods of its PMB and commercial operation of the projects.

4.6.1 Strategy for development, management use of high-quality human resource in key investment projects of PetroVietnam

Project investments are the driving force of corporate development. Successful project investments contribute to corporate growth and determine corporate efficiency and success.

As the leading economic corporation of Vietnam, PetroVietnam works in the field of oil exploration and exploitation, oil refinery and petrochemistry, gas industry, electricity, high-quality oil and gas services, etc. The corporation have been paying extreme attention to its new and focal investment projects. PMBs are established by PetroVietnam to manage those projects. It is a fact that success of those projects largely depends on great efforts of PMB staff, advisory divisions and the management of PetroVietnam, and related agencies. The comprehensive solution and strategy for improving the project results are therefore development and management of high-quality HRs for the projects.

HRs are commonly developed through training or recruitment, the former is mainly in form of either training courses or OJT. Though such training form provides certain knowledge and skills but it has not led to expected results for PetroVietnam and its projects, partly because the recruitment has not attentively developed suitable title-based requirements of competence and experience so that the recruits have to undergo additional training of professional knowledge and foreign language, or much OJT training. Even when the trainees, thanks to the training, could do their jobs in the projects well, their knowledge, experience and skills did not result in practical contributions for the corporation because of the lack of a mechanism for using them and developing their career

(those trainees may quit their jobs) or because of the lack of corporate databases, standardized procedures or plans for project management, etc. to follow, update or application to other projects.

Human resource during project implementation for Project management board

To overcome the current shortcomings of HRM facing PetroVietnam's focal projects, traditional methods of management and development should be combined with the new method of Multi-Level Learning, exchanging knowledge and experience among the high-quality HR to improve the project implementation results and make practical contribution to PetroVietnam's development, specifically as follows:

Development of the existing human resource for project management

First, instead of the current separate project management, there should be a general PMB for management of all projects of PetroVietnam that send project management staff to specific projects in their different phases;

Next, the high-quality project management staff members should be appointed and used properly to retain them and develop their career;

Then, they should enjoy relevant salaries, remuneration, rewards and favourable policies.

Establishment of standardized project management processes for PetroVietnam

Provision of a code of ethics for project management;

Development of standardized strict recruitment so as to select high-quality HR of knowledge and experience;

Provision of a standardized organizational model for project management applicable to all the projects – a PMB staffed by a high-quality HRs of 80 to 100 members, other than of some 200 members at present;

Establishment of corporate databases, standardized procedures and plans for project management (for example: management plans of integrated management, progress, costs, quality, personnel, communication, purchases, and risks) that are applicable to PetroVietnam's projects;

Application of learning methods for continuous improvement and update of the standardized procedures and plans for project management; facilitation of knowledge transfer, information exchange, lessons of experience drawing among the ongoing projects; optimizing the portfolio; organizing conferences and seminars on project management and topical seminars on projects.

Application of the Multi-Level Learning approach to improve the outcomes of PetroVietnam's project management and portfolio management

The level of separate project (Level 1) – Applicable to individual PMBs (at the levels of PMB, divisions, and specialized groups).

Meetings should be held for exchanging, learning and improving performance either periodically or after every project phase (i.e. basic design, technical design, selection of the EPC contractor, development of detailed design/ executive document, etc.), or for every main task or executive plan (e.g. assessment of equipment manufacturers; examination and approval of specialized designs; monitoring of construction of every item, etc.).

There are two types of meeting: a revision before implementation of a plan/an activity, and a performance review after such implementation. The revision before implementation aims to clarify the expected targets and outputs; identify individuals' role and responsibility in that task; and clarify limits of cost (if any) and time. The performance review aims to evaluate the actual performance against the expected targets and outputs set at the revision before implementation; collect and analyses the stakeholders' comments and evaluation (feedbacks) of the performance; identify the main causes and factors of the performance; highlight the good results; and consider what else can be done in the next phase, based on which to provide necessary improvements, changes and actions for the next phase.

Level 1 of the Multi-Level Learning approach is presented in the following diagram.

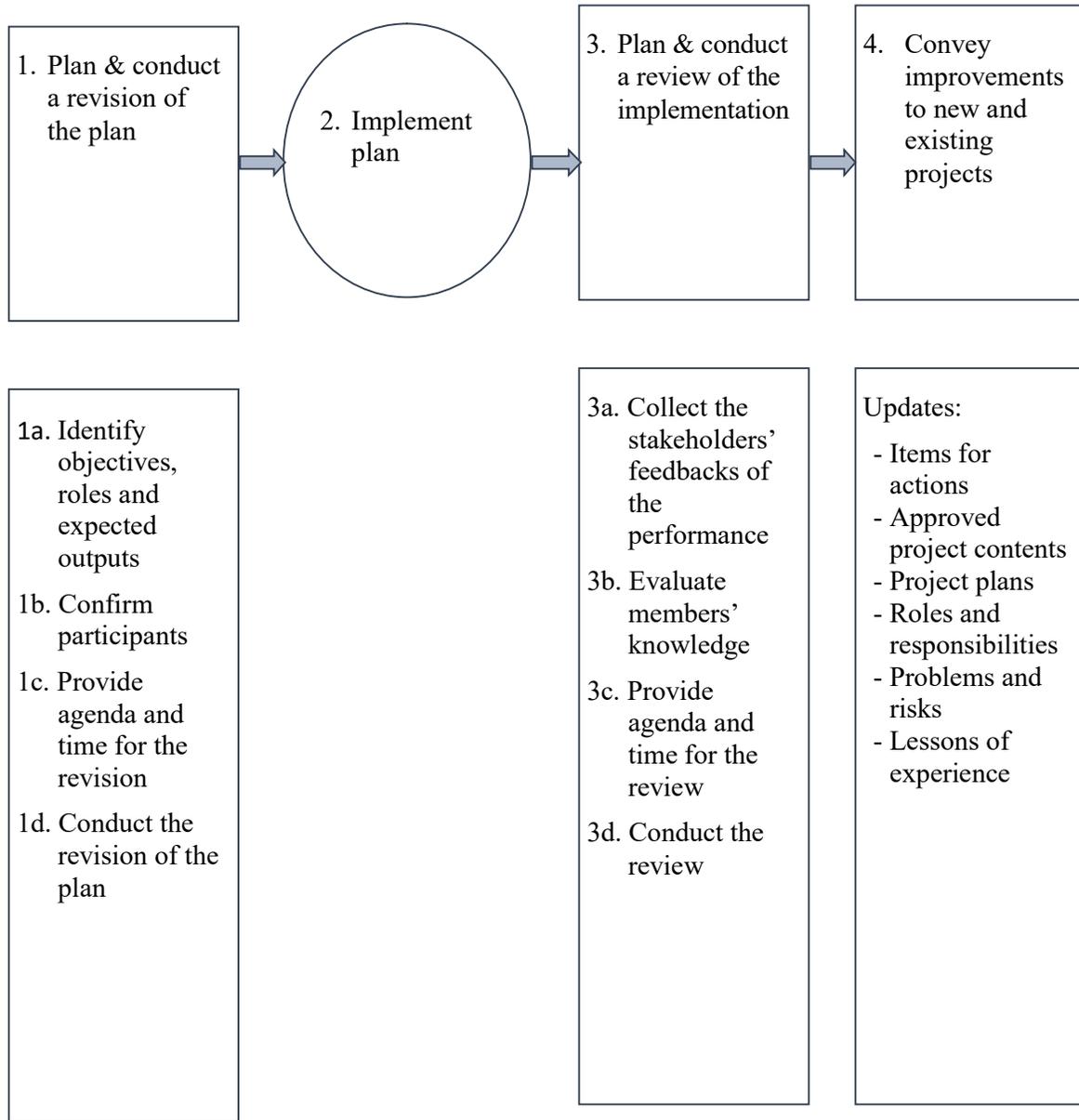


Figure 4.6 The level of separate project (Level 1)

This learning process facilitates the project members to reflect their ideas, learn and improve their knowledge through work so that they can have correct assessment of problems and risks and settle them effectively upon their arising.

The level of cross-project (Level 2): Applicable to the PMBs of one program (for example, a program on electricity or oil).

The PMBs periodically share their knowledge and lessons of experience during implementation of their projects in order to improve the procedures and processes applicable to all the projects. The participants include leaders of the PMBs and the specialized divisions under the coordination of a contact unit.

This method can be applied to every important phase of a specific project such as basic design, technical document, selection of the EPC contractor, development of detailed design/executive design, transition into a new construction phase, pilot running of the system and equipment, measuring operational parameters, etc. so that lessons of experience can be drawn from a corresponding phase of previous projects and suitable solutions are provided for the ongoing project. After the implementation of the ongoing project, the performance will be reviewed and lessons of experience drawn for other projects.

Like the learning process of Level 1, there are two types of meeting: a revision before implementation of a phase, and a performance review. The revision aims to identify related issues and objectives; define the roles and responsibilities of each PMB and PetroVietnam's specialized functions; identify the cost and time limits; and, define possible improving or optimizing solutions. In contrast, the performance review aims to look at the actual performance against the set objectives and identified issues; collect and analyses the stakeholders' feedbacks; identify the main causes and factors of the performance; highlight the good performance of the PMBs; and consider future improvements by the PMBs and the mode of knowledge transfer between the PMBs and the specialized functions. The standardized tools, procedures and processes for project management can then be updated and fine-tuned.

Level 2 of the Multi-Level Learning approach is presented in the following diagram.

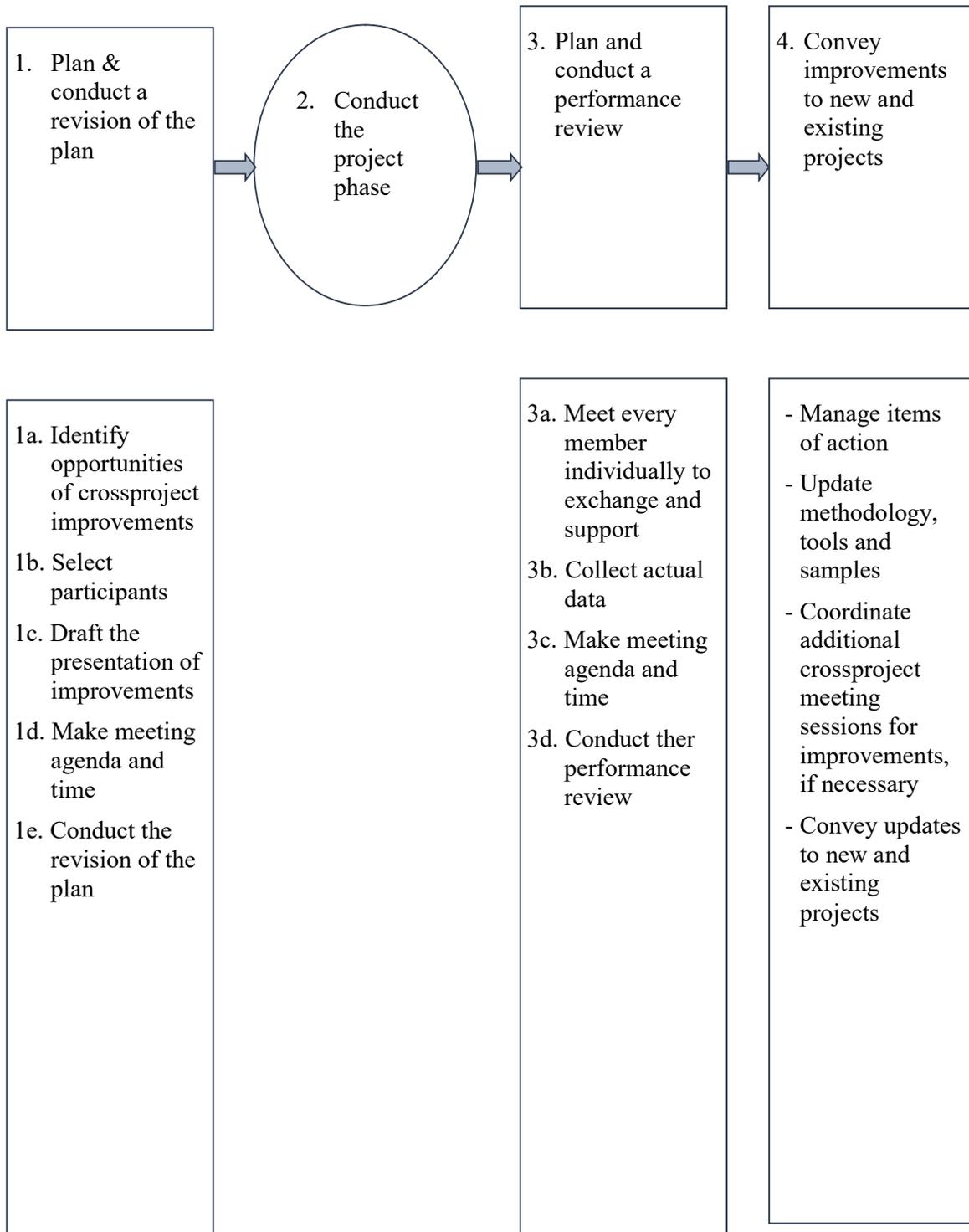


Figure 4.7 The level of cross-project (Level 2)

This learning process will be more useful and effective than simple organization of meetings on lessons of experience at the end of a project. It results in achievement of actual improvements at the simultaneous projects or is applicable to future ones.

The level of strategic portfolio alignment (Level 3):

The senior leaders are responsible for setting up the corporate mission, vision and strategic objectives. The objectives can be improved turnover, higher productivity, increased customer binding or provision of higher-quality services. To achieve those objectives, corporate strategies must be transformed into projects and programs that should be implemented effectively. However, the strategies should be evaluated regularly for adjustments or changes, especially when there are changes of the basic conditions or new information and data so as to improve the effectiveness and efficiency of the strategies. The benefits include reduction of risks and failures, better use of the scarce investment, and proper use of the corporate talents. The learning process of Level 3 is the means for the senior leaders' maintained balance of the strategic corporate objectives and its overall portfolio.

Similar to the learning processes of levels 1 and 2, this level includes two types of meeting: a revision before implementing a strategy, and a review after the implementation. The revision aims to identify strategic intentions in the coming time; necessary projects and programs for realization of such intentions; the role and responsibility of the individual stakeholders; the main indicators of target achievement. On the contrary, the performance review is to evaluate the actual performance already realized by the projects or program against the strategic intention; identify the main causes of the performance; evaluate the impacts of the actions and decisions at the portfolio level over the outcomes; define projects to implement, cancel, or change with clearly-stated reasons; and identify other actions to realize the strategic objectives.

Level 3 of the Multi-Level Learning approach is presented in the following diagram.

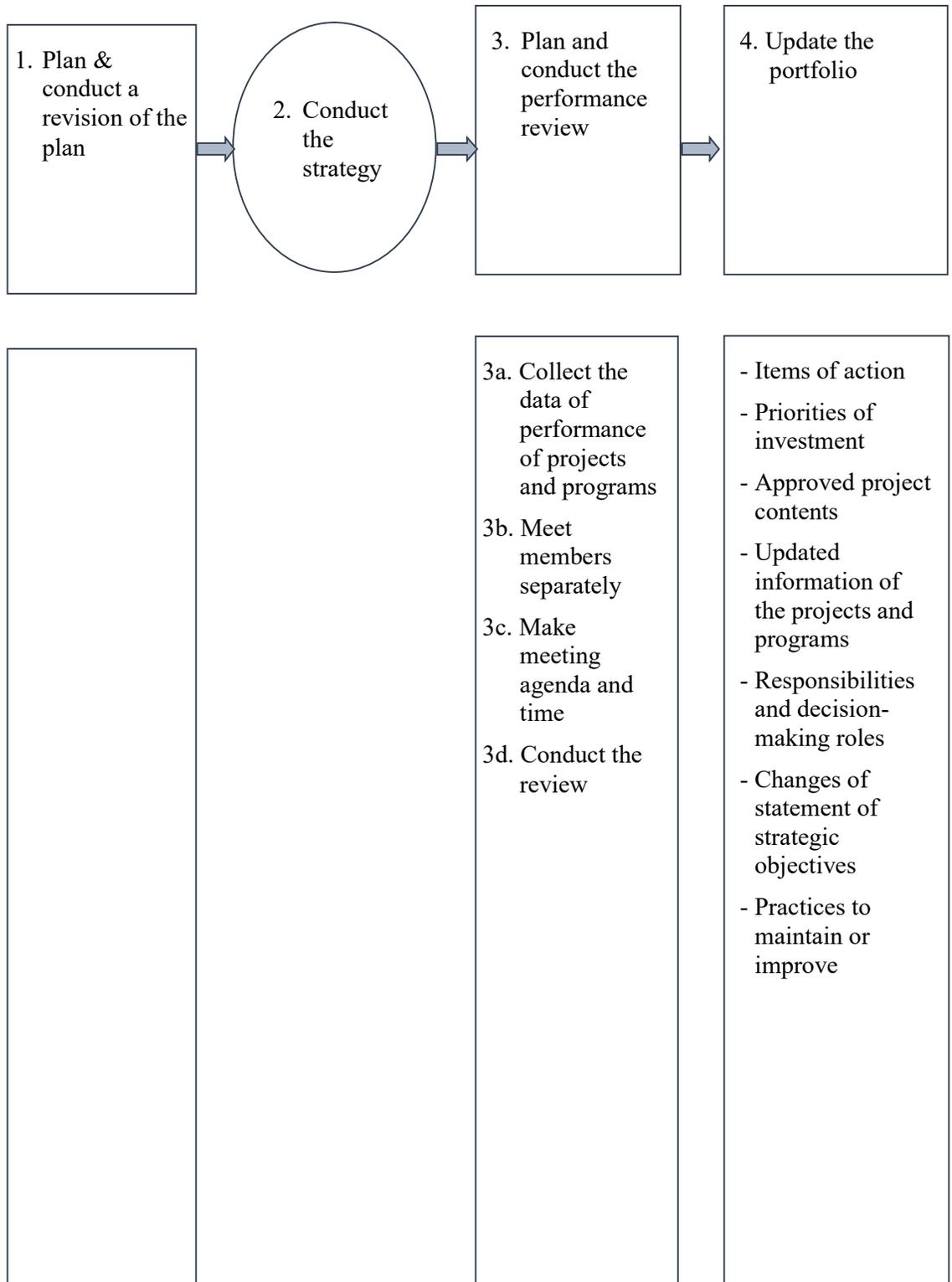


Figure 4.8 The level of strategic portfolio alignment (Level 3)

The learning process of Level 3 is the means for the senior leaders' optimization of the overall corporate portfolio value through proper selection and support of certain projects and programs in a given period and with a proper allocation of resources.

Human resource for project management and operation after commercial operation

Apart from the development strategy for the focal projects' high-quality HRs for the project management period, attention should also be paid to preparation of high-quality HRs for the management and operation after completion of the investments.

Accordingly, the following factors should be regarded: The PMB staff members who are interested in working for the plants after their commencement of commercial operation should be employed to the maximum; the preparation for the HR that operates a plant in commercial operation should be made a direct function under the corresponding project management system so that the operating HR can have gradual access to the operating technology of the plant during the transition from the pilot running for examination to the commercial operation period; the machinery of plant management and operation must be made extremely neat and highly qualified (through high pays) instead of a cumbersome one with a big personnel of low quality that require many training efforts and costs, etc. A HR of relevant qualifications, language skills, knowledge and experience will cut down the costs for training and development current paid by PetroVietnam's projects; the recruitment and training progress must be in line with the project progress to avoid a waiting time that negatively affects the preparatory operating HR psychologically after training (who may seek other jobs) or to cut off extra supporting costs while the investment has not been put into commercial operation; the present training activities of the operating HR remain much limited as seen in cumbersome, repeated and overlapped training. To cut down on the training cost, recruitment requirements should be raised while the English language and theoretical training should be reduced.

4.6.2 Recommendations on development, management and use of high-quality human resource in key investment projects of PetroVietnam

Based on the reality of the development, management and use of high-quality HRs for PetroVietnam's focal projects, and on the reality of the training and coordination, there are a number of solutions to further improve the quality of the HRs.

Recommendations for the Project Management Boards

Project management activities

Firstly, the PMBs should pay more attention to recruitment and career development of their staff. They should provide the titles with respective job descriptions that define the necessary knowledge and experience. Based on the job descriptions, the PMBs should conduct relevant, rather than unplanned, recruitment and/or training of only high-quality candidates. The scope should be extended to both domestic, foreign and overseas Vietnamese candidates.

Secondly, relevant training courses should be provided on the basis of oriented training and development contents, with attention paid to such courses as title-based training of project directors in line with international standards, training of project management knowledge and skills according to international conventions, training of the principles of international commercial contracts, etc.

Thirdly, the PMBs should apply Level 1 of the Multi-Level Learning approach through periodical organisation of orientation meetings and performance reviews for every plan/activity so that the members can exchange lessons of experience, reflect their ideas, learn to improve their ability to deal with actual work.

Fourthly, the planning of human resource development should be based on the plan of HR quality. Along with standardisation and improvement of recruitment quality, the PMBs should revise and evaluate the competence of the existing HR, provide relevant labour division, conduct organisational restructuring, and make relevant use of labour, especially in their important specialized areas.

Fifthly, the management of career development should be based on individuals' basic merit indicators and lay the foundation for personnel planning, transfers and appointments within the PMBs. Fresh recruits should be developed through coaching, training and coordination.

Sixthly, the welfare and remuneration system must be based on competence and merits (i.e. competence, position and performance) and market-competitive. There should be separate policies for attracting high-quality people in line with the set objectives.

Seventhly, the preparatory function for operating a plant under commercial operation must be established under the umbrella of the corresponding PMB to have gradual access to the operating technology of the plant during the transition from the pilot running for examination to the commercial operation period.

Finally, experienced PMB staff members should exchange and support the preparatory HR of the plant through training and conveying practical experience to the trainees.

Management and operation of plants

Firstly, recruitment criteria should be upgraded to recruit candidates of qualified knowledge and command of foreign language, knowledge and experience. The preparatory training should be optimized and avoid repetition of the knowledge trainees have gained from their previous schools to cut down on the costs of training and human resource development.

Secondly, more attention must be paid to OJT at the existing plants of PetroVietnam while cooperation in the field should be made to other domestic and foreign ones such as the plants of Vietnam Electricity Group (EVN), Vietnam National Coal and Mineral Industries Group (Vinacomin), Petroleum Authority of Thailand (PTT) from Thailand, and Petroliam Nasional Berhad (PETRONAS) from Malaysia.

Thirdly, the time of recruitment and progress of training should be aligned to the actual progress of the project to avoid a waiting duration that negatively influences the preparatory HR psychologically after their training because the preparatory workers may break their contracts for other jobs or the corporation has to pay extra support to them before the commercial operation of the project.

Fourthly, the plant machinery should be extremely neat and highly-qualified, other than being cumbersome with a big staff of low quality that results in many training efforts and costs.

Finally, operating trainees should be given proper remunerations and benefits.

Recommendations for PetroVietnam

Firstly, the corporation should perfect its system of human resource development for project management. It should provide a standardized model of project management for its projects as well as establish PMBs and businesses for management of specialized projects staffed by qualified and experienced people. The HRs for PetroVietnam's projects should be managed consistently, instead of being separately managed currently by individual projects, and sent to specific projects in relevant management phases.

Secondly, there should be establishment of corporate databases, standardized procedures and plans for project management (for example, management plans of integrated management, scope, progress, costs, quality, personnel, communication, purchases, and risks) that are applicable to PetroVietnam's projects.

Thirdly, the key personnel of project management should be given title-based training courses of project directors in line with international standards.

Fourthly, the project management staff should be properly appointed and used in order to retain them, especially in the final phase of the projects.

Fifthly, the corporation should apply Level 2 of the Multi-Level Learning approach so that the project directors can continuously improve and update the processes and plans for project management; and Level 3 of the approach for its senior leaders' performance review and adjustment of the portfolio. Sixthly, PetroVietnam should organize conferences and seminars on project management, and specialized workshops on its specialized projects. Finally, the corporation should have proper and effective investments in upgrading its training institution and material facilities to the regional and international standards and, at the same time, develop a mechanism and policies for tight cooperation between its enterprises and the training institution.

CHAPTER 5: CONCLUSIONS

To meet its development demands, PetroVietnam has attached importance to development and use of its human resources along its strategy for production and business development. Realizing the importance of the human resources, PetroVietnam has developed and issued its human resource development (HRD) strategies for application in specific periods: Decision No. 2496/QĐ-DKVN dated 19 August 2009 on the Human Resource Training and Development Strategy of PetroVietnam, period 2009 - 2015 and orientation to 2025; and, Decision No. 363/QĐ-DKVN dated 24 February 2017 on the Human Resource Training and Development Strategy, period 2016 - 2025 and orientation to 2035. The corporation has developed a high-quality human resource (HR) of basic training, activeness, and creativity to meet its requirements of production and business. However, based on the analysis of collected document and direct interviews of PetroVietnam's focal projects conducted by this thesis indicate that the corporate development, management and use of its HRs for its focal projects remain much limited, not yet promoting or taking use of its advantages or providing relevant solutions and policies.

To deal with the shortcomings and limitations above, this research on "Strategy for development, management and use of high-quality HR in key investment projects of PetroVietnam" has analysed the reality and provided solutions and strategies to develop PetroVietnam's high-quality HR for its focal projects, including both project management staff during project implementation to the operating HR for the commercial operation period. This thesis has suggested solutions for effective management and use of the HR in contribution to the success of the corporate projects, such as: i) recommendations for the PMBs in project management activities: paying more attention to recruitment and career development of their staff; relevant training courses should be provided on the basis of oriented training and development contents; applying the Multi-Level Learning approach; the planning of HRD should be based on the plan of HR quality; the management of career development should be based on individuals' basic merit indicators and lay the foundation for personnel planning, transfers and appointments within the PMBs; the welfare and remuneration system must be based on competence and merits and market-competitive; the preparatory function for operating a plant under commercial operation must be established under the umbrella of the corresponding PMB to have gradual access to the operating technology of the plant during the transition from the pilot running for examination to the commercial operation period; experienced PMB staff members should exchange and support the preparatory HR of the plant through training and conveying practical experience to the trainees; ii) recommendations for of the PMBs in management and operation of plants: recruitment criteria should be upgraded to recruit candidates

of qualified knowledge and command of foreign language, knowledge and experience; more attention must be paid to OJT at the existing plants of PetroVietnam while cooperation in the field should be made to other domestic and foreign ones; the time of recruitment and progress of training should be aligned to the actual progress of the project to avoid a waiting duration that negatively influences the preparatory HR psychologically after their training because the preparatory workers may break their contracts for other jobs or the corporation has to pay extra support to them before the commercial operation of the project; the plant machinery should be extremely neat and highly-qualified, other than being cumbersome with a big staff of low quality that results in many training efforts and costs; operating trainees should be given proper remunerations and benefits; and iii) recommendations for PetroVietnam: perfecting its system of HRD for project management; there should be establishment of corporate databases, standardized procedures and plans for project management that are applicable to PetroVietnam's projects; the key personnel of project management should be given title-based training courses of project directors in line with international standards; the project management staff should be properly appointed and used in order to retain them, especially in the final phase of the projects; the corporation should apply the Multi-Level Learning; organizing conferences and seminars on project management, and specialized workshops on its specialized projects; and the corporation should have proper and effective investments in upgrading its training institution and material facilities.

Compared to the other authors' research in the field and even PetroVietnam's strategy for HRD, which focus on research of general issues, strategies and solutions of HRD in organisations, this research has pointed out the reality through its data analysis, survey and direct interviews. This research has provided solutions for development of a high-quality HR, improvement of the organisation of project management, and proper use of the HR to avoid wastes and take maximum use of the existing qualified and experienced one.

Seeing the fact that the HRs of PetroVietnam's focal projects comprise i) that for project management (i.e. phase 1) and ii) that for their commercial operation (phase 2 after the investments), which have not been developed, managed and used consistently, this research has provided respective solutions which can be generalised as follows:

Regarding HR for project management, the existing high-quality HR for project management should be developed; PetroVietnam should provide standardised processes for project management and apply the Multi-Level Learning approach to improve the efficiency of its project management and portfolio management.

Regarding HR for operating and maintaining plants, the effectiveness of recruitment and training should be improved through further cooperation between PetroVietnam, its training institutions and the direct employers so that PetroVietnam can properly and effectively invest in upgrading its training institution and material facilities to the regional and international levels. The direct employers (i.e. the PMBs/ the plant managements) should realize their role and responsibility for the cause of high-quality HR training and development. The training institutions in question (i.e. PVMTC, VPI, PVU) of PetroVietnam should keep improving their material facilities and training staff for HRD in order to provide in time sufficient HRs quantitatively and qualitatively for PetroVietnam's new focal projects.

Because of the limited time and size of the thesis, this research focuses only on PetroVietnam's focal investment projects and the sampling is accordingly limited to those projects that do not represent projects of other organisations or corporations. The fact that the findings of this research may therefore not be applicable to other organisations and businesses suggests another indepth research on impacts of implementation of strategies of high-quality HRD on the performance of investment projects in a larger context (i.e. on the national, regional or international scale).

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APPENDICES

APPENDIX 1: INFORMATION OF PETROVIETNAM

Vietnam Oil and Gas Group is a state-owned company. On June 18th 2010, the Prime Minister of Vietnam issued the Decision No. 924/QĐ-TTg accepting that it is the State-owned Single-Member Limited Liability Company whose international transaction name is PetroVietnam (PVN). PetroVietnam is a strong economic group in Vietnam which is known worldwide.

- ✓ Full name: Vietnam Oil and Gas Group.
- ✓ International transaction name: PetroVietnam, PVN for short.
- ✓ Headquarter: No. 18, Lang Ha Street, Ba Dinh District, Hanoi, Vietnam.
- ✓ Phone: 84-4-38252526.
- ✓ Fax: 84-4-3-8265942.
- ✓ Website: www.petrovietnam.com.vn; www.pvn.com.vn; www.pvn.vn
- ✓ Email: info@pvn.vn

APPENDIX 2: INTERVIEW QUESTIONNAIRE

Hello,

I am Ho Huu Trien, a master-degree student of Tampere University (Finland).

To conduct my master-degree thesis on *Strategy for development, management and use of high-quality human resource in key investment projects of PetroVietnam*, I am collecting information and data on the human resource of some projects. I have been luckily working in the PetroVietnam's environment of construction project management with many colleagues including you - a senior, qualified and experienced colleague in the field.

I would like to interview you about the reality of the human resource of your project. Your contributions are very important for the completion of my research. The collected information and data are used only for the purpose of my thesis.

Thank you sincerely for sharing.

Part I: Personal information

Please kindly provide the following information:

Name of PMB:

Your full name:

Gender:

Tel:; Email:.....

Position:

Years of experience in the field of construction project management:.....

This interview is conducted betweenand

Part II: Interview questions

Please answer the questions of either Section I or Section II below:

I. Questions for project management personnel

1. What is your profession in the project? How many staff members are there in your project?

2. Do you think that the staff of your PMB is sufficient in terms of size, competence and experience to implement the project successfully?

3. Can you identify the similarity and difference between the concepts of human resource development and human resource management?

4. Are you satisfied with the remuneration policies (i.e. salary, reward, etc.) of your PMB and PetroVietnam?

5. Is your PMB committed to give you a new job after the completion of this project?

6. Do you wish to work permanently for the PMBs of PetroVietnam? Why or why not?

7. Do your PMB colleagues often quit their job or start work for another employer? Do you know the reason?

8. Have you ever participated in any intensive training course on construction project management? Please name the courses you have attended?

9. Does your PMB regularly hold meetings for updates of legal documents on construction investment?

10. Are you informed of the strategies of PetroVietnam/your PMB for development, management and use of the human resource for PetroVietnam's focal projects?

11. How does your PMB develop, attract and retain its human resource?

II. Questions for plant operation personnel

1. Which division of the plant do you work for? What is the total staff size of your plant?

2. Can you briefly introduce your education and training before being recruited for the plant?

3. Can you briefly introduce your PVMTC training program and contents after being recruited for the plant?

4. What were your expectations after the PVMTC course? How does the course training support you at work?

5. Do you think that the material facilities and trainer's qualifications of PVMTC meet the actual technical requirements of the plant?

6. Is the OJT training similar to the actual operation of the plant? What are the differences and difficulties in your actual operation?

7. How long did it take you to enter into your formal employment contract with the company since your graduation from the training course? Did the slow construction progress, if any, affect your own plan?

8. Did the allowance for trainees cover your living standard?

9. How many of your fellow trainees were disqualified from the training course?

10. Do you think that the trainees had similar command of English? Did you have any difficulty in learning the English language and reading technical documents during the training?

11. How many people in your company were transferred from the previous PMB?

12. Have you got any suggestions and recommendations for PVMTC's recruitment and training of plant operation and maintenance?