Master's thesis

NTNU
Norwegian University of Science and Technology
Faculty of Economics and Management
Dept. of Industrial Economics and Technology Management

Bingyang Huang

Project Managers' Career Development in the Contract Research Organization

A Case Study Applying the Social Cognitive Career Theory Framework

Master's thesis in Project Management
December 2021

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Preface

The idea of this thesis is based on my background as a graduate of the Master of Science in Project Management program. Being a mechanical engineer before, exploring career development helps me gain the whole picture and build a professional identity for my future career path in project management.

This master's thesis has been written during the Autumn of 2021. This work is built on the specialization project thesis (Huang, 2021) as preliminary research. The work has been carried out and written at the Department of Industrial Economics and Technology Management (IØT), Norwegian University of Science and Technology (NTNU) in Trondheim, Norway.

I would like to thank my supervisor, Associate Professor Ola Edvin Vie, for providing patient and superior guidance to my thesis. Motivation and high-quality standards from you are highly appreciated.

I would also like to thank my family in China for supporting me during my master's study. Thank Frida Huang and Freddy Huang for coming to my life during this thesis writing, bringing me joy and strength.

A special thanks also to the researchers in my case company, without whom I could not have been able to contrive this master's thesis.

Abstract

A trend towards projectification of work has given rise to increasing attention in the implications of career development for project professionals in the contract research organization. To meet this trend, the purpose of this project is to understand how project managers experience their career development and how organization influence career development of project managers.

My study adapts the social cognitive career theory (SCCT) framework as a lens to investigate the complex interplay between different factors from individual and organizational aspects that form the project managers' career development.

The thesis answers the following research questions:

Overall RQ. How could project managers build their career through contract research projects in project-based organization (PBO)?

RQ1. How do project managers experience their career development in contract research organization (CRO)?

RQ2. How does contract research organization (CRO) influence the careers development of project managers?

I conducted a case study in the technology institute of a contract research organization, using semi-structured interviews with 25 project managers to collect data to analyze my theoretical propositions. My revised new SCCT framework has practical implication for project practitioners to build and flourish their career, and emphasis the key factor in organizational influence which has significant impact on career development of their project managers. Project practitioners need to be proactive in managing their careers, while project-based organizations need to see the importance of developing specialization in career model for their project managers. Moreover, this thesis presents theoretical implication for the integration of career literature and project management literature and enriches the field of human resource management and project-based organization domain in the academy.

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Abbreviations

CRO – Contract Research Organization

HC – Human Capital

HR – Human Resource

HRM – Human Resource Management

PBO – Project-Based Organization

PM – Project Management

PMO – Project Management Office

POS – Perceived Organizational Support

PPM – Project Portfolio Management

SCCT – Social Cognitive Career Theory

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1 Introduction

An increasing number of industries, sectors, and organizations develop new organizational structures and dynamic working environments led to the increasing use of the temporary work form-project to deliver products and services (Turner et al., 2010). Jobs are shifted from the conventional functional organization into the modern project-based organization, in which project management is now vitally carried out to deals with greater complexity of process and politics through new authority systems, organizational structures (Whitley, 2006). Project management is one of the most common management assignments among professionals in contemporary organizations. In some project-based organizations, projects might be essential as separate units with their own profit statements. The growing importance of projects makes project managers becoming increasingly important and comprise a major part of organizational competencies today (Turner et al., 2008). In the project-based organization, project managers are often come from a diverse range of professions and backgrounds, which may lack the required competencies in project management, and are often accidentally assigned to temporary roles bonded with inherent transient projects within an organization, or across different organizations (McDonald et al., 2005). Many of them express feelings of stress, work overload, and the intention to leave for other managerial positions (Lindgren & Packendorff, 2009). Knowledge workers are the main competitive force within contract research organizations (Dul et al., 2011). It implies that contract research organization is more dependent on their employees than other resources in the project-based organization, like capital and equipment (Alvesson, 2000).

The temporary uncertain discontinuous project roles arise an increasing demand for qualification and motivation. However, the extensive body of knowledge on the competencies of effective project managers (PMI, 2013) gives little insight into the career paths of how they develop these required competencies. Meanwhile, the project managers often find it is difficult to access career planning and development in the contract research organization, due to the time pressure from the transient nature of project roles and the potentially unclear reporting relationship by the movement among a range of projects in the complex organization structure (Lloyd-Walker et al., 2016). This creates a need for project managers today to be more proactive and take initiative to plan and pursue their own careers through building expertise and networks to ensure future employment. In other words, career development for project managers are becoming unclear and problematic, as careers no longer follow a traditional course in the

functional organizations which viewing careers in terms of promotion upwards and subordinates, but a continuous process of learning and successful deliveries (Bredin & Söderlund, 2013). The uniqueness of project managers' career is determined by the temporary assignments as well as deficiency of formal positions, also career models in the contract research organization have not yet been developed (Hölzle, 2010).

Although the importance of project management is nowadays widely acknowledged and more people than ever before are pursuing unique careers in this field, the implications for project managers' careers have only received little attention in research and practice in the last two decades (Keegan et al., 2018). Meanwhile, it is remarkable that HR seems to play such a small role in the perceived support for project managers' career development (Bredin & Söderlund, 2011).

As a meta-research in the multidisciplinary field in HRM-PBO link (Huemann et al., 2007), the integration of career and PM focus on single HRM practices in the organizational level, such as an emerging study which mobilizes career theory to explore how project professionals experience and construct their careers (Lloyd-Walker et al., 2016). Complexity, chaos, and nonlinear dynamics career development theory (Bloch, 2005) developed and explain how careers unfold today. Notably, Shenhar and Dvir (2007) stress the importance of developing training programs with career models for project managers to ensure the motivation of competencies developing and the retention of the project managers' career path. Hölzle (2010) highlights the implementation of career models for project practitioners, and further address the importance of alignment between qualification and a formal career level.

The research on project managers' career development in a CRO context is therefore urgently needed. On the one hand, is valuable to understand the complex processes and system involved with project professionals' career development, to spearhead their motivation and career progression, as well as achieve the success of their projects and organizations. On the other hand, further integration of the literature on PM and career also benefits the careers literature by bringing in unique insights that emphasize the growing importance of context-PBO (Akkermans & Kubasch, 2017).

1.1 Research Question

In line with the calls of study in project managers' career development, it raises the overarching research question: *How could project managers build their career through contract research projects in project-based organization (PBO)?* Sustainable development among individuals and organizations is the goal of HRM (Huemann, 2016). It implies the importance of aligning project managers' career aspirations with organizations' requirements for project managers' development. I take this stance, and the purpose of my thesis is therefore to gain a better understanding of individual project managers' career experience and organizational career set up in the PBO. Based on this, the problem statement can be elaborated further and expressed from two dimensions as follows:

RQ1: How do project managers experience their career development in contract research organization (CRO)?

RQ2: How does contract research organization (CRO) influence the careers development of project managers?

In this thesis, I develop a career framework drawn from the key social cognitive career theory (SCCT) articulated by Lent et al. (1994), and investigate how six factors associated with the SCCT model steer the career progression of project practitioners from two perspectives: individual and organizational. SCCT framework helps to explain the similarities and differences in perception, interpretation, and response of individuals faced by career development (Lent et al., 2000). The results of my research will not only serve the integration of the literature on PM and career in the academy, but also practically inspire the project practitioners who contribute to the career development themselves in the CRO context, and even more influence on the organizations to create an environment that will attract, develop and retain the project managers they need for success.

1.2 Thesis Structure

Figure 1-1 visualizes the structure of my thesis. Chapter 1 start by introducing the relevance of theoretical foundation and need for research within the field, as well as making research questions. Chapters 2, 3, and 4 are reviews of former relevant literature that has been used as the theoretical foundation for this thesis and my research questions. Propositions for how career

development in PM are illustrated in Chapter 3 and 4 with the related six factors in the modified SCCT framework. However, Chapter 3 and Chapter 4 are presenting the modified SCCT framework respectively from two perspectives according to my sub-research questions. Figure 1-2 below shows the structure of answering research questions. In Chapter 5, the methodology of data collection will be elaborated as well as my personal reflection of this research. Empirical findings are presented in Chapter 6. In Chapter 7, I will exam my theoretical propositions with empirical data. Then revisiting the theories to discuss the theoretical implications. In the end, answering sub-research questions separately. In Chapter 8, I will conclude my overall research question, evaluating the limitations of my research, and giving suggestions for further research.

In the following Chapter 2, I present a review of former key constructs, literature, and theories linking the domains of PM and Careers which will be used as a basis for my study on project managers' career development.

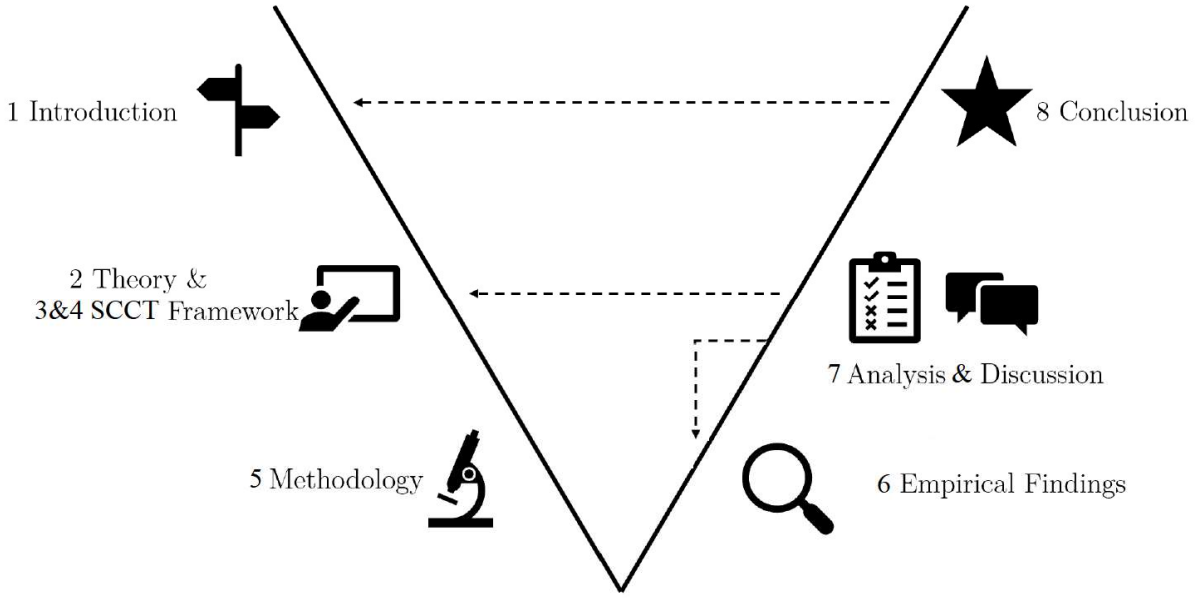


FIGURE 1-1 THESIS STRUCTURE

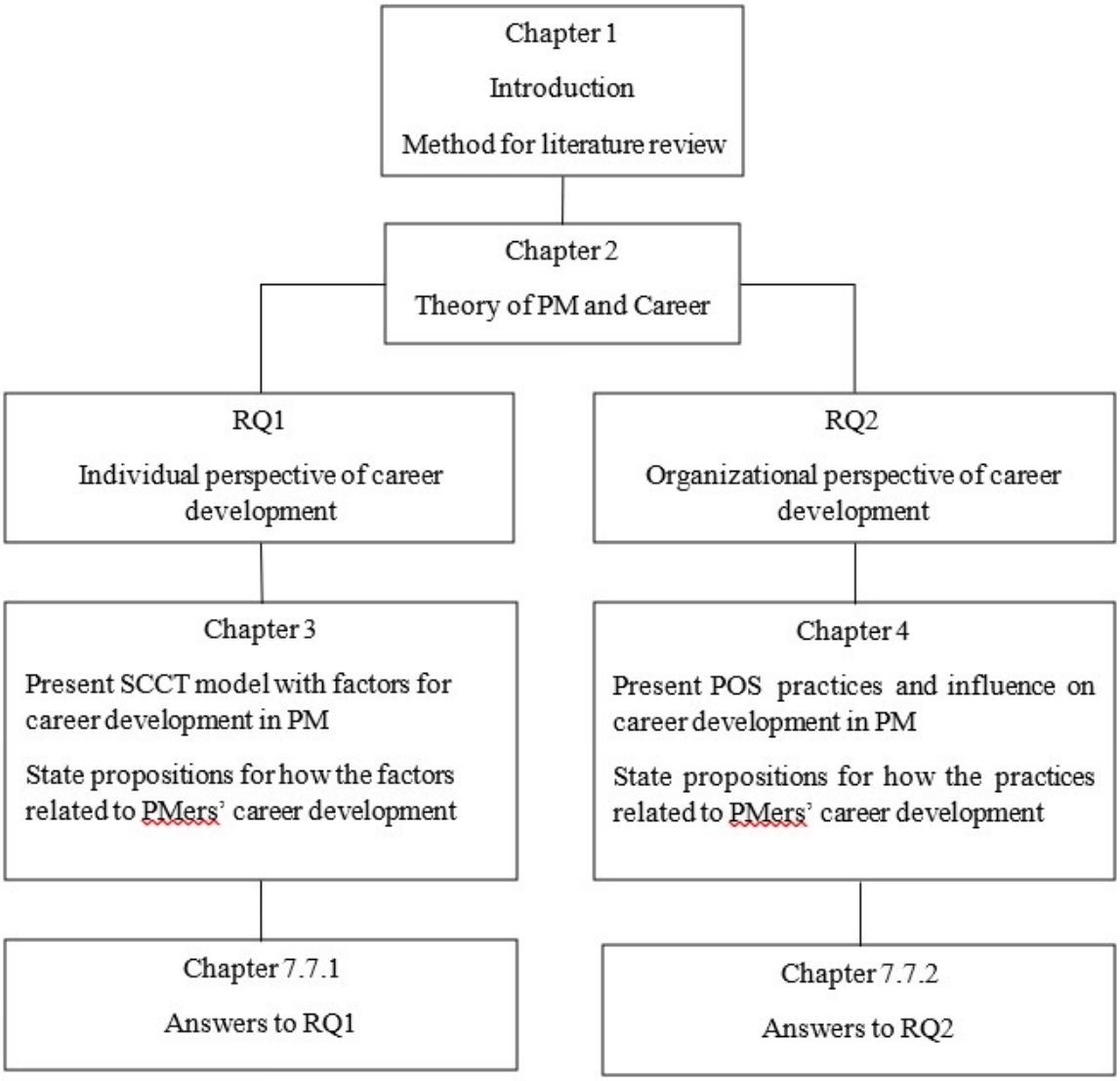


FIGURE 1-2 STRUCTURE OF ANSWERING RQS

2 A Career in Project Management

As mentioned in Chapter 1.1, the research questions in my study are as follow:

Overall RQ. How could project managers build their career through contract research projects in project-based organization (PBO)?

RQ1. How do project managers experience their career development in contract research organization (CRO)?

RQ2. How does contract research organization (CRO) influence the careers development of project managers?

To explore the reality of career development in project management, a career is necessary, one has to understand the theory about career and career development. Besides, the project-based organization offers a unique type of context, with its projectification of work (Lindgren & Packendorff, 2006), which have led to new and different models of career. To get answers on what is career development in PBO, especially in the context of CRO, the following subchapters are necessary.

Here, this chapter starts by conceptualizing the project, project-based organization, and project-based work. Then, go further on exploring career, career path, career model in the particular CRO context. Finally, review career theories to find opportunities for integrating it with this project management research.

2.1 Project

There is an emerging consensus among the scholars that the specific context is important to understand the project. In this paper, I perceive projects as temporary organizations amongst project management theories (Turner & Müller, 2003), enabling me to draw on insights for a career in a project-based organization. There are time limits for the temporary organization to deliver a beneficial change, which creates the urgency to the project and give rise to career uncertainty. The task is unique, novel, and transient, as no project will be the same, and every project calls for a different approach in a limited time. According to it, the project is considered to be less stable with complexity and uncertainty as to its inherent part (Whitley, 2006). Recurring temporary projects are embedded into a permanent organizational context, required

resources include materials, economic, equipment, and personnel. Project members with different competencies are chosen especially for the task with new job functions, who may from different functional units in the organization, or external organizations. This implies an inherent tension between the temporary project and the permanent organizations in coordinating processes, resources, and capabilities.

2.2 Project-based Organization

In organization literature, new and flexible works structures within organizations are increasingly emerging as a project-based form in a long time. Galbraith and Galbraith (1977) analyzed a continuum of organizational structure, ranging from line through the matrix to the pure project organization, alone with the authority distribution between line and project organization. In order to make the concept more concrete, I clarify a differentiation between a project-based and a project-oriented organization, which are often used synonymously. Bredin (2008) considers project-oriented organizations largely remain functional structures but use temporary projects to carry out their work by the increasingly strategic choice, while the project-based organization is the one which focuses on the project perspective organizational structure and undertakes projects as core business to deliver bespoke products or services to customers (Lindkvist, 2004).

2.3 Project-based Work

Lindgren and Packendorff (2006) point out that, as a result of economic and technological change in globalization, project management is now carried out across industries, with project-based work becomes a vital form in all sectors of the economy. The new and different career in project management becomes a result of the temporary uncertain discontinuous project-based work.

Project team members are by their nature temporary due to the duration of the project. Regardless of whether permanently employed by the organization and assigned to a project, there is an acknowledgment of uncertainty and discontinuity inherent in the project-based work (Braun et al., 2012). The uncertainty indicates a boundaryless career in which individuals embrace uncertainty and change their career direction (Briscoe & Hall, 2006). The discontinuity demonstrates a general acceptance of increased temporary, contract, or self-employed

employment in recent years, as a result of outsourcing (Connell & Burgess, 2006). Moreover, Paton et al. (2010) refer project management as the accidental profession, according to the fact that people have been chosen to the project-based work, despite they have not expected to work as projects managers in the profession when they entered the organization and lack of the required competencies in project management. However, Manning (2010) points out that although project works are temporary, the interpersonal and inter-organizational network in which embedded may be more enduring to support future project assignments and career progression.

As a result, such uncertain discontinuous work inherently challenges the individual career path and organizational career development. There is evidence that supports from the contracted organization is usually limited so that those who take project-based work are 'far greater loyalty to one's craft than to one's company' (Bredin & Söderlund, 2011), in which they believe themselves has the control over their career and related career development.

2.4 Contract Research Organization

In today's knowledge-rich environment, no organization has sufficient human talent inside its boundaries; no institution can cover all the science disciplines that contribute to its product offerings; and large companies usually cannot control the end-to-end production processes (Chesbrough, 2003). As a result, there is trend that companies no longer rely solely on their internal R&D capacity. Instead, organizations are forced to increase their R&D capacity by collaborating and sourcing in from other institutions – Contract Research Organization (CRO). Markman et al. (2008) define this mode of research and technology commercialization as Contract Research. Because widely distributed contract research reduces costs related to organizing, the rates of research, technology development, and appropriation are accelerating. On the one hand, it promotes diffusion of technologies from universities to industries. On the other hand, it raises public-private research partnership and public investment in research programmes.

Knowledge workers are the main competitive force within CROs (Dul et al., 2011). It implies that CRO is more dependent on their employees than other resources in the PBO organizations, like capital and equipment (Alvesson, 2000). This makes CRO more vulnerable towards turnover compared to PBO organizations which has knowledge storage in routines, such as

consultancy. Most academic researchers in the CRO are keen to retain their autonomy by ensuring that collaborative work with industries is conducive to—or at least compatible with—their research activity. CRO thereby develops a special structure to support their employees with high freedom on jobs.

2.5 Career, Career Path and Career Model

To understand the career, a differentiation among career, career path, and career model has to be made, since these terms tend to be used ambiguously. Moreover, the focal point of career development is a career. In order to have an insight into the reality of career development, it is important to understand the fundamentals of a career.

In recent years, Baruch and Rosenstein (1992) define career as a "process of development of the employee along a path of experience and jobs in one or more organizations". The project, as a temporary organization, gives rise to career uncertainty. As a result, the conception of career is further built and changed towards a world of temperature projects, shown that career becomes more open and diverse, while the structure and control from employers become less and people become more self-reliant (Baruch, 2004). On the one hand, these changes in career implied the trend of career progression shifting from a one-off lifetime professional choice towards numerous dynamic career choices covering entire life span (Stuer et al., 2019). On the other hand, it also indicates a shift towards a new employer-employee psychological contract which is focused on employability and opportunities for self-development (Rousseau, 1995). The evolution of career calls for a need to explore further the project manager's career, in order to give an insight into career development from both individual and organizational perspectives, how project managers steer their career path, and how organization support their careers.

Walker (1976) views career from subjective and objective parts, where the subjective career is the individual perception of career experience, and the objective career is an evolving sequence of an individual's work experience. Based on this, he differentiates the terms of "career", "career path", and "career model", arguing that career path unfolds over the objective sequence of an individual's work, which is opposite to the individual's subjective perception of career experience, while career model is a generalized or idealized progression in the frame of organization.

This research is concerned with both subjective and objective career, exploring the project managers' subjective perception of their career experience, and the organization's objective formalized career model for project management. A career model which aligned with an individual's career perception is of vital importance for providing occupational identity and motivation to develop towards the organization's requirements.

2.6 Career Theory in Project Management

More youth than ever before are now pursuing the project managers' careers, however, there is a current scarcity of understanding in the unique career of project professionals (Bredin & Söderlund, 2013). Therefore, this gap is urgently needed to address by reviewing existing key career theories integrated with project management, as an important organizational context.

In this chapter, firstly I review the widely cited and influential career literature in the past years, then conceive the career development definition in my study based on these profound works of literature, as well as choose an optimal conceptual starting point for the integration with project management. In recent years, the trend of career research puts more emphasis on the individual agency in the self-managed career, and the importance of employability with proactive career behaviors (King, 2004).

First, DeFillippi and Arthur (1994) define a concept of boundaryless career as "sequences of job opportunities that go beyond the boundaries of single employment settings." In this theory, the focus is on the opportunities of career mobility (physical mobility) and independence from employers (psychological mobility). It indicates that limits or restrictions in career are no longer exist, employees embrace uncertainty themselves. Furthermore, Eby et al. (2003) address career capital for career success in three ways of knowing: knowing why (related to individual reflection and career identification), knowing whom (about internal and external networks), and knowing how (refers to individual competencies and organizational knowledge base).

Second, Hall (1976) addresses the protean career theory with the focus on how individual careers develop over time and social spaces, stressing that the individual has largely taken control over their career, career choices, and related development. It indicates self-awareness of competencies and adaptability to the change are the foundation to achieve career success.

Third, Savickas (2002) develops career construction theory (CCT), which consists of three concepts: developmental contextualism, occupational self-concepts, and developmental tasks, and viewing career was constructed by individual continuous adaptation to a social environment with the goal of personal and environment integration.

Forth, Patton and McMahon (2006) develop a systems theory framework (STF) to investigate the impact of the external environment and the intrapersonal impact of individuals on career development. This framework enables analyze career development as a dynamic process, in terms of recursiveness, change over time, and change, with a systemic interaction between two open systems: individual and the external environment.

Fifth, Van der Heijden and De Vos (2015) define the sustainable career perspective (SC), which is a relatively new perspective, emphasizing not only the individual agency but also the contextual influences from a life span perspective, with three key outcomes: happiness, health, and productivity.

Last, social cognitive career theory (SCCT) articulated by Lent et al. (1994) emphasizes the complex interrelations among individual cognitive processes, contextual elements, and self-regulatory behaviors.

Since this thesis is mainly focusing on the individual and organizational perspectives as mentioned in the research questions in Chapter 1.2, it is not relevant to present the social environment perspective. It can shortly be mentioned that in addition to showing perspectives of both individual and organizational, CCT, STF, SC, and SCCT also describe a social-environmental context that influences career development. Table 2-1 compares these dominant works of literature mentioned above, in relation to career development definition, and their main focus on the individual and organizational perspectives.

TABLE 2-1 CAREER DEVELOPMENT LITERATURES

Theories	Definition	Focus	Individual	Organization
Boundaryless career (DeFillippi & Arthur, 1994)	"Sequences of job opportunities that go beyond the boundaries of single employment settings"	Mobility		
Protean career (Hall, 1976)	"a process which the person, not the organization, is managing. It consists of all the person's varied experiences in education, training, work in several organizations, changes in occupational field, etc."	Individual agency	x	
Career construction theory (CCT) (Savickas, 2002)	Careers are actively constructed by individuals in adapting to their social environment.	Career adaptability	x	x
Systems theory framework (STF) (Patton & McMahon, 2006)	Career development is a dynamic process through a range of influences from the individual system and environmental system.	All concepts of career development can be positioned and utilized in theories or practices.	x	x
Sustainable career (SC) (Van der Heijden & De Vos, 2015)	"Sequences of career experiences reflected through a variety of patterns of continuity over time, thereby crossing several social spaces, characterized by individual agency, herewith providing meaning to the individual."	The person-centered agency, systematic context, and time dimension affect career sustainability.	x	x
Social cognitive career theory (SCCT) (Lent et al., 1994)	"A complex array of factors … operate in tandem with people's cognitions, affecting the nature and range of their career possibilities."	Interaction between individual cognitive processes and contextual factors in driving self-regulatory behaviors.	x	x

As Table 2-1 shows, the definitions of career development from these authors are to some degree correlated to each other. Based on these profound insights, my main conception of career development borrows the idea from SCCT with other theories as a complement, arrived at the following definition:

Career development is a sequence of self-regulatory behaviors determined by the dynamic interplay between individual attributes and organizational factors, that facilitate individuals to develop competence and achieve career success through work experiences to ensure their employability.

After reviewing the selection of dominant career theories shown in Table 2-1, not all of them fit my study. First, the boundaryless and protean career miss the perspectives of both individual and organizational. Second, CCT focus on career adaptability between an individual and its environment, however, it misses the examination of the causality between the independent variables in the project managers' career development. Third, STF takes all career concepts into account which misses the focus on an in-depth study of the interplay between limited career factors. Forth, SC is focused on a systematic context over a life span dimension across various organizations, which is too broad for my study, that emphasizing the individual and organization level, over the employment period in its organization. Last, SCCT is believed that particularly relevant for my thesis, since it explicitly clarifies both individual and organizational factors that influence career development, with a focus on the interactions among core variables that determine several self-regulatory behaviors.

In my study, using SCCT in the CRO context, helps me develop an in-depth analysis of the mechanisms and procedures of developing a sustainable career for the project managers. Besides, concepts from other theories as a complement will also be mobilized from time to time. In order to gain an understanding of career development with this optimal theory, the context is needed. The following chapter will introduce the SCCT in light of the CRO context and reconsider the interplay factors identifies in the original framework.

3 SCCT in Project Professionals' Career and Factors

It is acknowledged that two aspects participate in career development, the individual and organizational side. In order to explore the project professionals' subjective perception of their career paths and the organizational objective influence, this chapter has adopted social cognitive career theory (SCCT) and modified it as the main theoretical framework for my study, shown in Figure 3-1. The modified SCCT framework presents the factors which impact on career development for project managers in the CRO. Through analyzing different variables and their interplay in SCCT, this research contributes to unfold the reality of career development in the project management. The research questions addressed in this chapter are as follow:

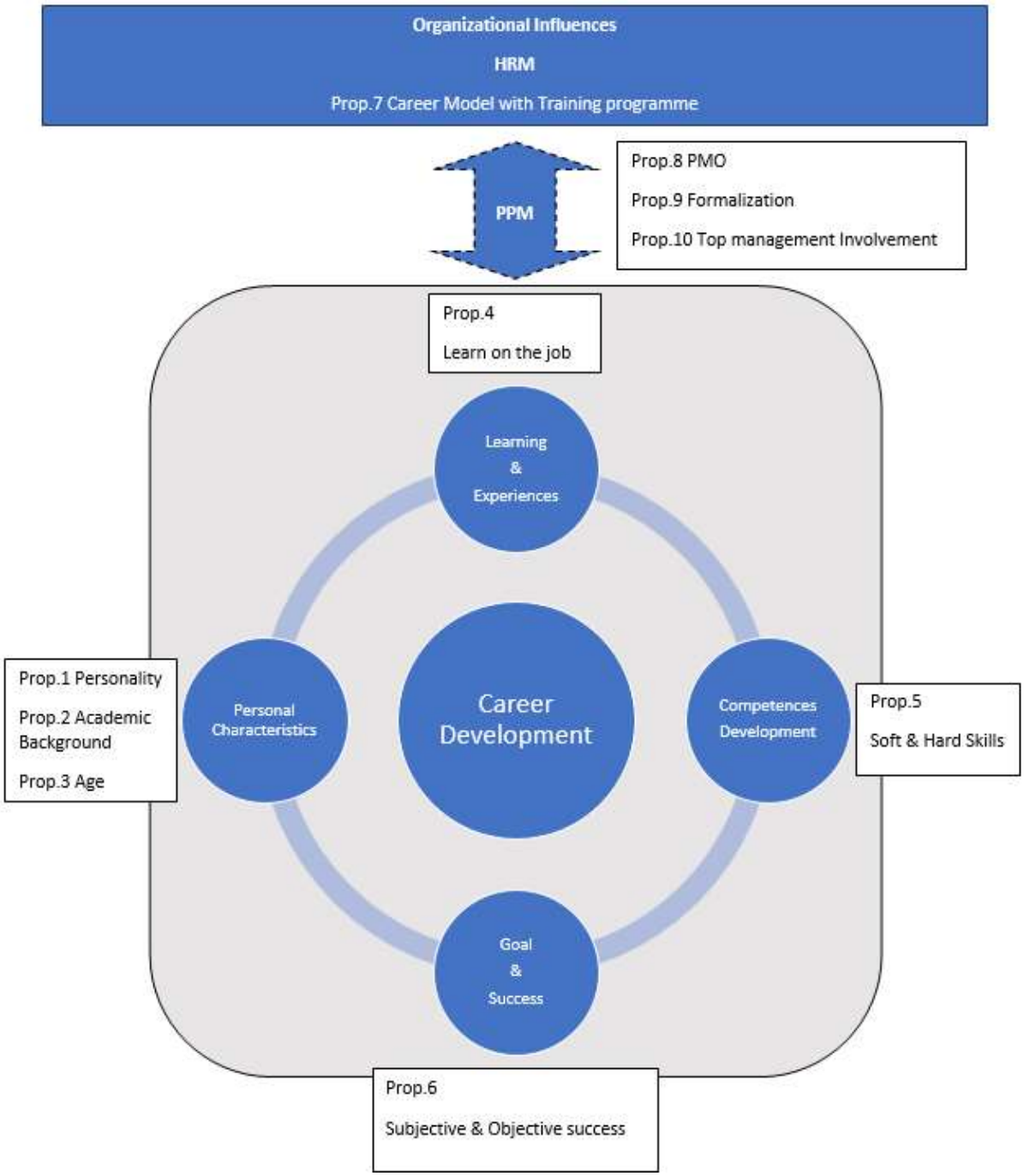
RQ1. How do project managers experience their career development in contract research organization (CRO)?

The modified SCCT articulates cognitive variables of learning and experience, such as career competencies, goal and success, and their complex interactions with personal characteristics (e.g. personality, academic background, age), and organizational influences (e.g. HRM, PPM) which may provide support or shape barriers for setting up career goals to achieve individual relative degrees of career success.

Interactions are complex considering the individual subjective interpretation and response. However, the essential hypothesis underlying SCCT is that multiple career variables determine self-regulatory behaviors as the outcome of their complex interactions (Lent et al., 2002). For example, self-efficacy based on competence development acting together with career goals to shape career success, as one of career development processes. Then the career success potentially feeds back and influences on competence development and career goals. In the modified SCCT, the career learning experience is influenced by personal characteristics and organizational influences, and then form competence development and vocational goals which are two core variables form the determinants of individual agency. Career goals, as another career development process, are a critical predictor of career success. The realization of career success is considered to be the output of the interplay between two core variables, competence development and career goals. In scenarios where people feel competent and expect corresponding incentives, they are likely to formulate their career goals toward certain attainments. Alongside personal characteristics, the organizational influence also plays an

important role impact on vocational goals, because individuals tend to formulate their interest on objects in which they have experience.

FIGURE 3-1 MODIFIED SCCT FRAMEWORK OF CAREER



SOURCE: MODIFIED ON MODEL DEVELOPED BY (LENT & BROWN, 2006)

It is worth noting that personal goals may be the same or similar to outcome expectations. The qualitative difference is goals are an essential aspect of the individual agency which help guide people to perform and sustain certain behaviors based on their beliefs of outcome expectation, that could comprise extrinsic outcomes (for instance, contribution, expected financial rewards, and promotion) and intrinsic outcomes (for instance, self-satisfaction, self-identity, anticipated social recognition and approval) (Hölzle, 2010). Considering the similarity between personal goals and outcome expectations, in the following subchapters, personal goals are chosen to further analyze instead of outcome expectations in the modified SCCT framework.

3.1 Personal Characteristics

Characteristics of the person relevant to career development include various aspects, here I illustrate three influential factors which has attained a certain amount of empirical support after all these years.

3.1.1 Personality

As personal competencies, the core personality characteristics compose a person's capability to do a job (Heywood et al., 1992). As a complementing study of SCCT, it can give a better understanding of how personality influence career choice in career development.

The socio-analytic model of identity development (Hogan & Roberts, 2004) explicates a reciprocal influence between personality and the development of occupational choice. On the one side, personality influences an individual reaction to experiences and adaptation to their context, which steering the career choice. On the other side, the individual experiences, which are built on self-selecting educational and work environments by occupational choice, reciprocally have an effect on the development and refinement of personality over time. One of the key mechanisms contributing to this reciprocal influence is the gravitational hypothesis (Braun et al., 2006) which states that individuals are pulled towards careers that are consistent with their level of cognitive ability.

In order to have a better understanding of personality, Holland (1997)'s RIASEC model is brought in, which developed a parallel set of categories for individual personality type and occupational classification to facilitate the process of career choice. Six distinct patterns of career orientation are documents: Realistic, Investigative, Artistic, Social, Enterprising,

Conventional. Holland explains the six types as following: The Realistic type likes engineering jobs such as mechanic, has the mechanical ability, but may lack social skill. The Investigative type likes scientific jobs, has scientific ability but often lacks leadership ability. The Artistic type likes artistic jobs, has the artistic ability, but often lacks clerical skills. The Social type likes social jobs, has social skills, but often lacks mechanical and scientific abilities. The Enterprising type likes enterprising jobs, has leadership ability, but often lacks scientific ability. The Conventional type likes conventional jobs, has the clerical and arithmetic ability, but often lacks artistic ability.

Holland (1994) further describes a hexagon model shown in Figure 3-2. The hexagon illustrates the relative distance among personality types. Profile patterns which composed of adjacent types of personality are most consistence (e.g., Realistic-Investigative, Enterprising-Social, etc.); on the contrary, profile patterns which composed of opposite types of personality are least consistence (e.g., Realistic-Social, Investigative-Enterprising, etc.). The hexagon also defines the consistency of an environment in the same way, as well as the congruence between person and environment (e.g., the most congruent situation for a Social person would be within a Social environment, however the most incongruent situation for a Social person would be within a Realistic environment).

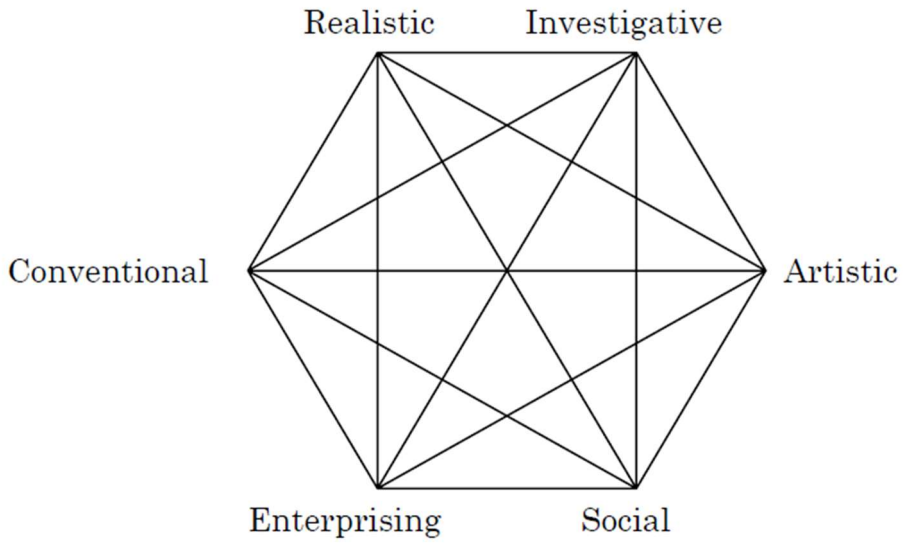


FIGURE 3-2 HOLLAND'S HEXAGON MODEL FOR VOCATIONAL INTERESTS

Holland also asserts that most individual's personality has a unique combination of several of the types. The dominant type determines the primary direction of vocational choice (e.g., a person with an Investigative personality would tend to choose an Investigative occupation). The secondary and tertiary personality types define a particular subgroup which refer to a personal choice in more specific manner (e.g., a person who aspire to Investigative occupations, specifically prefer to subgroups of Investigative-Social or Investigative-Social-Realistic). Hence, the nature of a person's occupational performance, for example, what a person prefers to do on a particular job, comes from his or her personality types.

Paton et al. (2010) apply the RIASEC model, find that many project managers start by accident, but the majority enjoy and choose to remain in project work. It could be linked to their personality that project managers with a Social-Enterprising orientation prefer to participate in people-oriented activities rather than conventional routine work.

Therefore, I propose the following proposition:

Proposition 1: People who have a personality type in Social-Enterprising more likely to prefer a career in project-based organization.

3.1.2 Academic Background

Cano et al. (2017) state significant differences for career choices in the study fields, education level and academic performance. Four different vocational choice are categorized: entrepreneur, employee (academic, public, private, NGOs, among others), successor, and others. They state that researchers are formed by the groups of more autonomous academic entrepreneurs and academic employees who coevolving with the research-based organization and spin-offs.

The field of study is a decisive factor for career choice. Cano et al. (2017) claim that in the study fields of administrative sciences and technical background, the interest to create business prevails; while in the study fields of social sciences, the interest to be an employee predominates. This largely explained by the approach of each field of study in the development and commercialization of products and services.

Another factor that can influence the career choice is the education level. Cano et al. (2017) illustrate that as the education level increases, the long-term interest for being entrepreneurs

decreases. Among others, doctoral students have the equal interest to be an entrepreneur, an employee, or others. This indicates that students with higher education level find more alternatives and expect to find job opportunities corresponding to their knowledge level.

In addition to the education level, the academic performance can also influence the career choice. McGee et al. (2009) mention that students with a high academic performance have stronger interest to be employees compared to other students. Therefore, I propose the following propositions:

Proposition 2a: People with the study fields of technical background are predominated employed in the technology industry.

Proposition 2b: People with higher education level and high academic performance expect to a career linked with research.

3.1.3 Age

As part of a personal characteristic, age implies the generational differences, which are related to qualifications and the expectation of organizational support. Mlodzik and De Meuse (2010) adopts the categorization of three generations who form the current workforce in project management: Boomers, Generation X, and Generation Y. NetGens (GenX and GenY workers), as the younger generation, tend to pursue more education, and particularly develop themselves to project management. Besides, they value self-development in a flexible work arrangement for long-term employability. This flexibility, in the end, provides the opportunity to pursue a different career path, as lateral moves within the organization or across organizations. Boomers, on behalf of senior project professionals, value job security and provide career mentoring for the transfer of intergenerational project experience, expertise, knowledge, and skills. Similarly, the motivation and individual agency can change with age in specific phases of the lifespan, for instance, the seniors tend to have lower expectation of organizational support and higher individual agency (Zacher & Griffin, 2015).

Furthermore, Akkermans et al. (2018) suggest that disruptive and extraordinary career shocks, such as being laid off and getting an unanticipated assignment, have fairly different impacts on a person determined by the timing, which refers to the earlier or late career. Moreover, Savelsbergh et al. (2016) observe the different content from the learning experience in the

development phase of project professionals. In the first learning experience, project professionals tend to gain self-insight, and the practice of project management, with professional knowledge and hard skills growing. Compared to the later learning experience, senior project professionals tend to gain self-efficacy, and a broader view of the project role, with soft skill development in a more people-oriented way of thinking and acting. In line with the above reviews, I form the following propositions:

Proposition 3: Senior project professionals have a lower expectation of organizational support and lower mobility rate.

3.2 Learning Experience

As the cognitive process in the SCCT, I adopt the empirical finding from Savelsbergh et al. (2016), to address the project managers' learning experience by categorizing three types of career development with two learning routes, shown in Table 3-1.

TABLE 3-1 PROJECT MANAGERS' LEARNING EXPERIENCE

Type of development / Learning route	Planned	Self-guided	Spontaneous
Formal	Organizational training program. Work opportunities. Internal accreditation.	Personal academic qualification. Education.	
Informal	Organizational mentoring. Web-based learning resource.	Personal learning and reflection.	Accident situation

Formal learning is a part of professional development through training and education in the field of project management certification and competence, while informal learning takes place mainly on-the-job, involves learning from others and self-reflection from personal experience. Much professional learning occurs on the job (Day et al., 2014), which is important for the

development of those who have to deal with new and uncertain in complex jobs, which especially fit for project managers. Crawford et al. (2006) point out that formal learning often does not match the complexity of particular projects, so that focus on project managers' development should be put on informal learning.

The planned development is the organizational approach for a timely and effective development for project managers, while self-guided development refers to the individual effort to promote themselves. Spontaneous development refers to the learning occur naturally and automatically, mainly happens in accidental situations. Huemann et al. (2004) argue that planned development seems unrealistic in a project to know exactly what has to be learned and spontaneous development is the main way for the development of project managers. In order to ensure the quality and pace of the development paths, there is a need for a proactive and reflexive informal learning routine to spur spontaneous learning to become more guided and planned.

Proposition 4: A spontaneous development with informal learning is the main experience of project professionals' careers.

3.3 Career Competencies

Mastering career competencies enables project professionals to become more engaged in their work, actively craft their work and careers, achieve career success, and increase their employability (Akkermans & Tims, 2017). Hence, it is important to understand what kinds of career competencies are needed for project managers to shape their career paths.

Gareis and Huemann (2000) describe generally project manager's competencies, such as project management and expertise, leadership, and social competence, and argues that many organizations match the needed project manager's competencies with a project classification, depending on the type and scope of the project, these competencies vary in their depth and breadth. Similarly, Hölzle (2010) suggests that such a match determined the project managers' career path levels with a trend as the hard skills like project management and expertise, decrease with a raising career level, the soft skills like leadership, social competence increase with a raising career level.

Career competence, known as one of the main career resources, consists of knowledge, skills, and abilities which can be developed by training and practices (Akkermans & Tims, 2017). It

gets distinguished by Crawford (2005) as one of the essential project management competencies models, referring to input competencies. Also, the know-how embedded in skills is important for boundaryless career progression (El-Sabaa, 2001). M. Turner (2016) reflects a recent research agenda of Rethinking Project Management (RPM), with a focus on the human side of project management and its positive impacts on the skills development of project professionals, which is beyond classical project management (CPM) and its iron triangle. Following RPM as a starting point, I address the career competencies from two perspectives of skills in this research: Hard skills refer to contents like project governance and tools, while soft skills refer to contents like interpersonal skills, leadership, and teamwork (Savelsbergh et al., 2016).

3.3.1 Hard Skill

My experience of project management education is very much embedded within CPM which assumes simplicity, linearity, controllability, and instrumentality, and has focused on the technical skills and achievement of the "iron triangle" (time, cost, and quality). Technical skill implies an understanding of methods, processes, techniques, and specialized knowledge in the use of tools and techniques from the specific discipline (Katz, 1991). The PMBOK® Guide perpetuates the CPM by promoting the technical or hard skills of project management. However, Winter et al. (2006) point out that the linear, rational, analytic approaches in the PMBOK® Guide fall short of supporting larger and more complex projects. Svejvig and Andersen (2015) assert that nowadays the project management research has moved from the hard paradigm to the soft paradigm in recognition of the growing complexity and uncertainty of the global business landscape.

3.3.2 Soft Skill

Thomas and Mengel (2008) argue that in project management, soft skills are largely ignored by CPM. However, managing personnel in a project environment is dynamic, complex, contextual, and diverse, which is demonstrated as soft skills. The Project Management Institute (PMI, 2013) published an updated skill set, referred to the "Talent Triangle", which consists of three skill sets: technical, leadership, strategic, and business management. The leadership in the new "Talent Triangle" could be considered as the human skill, primarily focus on working with people, enable the project manager to work effectively as a group member and to build a cooperative effort within the team (Katz, 1991).

Although soft and hard skills are interrelated, they can be developed independently. Scholar shows that soft skill of the project manager has the greatest influence on project management practices, while hard skill, relatively speaking, represented the least essential project manager's skill (El-Sabaa, 2001). I, therefore, put emphasis on soft skills with a proposition.

In general, project managers can acquire both hard and soft skills from their experiences, or through qualification programs, but a period for exercising and applying these skills are needed in order to transform competencies into expertise. Hobday (2000) claims that skills are built through the completion of projects, adding to the organizational and the individual competencies. Consequently, the organization needs to offer intrinsic and extrinsic incentives to foster consistent behavior.

Considering the temporary nature of the projects, the temporary–permanent dilemma often address issues about competencies development. When structures, project professionals are changing in the short-term, the organizational capabilities become important and have a purpose of repositories of the distributed competencies that goes beyond the individual projects, as the long-term and permanent feature in the organization. The project-based organization often develop a set of routines to manage knowledge learning and transfer the inter-project skills (Prencipe & Tell, 2001).

Proposition 5a: Soft skills are more essential than hard skills for project managers' competence development.

Proposition 5b: Young project professionals tend to pursue hard skills development in professional knowledge while senior project professionals develop more on their soft skills.

3.4 Career Goals and Success

As mentioned in the modified SCCT framework at the beginning of Chapter 3, personal goals to some extents are similar to outcome expectations (Lent & Brown, 2006), which include career direction, job opportunities, financial or social rewards, and desired levels of workplace performance. But personal goals also have a fundamental aspect of personal agency, which helps guide and sustain a person's behaviors in career development.

The original SCCT model defined performance and work-related satisfaction and well-being as factors of the career development processes (Lent & Brown, 2013), which concerned the attainments and persistence of actions to achieve career success in career development. Considering performance and satisfaction respectively constructs objective and subjective career success, so I use "career success" in the modified SCCT to articulate the career development.

Career success is common defined as "the accumulated positive work and psychological outcomes resulting from one's work experiences" (Seibert & Kraimer, 2001). Achieving career success is not an ultimate endpoint, but rather a lifetime continuing process, as the career outcome keep interplaying with other career development processes and feeding beck complex impact on individuals in different perspectives, for instance, the long-term goals seem to get more influence from the subjective rather than objective career success. Accordingly, it is essential to distinguish objective and subjective career success (Spurk et al., 2019). Heslin (2005) distinguishes that objective career success is related to confirmable attainments, such as financial rewards and promotions, whereas the subjective career success is related to individual responses to the career experiences, such as career satisfaction and recognition. Similarly, the predictors for objective and subjective career success are unlike. The former is mostly predicted by work experience, knowledge, and sociodemographic status, whereas the latter is more predicted by organizational support and stable individual identify (Ng et al., 2005).

Objective and subjective career success inherently are of interdependency, it is noticeable that conceptualization and assessment of career success have gain momentum over the last few years, especially the subjective career success has become predominant in the research trend (Akkermans & Kubasch, 2017). Mayrhofer et al. (2016) present and validate a model that captures three dimensions of career success: growth, design for life, and material outcomes. First, growth is focused on learning and developing. Second, design for life is about work-life balance, having impacts on others, and building a social network. Last, material outcomes are emphasizing financial success. This model of career success will be used later in the discussion Chapter 7.4 for capturing career success in project management.

Proposition 6: Subjective career success has a greater impact than objective career success on individual long-term goals in project management.

3.5 Summary

As mentioned before, this chapter is relevant to answer the research question as follow:

RQ1. How do project managers experience their career development in contract research organization (CRO)?

To summarize, I propose four factors in the SCCT that contributes to unfold the individual experience of career development in project management:

- *Personal characteristics*: Comprise of personality which impact the career choice; academic background which is relevant to the congruence between employees and organizational environment; and age which determines the performance, expectation of organizational support and mobility rate.
- *Learning experience*: Learning route combined with development type.
- *Career competencies*: The skills to perform project tasks.
- *Career goals and success*: Individual agency to achieve career attainments.

These four factors interplay with each other in the context of PBO, unfold the individual experience and facilitate the development of a project management career. Besides, the summary of propositions in this Chapter will be illustrated together in Chapter 5 after exploring the interplay from the organizational level. I propose organizational influences in SCCT but choose not to discuss in this chapter. It is related to another RQ, will therefore go further into the next chapter.

4 SCCT in Organizational Influences and Factors

Through analyzing organizational influences on project managers' career development in modified SCCT, shown in Figure 3-1 Modified SCCT Framework of Career**Error! Reference source not found.** at the beginning of Chapter 3, the research questions addressed in this chapter are as follow:

RQ2. How does contract research organization (CRO) influence the careers development of project managers?

I explicate organizational influences by analyzing predictors of project professionals perceived organizational support (POS) and its influence on their career success. In this part, organizational support practices, as predictors, are chosen from career-related human resource management (HRM) and project portfolio management (PPM) perspectives, considering the specific project management context.

As mentioned in Chapter 2.3 Project-based Work, in spite of the fact that project practitioners expect a certain degree of autonomy and empowerment, they still appear to struggle with project-related stresses, such as uncertainty, work overload, role conflicts, and time pressure, which are positively related to the turnover rates (Turner et al., 2008) and lead to the call for support from organization (Cao et al., 2014). However, scholars (Bredin, 2008; Bredin & Söderlund, 2013; Hölzle, 2010) indicate that the temporary project is hard to offer long-term development opportunities, as well as the organization may fail to provide adequate support to project managers.

Ekrot et al. (2018) stress that POS plays a significant role as a mediator between career development practices and employee outcomes, and it will induce a sense of obligation to reciprocate the organization. POS is defined as a 'cognitive assessment (i.e. set of beliefs) about organizational caring' (Shore & Tetrick, 1991). A high level of POS is manifest in the organizational discretionary forms of diverse caring actions for employees (Eder & Eisenberger, 2008), and implies producing favorable outcomes for both employees (e.g. career success) and organizations (e.g. reduced turnover, reach its objectives).

4.1 Human Resource Management and POS

With respect to HRM measures, I focus on the career model for project managers with qualification opportunities that enable them to further develop their project management competencies. Rhoades and Eisenberger (2002) argue that the provision of a formal career model communicating the organization values and employees' contributions by offering them development opportunities, thus related positively to POS. Qualification opportunities, referred as the existence and usage of specific training programs, are considered by most employees as a discretionary HRM practice aimed at developing their competencies, therefore may enhance the positive impact of a given career model on POS (Zhang et al., 2012).

4.1.1 Career model with qualification opportunities

As mentioned in chapter 2.5 Career, Career Path and Career Model, the career model is a generalized or idealized progression in the frame of the organization. The main reason for implementing career models is the motivation to attract and keep the talented project managers which organizations need, build project management competencies on a various level, and prevent the loss of project management knowledge. Moreover, career models provide different levels of project managers with a common language to communicate and a sense of professional identification with recognition for their competencies. A career model without aligned tailored qualification programs, existing as a superficial endorsement, may not be perceived as supportive for the project manager's roles (Bredin & Söderlund, 2013; Hölzle, 2010). Accordingly, qualification opportunities without a long-term career model might be perceived by project managers as a burdensome task aside from the high workload which targeted most for organization benefits rather than their career growth (Gavino et al., 2012). Hence, it suggests that HRM practices need to combine the career model with related qualification opportunities for positive career outcomes in project management.

The uncertainty in the project indicates a change in the career model from a traditional permanent organization. McDonald et al. (2005) imply that a traditional career model unfolded a chance to ascend in the career ladder to reach a higher position with a higher salary in the hierarchy, through moving from one related position to another in a sequence decided by the organization's functional structure. It is predicted according to the inherent job stability with an associated level of certainty. On the contrary, progression in projects, as temporary

organizations, is signified not only by job titles (e.g. project manager, project director, program director) that indicate increasing levels of responsibility, but by the type and nature of project assignments. It is noticed that the career model for project management should keep the minimum systems and procedures since career success is not just following a career model with training established by the organizations, but exclusively based on the project managers' ability to create and mark their career path (Larsen, 2002). Hence, project professionals are facing challenges in mapping out a clear career path and accessing the related qualifications required to progress their careers.

4.1.2 The design factors of career model

In accordance with a prior study from Bredin and Söderlund (2013), the career model is suggested to design in terms of:

- the number of project managers' levels
- the complexity of projects
- set competence, experience, and leadership requirements with qualification programs
- the given authorities of project managers

IPMA or PMI provides general guidelines for the level in career models. A formalized relation between the levels in the career models and the level of project complexity is various among companies and hard to get a systematic classification. All organizations have implemented extensive project management training programs on different levels in the career models, with relevant performance and competence review, in order to build and track project managers' competence. The project managers gain different authorities for projects, such as budget or disciplinary authority, which depends on the organizational setup of the project and the importance of the project manager in the organization.

4.1.3 Two archetypes of career models with qualification opportunities

Bredin and Söderlund (2013) suggest two archetypes for the development of career models in project management. One is the 'competence strategy model' which primarily focuses on the organizational need, competence strategy, and relative qualifications of project requirement. It is used as a tool to support project assignment processes with resource allocation. Another one

is the ‘talent management model’ which puts primary focus on the individual needs. It is used to find ways of providing training opportunities for project managers’ development.

4.1.4 The Integrated Career Model and Perceived Career Experience

Hölzle (2010) puts forwards a matrix to integrate organizational model setups with project managers' perceived career experience in the organizations, shown in Figure 4-1 below.

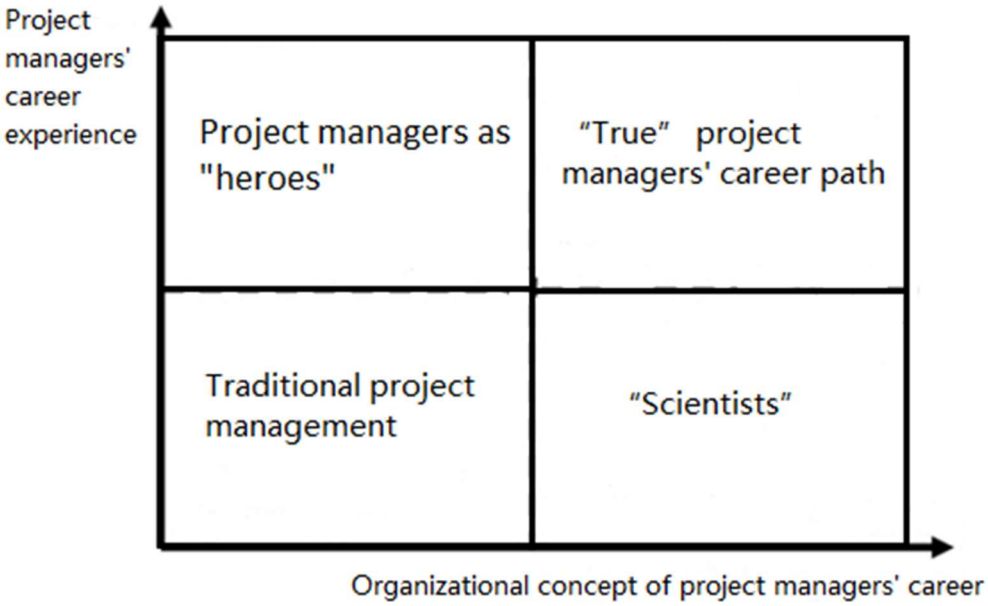


FIGURE 4-1 COMPARISON OF CAREER MODEL SETUPS AND INDIVIDUAL EXPERIENCE

For the organizational concept of career models, there is no one-fit-it-all solution. Traditional project management refers to the organization that mainly do the project in the traditional and operative way with its project managers based in a permanent functional department. “Scientists” presents a sophisticated design for a career model, but the implementation is constrained by the organizational barriers. Project managers as “heroes” refer to the project-oriented organization which does not differentiate between the leadership and the project manager's career path, and project managers act as “heroes” independently in the projects. “True” project managers' career path has the ideal setup for a project management career, meanwhile, the project managers are important in the organization who experience lots of development opportunities.

The divergence between individual project practitioners’ expectations on career development and the practical realization of these expectations by POS through organizational career model

setups, significantly determines the job satisfaction and turnover rate of project practitioners (Rhoades & Eisenberger, 2002). The turnover in project management may be an internal position change from project manager to the line manager or an expert position, or actually leaving the organization. Hence, multiple career directions, illustrated in the following Chapter 4.1.5, are critical to influencing the turnover intention by establishing a balance in the career development for project professionals.

4.1.5 The parallel career models

A clear identified career path within project management, as well as parallel career path options for those who may wish to move to leadership roles, or aligning all existing career paths in the organization, potentially related positively to POS, by supporting individual career planning and identify their career development needs (Debourse & Archibald, 2012). Such matching of career paths is shown in Figure 4-2 below.

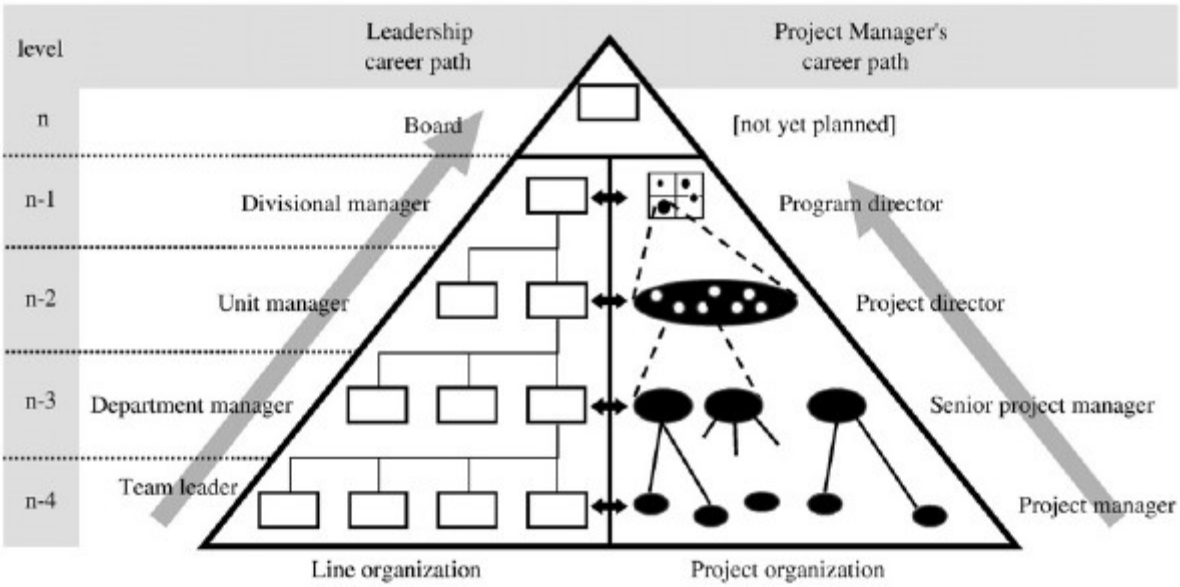


FIGURE 4-2 MATCHING OF LEADERSHIP AND PM CAREER PATHS

SOURCE: HÖLZLE (2010)

Bailyn (1991) complements that the multiple aligned career directions enhance the organizational flexibility, and the provision of mobility between different career models support the individual career orientations. Moreover, a fair and transparent promotion policy in career models in another way motivate project managers to develop in the direction aligned with organizational requirements (Hölzle, 2010).

Proposition 7: A career model, if is accompanied by adequate qualification opportunities or parallel career directions, will positively support the project managers' career development.

4.2 Project Portfolio Management and POS

With respect to PPM practices, I concentrate on three representative constructs from PPM maturity: the support of a project management office (PMO), the formalization of the PPM process, and the top management involvement.

Jonas (2010) defines a project portfolio as a group of interdependent projects, compete for limited organizational resources (people, finances, time, etc.), and achieve the organization's specific business strategy as a whole. Moreover, Blichfeldt and Eskerod (2008) define PPM as the managerial practices that coping with selecting and prioritizing project proposals, steering and coordinating projects' synergy and dependency relationships, and assigning scarce resources to projects.

In modern project-based organizations, most project managers are embedded in a large project portfolio (Cooper et al., 2001). It implies that project managers have to cope with the requirements of processes and decisions made on a project portfolio level, hence may need additional support in order to effectively achieve their project success in the scope of the project portfolio. Therefore, PPM characteristics potentially influence project managers' POS.

4.2.1 Project Management Office

PMO is defined as 'a management structure that standardizes the project-related governance processes and facilitates the sharing of resources, methodologies, tools, and techniques' (PMI, 2013). Aubry et al. (2011) point out the core functions of PMO are executing project tasks, implementing audits and reviews of projects, and supporting project managers with managerial activities to deal effectively with complexities. As a result, these various PMO supports which are related positively to POS, are highly appreciated by project managers (Hölzle, 2010).

Proposition 8: A project management offices will positively support the project managers' career development.

4.2.2 Formalization of PPM process

Nahm et al. (2003) suggest that PPM formalization determines the degree of PPM task standardization and certain extent rules and regulations which conduction of PPM tasks need to follow. As part of the organizational discretionary job, the relationship between PPM formalization and POS varies in a different context.

On a portfolio level, the formalization of PPM process is related positively to POS. The formalization enhances the employees' perceptions of procedural justice by increasing the consistency and transparency in management decisions of large project portfolios (Teller et al., 2012) and reducing the probability of organizational politics (Rhoades & Eisenberger, 2002), includes the informal actions aimed influence portfolio decisions to benefit individual interests.

On a single project level, the formalization of PPM process is related negatively to POS. On the one hand, it increases the administrative duties which conflict with the high autonomy for project managers to manage projects independently (Rhoades & Eisenberger, 2002). On the other hand, a formal decision-making process in formalization implies a shift of responsibilities regarding portfolio decisions, from project managers to top managers, portfolio managers, or line managers (Jonas, 2010). Therefore, the lack of participation in decision-making is considered as less supportive by project managers (Allen et al., 2003).

However, Teller et al. (2012) emphasize that a high degree formalized PPM process on the portfolio level might imply that PPM formalization on the project level has already been implemented. As the result, the formalization of PPM process may potentially hinder the career development of project managers.

Proposition 9: The formalization of PPM process can have a negative impact on the career development of project managers.

4.2.3 Top Management Involvement

As the maturity of PPM, top management involvement reflects the significance of project management in the organization which the executive level and senior management appreciate and values (R. Turner, 2016), with the extent to participate in the PPM process, influence the decision-making, enhance PPM tasks execution, consistently sponsor projects and champion the projects. Jonas (2010) shows that a high degree of top management involvement supporting

an effective and efficient PPM process to potentially strengthen the position of project managers. It is recognized and appreciated by project managers, hence related positively to POS. A wide stream of researches (Unger et al., 2012; Young & Poon, 2013) emphasizes that managing projects and developing project management competencies are much easier in organizations where top management supportively involving with the supportive infrastructure and systems.

Proposition 10: A high degree of top management involvement which strengthen the position of project managers is of significance for the career development of project managers.

4.3 Summary

As mentioned before, this chapter is relevant to answer the research question as follow:

RQ2. How does contract research organization (CRO) influence the careers development of project managers?

To summarize, I propose four factors from HRM and PPM perspectives in the SCCT model which are most relevant to the organizational influences on career development in project management.

- *Career models with qualification opportunities*: Organizational career design with relative qualifications programs to fulfill both project requirements and project managers' development needs.
- *Project Management Office*: A management structure facilitating project implementation.
- *Formalization of PPM process*: Formalized managerial activities that dealing with the project portfolio.
- *Top Management Involvement*: Project support from the top management group

These four factors contribute to the POS and manifest the organizational influences on the experience of project managers' careers and development. So far, the two aspects that participated in the career development are explored through the modified SCCT model I proposed, with theories from a variety of authors mentioned in Chapter 3 and Chapter 4. Moreover, the summary of propositions in this Chapter will be presented together in the next chapter.

4.4 Conclusion of Theory

As mentioned in Chapter 1.1, the overarching research question in my study: *How could project managers build their career through contract research projects in project-based organization (PBO)?* To gain a better understanding of the literature review, it has been broken down as follow:

RQ1. How do project managers experience their career development in contract research organization (CRO)?

RQ2. How does contract research organization (CRO) influence the careers development of project managers?

To investigate and answer both research questions, twelve propositions are developed through literature review based on the modified SCCT framework of project managers' career development, shown in Figure 3-1 Modified SCCT Framework of Career in the Chapter 3**Error! Reference source not found.**. Besides, Table 4-1 below presents a summary of all propositions presented in Chapter 3 and Chapter 4.

Research questions are expressed from two main dimensions, to be more specific, project professionals' subjective perception of their career experience and the influence of organizational objective career set up in the PBO. Propositions are also illustrated from relatively two aspects of individual and organizational. In Table 4-1, I present which aspects each proposition is belonging to, and which factor in the modified SCCT framework each proposition is belonging to.

TABLE 4-1 LIST OF PROPOSITIONS

Aspect	SCCT Factor	No.	Proposition
Individual Perspective	**Personality**	**1**	People who have a personality type in Social-Enterprising more likely to prefer a career in project-based organization.
	Academic Background	**2a**	People with the study fields of technical background are predominated employed in the technology institute.
		2b	People with higher education level and high academic performance expect to a career linked with research.
	Age	**3**	Senior project professionals have a lower expectation of organizational support and lower mobility rate.
	Learning Experience	**4**	A spontaneous development with informal learning is the main learning experience of project professionals' careers
	Career competences	**5a**	Soft skills are more essential than hard skills for project managers' competence development.
		6b	Young project professionals tend to pursue hard skills development in professional knowledge while senior project professionals develop more on their soft skills.
	Goal & success	**7**	Subjective career success has a greater impact than objective career success on individual long-term goals in project management.
Organizational Perspective	**HRM**	**8**	A career model, if is accompanied by adequate qualification opportunities or parallel career directions, will positively support the project managers' career development.
	PPM	**9**	A project management office will positively support the project managers' career development.
		10	The formalization of PPM process can have a negative impact on the career development of project managers.
		11	A high degree of top management involvement which strengthen the position of project managers is of significance for the career development of project managers.

A trend towards projectification of work (Lindgren & Packendorff, 2006) has given rise to increasing attention in the implications of new and unique career and career development for project professionals in PBO. To meet this trend, there is a need to understand how the CRO context influences the personal perceived career experience and the organizational support for career development. My study adapts the SCCT framework as a lens to investigate the complex interplay between different factors from individual and organizational aspects that form the project managers' career development. The findings have practical implications for project practitioners' employability in their career, and organizations influence on their project managers they need for success. Besides, the results further contribute to the integration of career and PM literature and enrich the field of HRM-PBO domain in the academy.

The next research agenda is to examine these prepositions empirically, therefore a plan for data collection and analysis is needed. In the next chapter, I will discuss the research methodology for further empirical study.

5 Methodology

The aim of my research is to gain insight into the individual perceived career experience and organizational influence obtained from the PBO that Project managers work for. In other words, providing answers to my research questions, shown as below:

Overall RQ. How could project managers build their career through contract research projects in project-based organization (PBO)?

RQ1. How do project managers experience their career development in contract research organization (CRO)?

RQ2. How does contract research organization (CRO) influence the careers development of project managers?

Referring to my previous work in the project thesis, in this chapter, the methodology of how to carry out the research will be discussed. Based on the formulated research questions, the paradigm to investigate my research will feed into the ways in which ontological, epistemological, and methodological foundations stand. My research strategy, research design, selected research methods, data collection, and analysis of results hence will be formulated according to these research philosophical stances. Following, I will elaborate the criteria for evaluating my research design. In addition, ethical consideration with measures that taken to ensure anonymity for interviewees and my case company will be elaborated. In the end of this chapter, I will share my personal experience of conducting this research.

5.1 Research Strategy

Allen et al. (2003) define 'a paradigm is a cluster of beliefs and dictates which for scientists in a particular discipline influence what should be studied, how research should be done, how results should be interpreted'. In other words, the choice of paradigm shows the relationship between epistemology and ontology in research with implications for the research design and research methods.

My research questions focus on the development of employment relations. To be more specific, my research object is the career development of project practitioners in a CRO which is a truly novel and complex process related to social and human issues. Regarding the modified SCCT

model I presented at the beginning of Chapter 3, in order to investigate the in-depth actuality of career in the world of projects, on the one side, I need to gain an understanding of project practitioner's lived experiences of their career journeys in CRO, on the other side, I seek to gain insight of the perceived organizational influences on the project practitioner's career path. It implies that the social properties of my empirical study are discovering the output of the interplays between individuals and CRO, instead of testing an objective 'out there' phenomena. Bell et al. (2018) describe such ontological consideration as constructionism. Moreover, the complex social investigation process in my empirical study which emphasizes the understanding of the social world through the individual employees' interpretation. It is referred to the interpretivism epistemological consideration (Bell et al., 2018). Furthermore, considering the high complexity, novelty, and flexibility in the PM career and research projects, it is impossible to 'freeze' the social setting and the circumstances of previous studies. Hence, my main concern is not testing previous theories through quantitative research but generated in-depth understanding of project managers' career development out of my empirical research.

In short, for my empirical study, I choose to use qualitative research strategy which is following my call for constructionist and interpretivist. The qualitative research strategy is suiting to in-depth explore the complexity of career development induced through individuals and my case company (Creswell & Poth, 2016). Furthermore, this strategy put stress on words instead of quantification of numbers in the data collection and analysis process (Bell et al., 2018). The richness of words allows me to look thoroughly at all the aspects of career development in CRO and discover underlying causes and effects.

In the next section, I will further discuss the research design which provides the framework for data collection and analysis.

5.2 Research Design

Based on my previous project thesis work, I discussed five prominent research designs. There are outlined as: experimental; longitudinal; comparative; cross-sectional or social survey design; and case study (Bell et al., 2018). The relevance of those research designs for my qualitative study will be examined as follow:

First, the experimental designs (Bell et al., 2018) is not in my consideration, because it entails a true experiment which typically associated with quantitative rather than qualitative research conducted in my study.

Second, a longitudinal design (Bell et al., 2018) which allows insights into the time order of variables, are typically fit the career research that related to lifetime development in the real world. However, it is not feasible for my study due to the time limitation of the dissertation.

Third, a comparative design (Bell et al., 2018) requires to use identical methods in multiple contrasting cases to seek comparison. It would be helpful if I am able to access multiple case companies (PBOs) to compare their different career setups within my study, however, the participated case company for my research is limited to one due to the short research resource and period. Besides, my intention is not a comparison, but rather accumulate the various cases with different variables of the modified SCCT model to capture an outline of how a career is developed in the PBO. Therefore, it is not fit for my study.

Forth, the cross-sectional design, also called as social survey design (Bell et al., 2018) when the collection of data linked to multiple variables of various cases on the purpose to produce general findings of their causal inference, is primarily conducted through a questionnaire which typically associated with the quantitative research tradition and deductive view. Even it can use qualitative methods as a follow-up, but it is not applicable to my preoccupation in qualitative research with the focus on one case and its unique context. It is good to shortly mention that the original SCCT framework is derived from a cross-sectional design by Lent et al. (1994) who have clarified and examined the general pattern of association among all the career variables that apply regardless of time and context. When it employed and modified to my study, my emphasis is on contrary to the inference of causality, but intensively focus on each of the six variables presented in the modified SCCT model, refer to the Figure 3-1 in the beginning of Chapter 3, and how do their complex interaction affect the project practitioners' career development in the unique context of PBO. Based on this, the cross-sectional design is not suitable for my study.

Last but not the least, after reasoning my arguments against all other research designs, the case study design (Bell et al., 2018) which lies predominantly with a qualitative research strategy and favours qualitative methods, is deemed the best match for my research. This design aim to

in-depth and extensive analyze the uniqueness of a single case organization in its unique bounded setting of CRO, developing my propositions by exploring the complexity and distinction of six specific career variables in my modified SCCT, in order to gain a deep understanding of project managers' career progression. To justify my choice of the case study design more explicitly, the approach to conduct my case study will partly borrow the positivistic view (Piekkari et al., 2009) which aim at extracting six career factors in SCCT to refine or refute existing career theory, but mainly follow the inductive view (Yin, 2009) to generate my propositions and theory for the unique context in CRO.

In sum, Yin (2009) asserts three conditions to favor the choice of a case study, which conclude all five research design I have discussed above, shown in the Table 5-1 below.

TABLE 5-1 SELECTION CONDITIONS OF RESEARCH DESIGN

Method	How?	No Behavioral control	Contemporary focus
Experimental	✓	×	✓
Longitudinal	✓	✓	×
Comparative	×	✓	✓
Social survey	×	✓	✓
Case study	✓	✓	✓

The first and most important condition is the form of the research question, referring to the beginning of Chapter 6, my "how" questions, dealing with the tracing of career progression over time, rather than mere frequencies based on "what" questions, are the rationale for a case study. The two remaining conditions further distinguish my choice of the case study that the relevant behaviors about career development can be little or no manipulated as in precise experiments, while my two research questions are investigating a real-time case focusing on their day-to-day activities (rather than historical) in-depth and within its PBO context.

The research design represents a structure that guides the execution of research methods for literature review, data collection, and the data analysis. To be more specific, Yin (2009) defines a strategy to perform a case study in a linear but iterative process, shown in Figure 5-1.

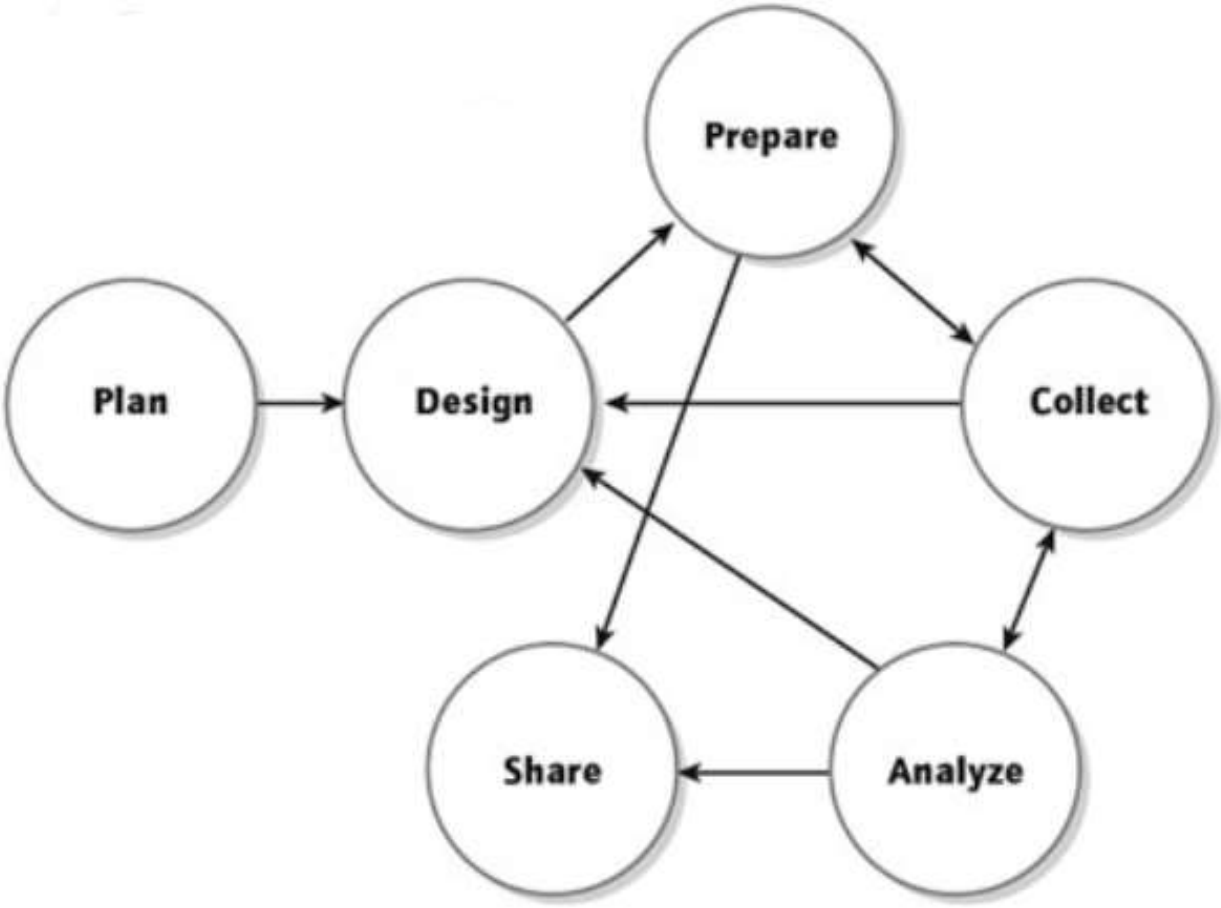


FIGURE 5-1 THE LINEAR AND ITERATIVE PROCESS OF CASE STUDY FROM YIN (2009)

This process contains the following steps: plan, design, prepare, collect, analyze, and share. After selecting the case study as my research design, I follow this process in general to conduct my research. The contents of each step which I used in my thesis are present in the Table 5-2 Contents of Case Study Process from Yin (2009).

In the following sections, I will explain how my research was conducted step by step which complied from Yin (2009).

TABLE 5-2 CONTENTS OF CASE STUDY PROCESS FROM YIN (2009)

Step	Contents
5.2.1 Plan	initiate Research
	Review Literature and develop theory
5.2.2 Case Design	Decide Case Study Method
	Define Unit of analysis
5.2.3 Preparation	Sampling Interviewees
	Interview Guide
5.2.4 Data Collection	Interviews and Documents
	Documents
5.2.5 Analysis	Coding Data
	Presenting findings
	Analysis of findings
5.2.6 Share	Sharing Findings

In the following sections, I will explain how my research was conducted step by step which complied from Yin (2009).

5.2.1 Plan

In this section, I will present how I initiated my research and how I conducted the literature review.

Initiating Research

Referring to my project thesis, even though research has recognized the call for employing the HRM system in the context of PBO, published studies in major PM journals in recent years still shown relatively low level of attention in HRM (Bredin & Söderlund, 2011). Hence, I initiated my study in this promising and interesting research area of exploring the link between HRM

and PBO. Based on it, I structured a draft with milestones regarding literature review, problem statement, interview process, analysis, and writing up the thesis.

Research Method for Literature Review

Referring to my project thesis, I chose the narrative approach for carrying literature review in my thesis. This approach gave me a broad overview of the existing literature within the field of HRM and PBO study, so that I could further define possible research questions (Bryman, 2016). During my literature review, searches were performed in Google Scholar and Oria. I ensure the credibility of my resource by looking at the citation numbers, peer-reviewed status and the references used within the sources. Credibility will be illustrated further later in Chapter 5.3 Research Criteria.

A list of keywords related to both project and HRM is defined and combined for my literature searching in order to guarantee a comprehensive research process. The keywords related to the project are project, temporary organization, project-based organizing, while the keywords related to HRM are HRM, HR, HC, human resource management, human resource, career, human capital.

On the one hand, as a student specialized in PM, I chose three key journals in the field of PM for my searching: Project Management Journal (PMJ), International Journal of Project Management (IJPM), and the International Journal of Managing Projects in Business (IJMPB). On the other hand, HRM is a vast research domain covering different levels of analysis. Keegan et al. (2018) provide a schematic overview of theoretical developments in mainstream HRM over the last two decades during the period 1996-2016. I draw on their HRM research framework which classified HRM research into three levels, regarded as individual, project, and organization, with both single and multiple HRM practices. Based on this starting point of distinguishing the HRM-PBO level, I set my study interest on single HRM practices of project managers' career development at the organizational level with a complementing theme of competence development at the individual level.

After I reviewed exemplary publishments that systematically integrated HRM-PBO at the organizational and individual levels. I was inspired to develop insights of career development that spans two different levels which explain how practices at organizational level influence outcomes at individual level, vice versa. In the end, I reconsidered how these existing researches

could potentially be mobilized to understand project manager's careers, in light of the purpose to further enrich both fields of PM and HRM.

5.2.2 Case Design

When designing a case study, the research method which are known as techniques for data collection and the unit of analysis, are of high importance (Yin, 2009) and will be formulated in the following section.

Research Method for Data Collection

Qualitative research subsumes several different methods of data collection. As mentioned in Chapter 5.1, my qualitative research denotes theory emerges as an outcome of the data collection and analysis. Besides, it forms greater variability than quantitative research by using methods concerned with the analysis of language rather than quantification numbers. Hence, it is encouraged to use multiple research methods as a triangulated approach in order to capture complexity and contradictions in the data, then improve the internal validity of my study (Prasad, 1993) Validity will be illustrated further later in Chapter 5.3 Research Criteria.

I categorized five main research methods associated with qualitative research (Bell et al., 2018): ethnography or participant observation, language-based approaches (such as discourse and conversation analysis), focus groups, qualitative interviewing, and document-based approaches. The participant observation was not an option for me, since it required a long period immersed in the case organization which I did not have. Also, the language-based approaches could not apply to my research in order to avoid misinterpretation caused by Norwegian language barriers with my Chinese background. A focus group (Bell et al., 2018) refers to interviewees discuss their relevant specific situation or event in groups, which was not appropriate because of the highly regulatory social distance requirement to prevent the spread of COVID. Despite the possibility to conduct it by telephone or virtual meeting, this was not an ideal method considering the advantage of the in-person interview which I would explain later in Chapter 5.2.4 Interview. However, inspired by the idea of focus group which present, and discuss the research findings in order to help validate my research findings and attain further insights, I employed double amounts of samples and divided my interviews in two periods to achieve the same purpose, refer to Chapter 5.2.4 Data Collection below.

Afterward, the qualitative interviewing was used as my main research method, complemented with document-based approaches for the data collection, and followed up by more qualitative interviewing to validate and refine my findings (Bell et al., 2018).

Selecting Case Company and Discussing Unit of Analysis

The previous sections have discussed how my thesis end with a qualitative case study with multiple research methods. In this section, I enclosed the consideration of selecting case company.

Yin (2009) presents two fundamental processes should be taken into consideration when choosing the unit of analysis: defining and bounding the case. Regarding the specific context CRO in my research with the theoretical considerations from previous literature reviews, the target case company for my empirical study need to fulfil the requirements as follow:

- With specific context as a project-based organization and CRO.
- Implement a formal PM career model.
- Has training programs for project management.
- Exist a structure that functioned as PMO with PPM practice.
- Cover various industries and sectors.
- Based in Trondheim, Norway.

The previous four requirements are drawn from my research contents of the modified SCCT model. In order to avoid the risk of getting a very narrow view on the career models with a distinctive influence from its industrial culture, for instance, the construction company, there was a need for the company to cover various industries and sectors. The collecting data therefore will be more valuable since it would not be subject to industrial bias. The reason for a local-based company was simply considering the accessibility for me to conduct interviews and research.

After screening with those requirements, few large international firms shown up. However, I did not choose multiple cases to study because of time and resource constraints. Instead, an appropriate single case study implies its findings could be applied to other similar cases while the case company could be regarded as an industrial representative. Through networking, I managed to get access to my case company in April 2021. It is the best match case company

for my research since it is a big and international CRO running projects across Industry, Digital, Ocean, Energy, Manufacturing, and Community.

To specify my unit of analysis within the boundaries, the case company is a CRO with a flat organization structure assigning researchers to different research projects. I did not research the entire company, as they across five industries and located in different cities throughout the country. Instead, I focus upon one institute of technology which located in two geographic locations. This institute consist of several departments with specific research groups. Thus, I limit my case to the project managers within one institute of technology in the case company. In addition, Rousseau (1985) emphasizes that it is important to avoid misinterpretation result from using data collected from one level to represent something at another level. Bell et al. (2018) present the SOGI model (societies, organizations, groups, and individuals) as the primary level of analysis. To further delimit the level of analysis in my research, I emphases on the career development of Project managers in the CRO which draws on samples that combine both individual and organizational levels of analysis.

5.2.3 Preparation

As mentioned initially in section 5.2 Research Design, case studies are conducted with little behavioral control (Yin, 2009). Hence, preparation is important to smooth the data collection process. In this section, I will explain how I selected interviewees in my study, how my interview guide was composed and what was the result of my sampling.

Design for Sampling

In this section, I will justify my choice of sampling methods in terms of sample size and sampling strategies. Also clarify the design of sampling in my research concerned with the selection of interviewees.

Bell et al. (2018) suggest the consideration of sample size should depend on: the constraints of time and cost, the need for precision, non-response, heterogeneity of the population, kind of analysis. It means increasing the sample size increases the time and cost, and the likely precision. In my qualitative research, there was a constrain of time and very limited accessible resources. As there was no definitive answer about the minimum sample size in my department, in line with recommendations from my supervisor for selecting a manageable sample size, I chose to

conduct at least 10 interviews. When sampling for qualitative research, reaching data saturation is the most important (Bryman, 2016), so I tried to maximize the number of interviews in a feasible way until achieving data saturation.

Bell et al. (2018) further classify two ways of sampling: probability and non-probability sampling. For me, probability sampling needs lots of preparation and is rarely conducted in qualitative research. It was not feasible to employ it in my research simply because of the constraints of time and resources. For my case company, I needed to ensure that I gain access to individuals who are relevant to my research questions. Hence, purposive sampling (Bell et al., 2018) was conducted to purposively select participants from my case company who are likely to contribute to the theoretical understanding of career development. As one of its main forms, snowball sampling (Bell et al., 2018) was also used in my research, because of the difficulty of creating a sampling frame for the population in my case company (around 500 employees). To be more specific, uncertainty and discontinuity inherent in the project-based work lead project managers by their nature are temporary in the assigned project and shift role as researchers beyond projects in my case company. Therefore, the most effective approach to access the potential respondents was following up on referrals from the initial contact. Additionally, convenience sampling (Bell et al., 2018) was employed considering the restrictions on interviewees selection in reality in my case company in terms of many rejections and non-response.

Sampling bias with the non-probability sampling method is the distortion in the representativeness of the sample (Bell et al., 2018) caused by non-random selection with an impact from human judgment. However, this issue was less important in my case study which aims at generating an in-depth analysis in the technical institute as a whole instead of generalizing my findings to a population in quantitative research.

In line with the evaluation criterion of fairness (Guba & Lincoln, 1994), as reviewed in later Chapter 5.3.2 Authenticity, my interviewees were representative of all relevant persons of interest in the CRO to achieve the authenticity demand in the research. Hence, participants were drawn from different departments in the technical Institute as a whole. One group with project roles, included but were not limited to Project managers, project team members, or the line managers who are involved in the projects, were invited to get the data of individual experience

and perspective of the career path in the CRO. Another group with representatives called from the HR department who is in charge of PM training programs, and familiar with the ideas underlying organizational career models design and development. Besides, the top managers were also engaged to gain their insight into management philosophy about organizational support on the career in PM and their personal experience of climbing up the career ladder.

Last but not the least, considering my propositions referred to Table 4-1 in Chapter 4.4, an intended attempt was made to select the interviewees includes both female and male, senior and junior, hold different educational background with diverse PM qualification, and stand at various career positions, However, I acknowledged that the minimum 10 interviews followed by my supervisor's recommendation may not guarantee those ideal premises for sampling.

Result of Sampling Interviewees

I initiated the sampling process by holding a small meeting with presentation for one of the leaders within the case company. After briefly explaining my research and expressing my consideration regarding interviewees, we went collaboratively through the organization and found potential interviewees with a contact person within the institution. Following my plan mentioned above, an invitation regarding participation along with an information letter, attached in Appendix A1, was sent by mail to my purposively selected candidates in the institution, which was efficient to make a sample that best fit to the needs of my interview (Bell

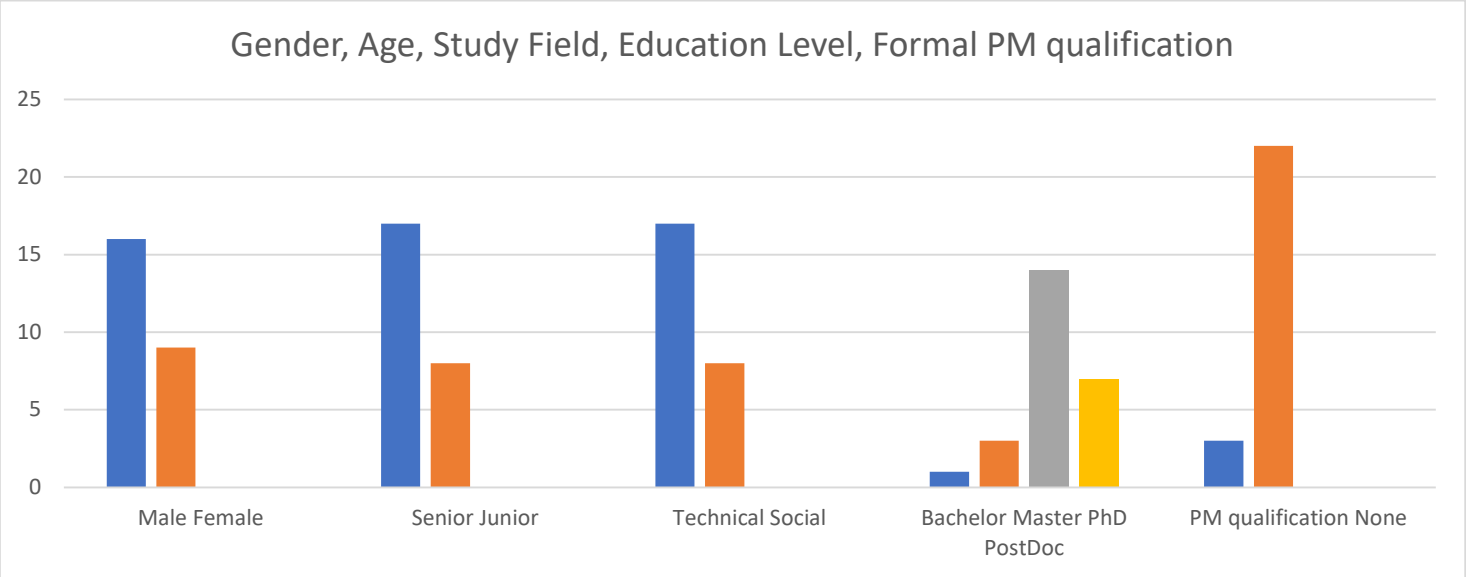


FIGURE 5-2 DISTRIBUTION OF INTERVIEWEES

et al., 2018). Additionally, four interviewees were brought in through recommendations as snowball sampling mentioned in the last section.

In the end, a total of 25 interviews were conducted in the case company, which eventually achieving data saturation in my qualitative study. For this big number of interviews, I would discuss the pros and cons later in the Chapter 5.5 Personal Reflection. Representative distribution of gender, age, study fields, education level, formal PM qualification are depicted in Figure 5-2 above.

Interview Guide

As mentioned initially in Chapter 5.2.2 Research Method for Data Collection, I chose to conduct semi-structured interview with interview guides.

Dalland (2000) states that an unstructured interview would allow researchers to pursue more spontaneous and unexpected findings, while a structured interview would provide more directed data, which would be easier to analyze. I chose in between, the semi-structured interview provided support to me in formulations of questions via interview guides. Meanwhile, the open questions in it left me flexibility to follow the interviewees' line of thought without the restrictions of a structured interview guide, for example, "Can you tell me about your project experience?" instead of asking "Do you have project experience?". Hence, semi-structured interview was suitable for my case study to investigate Project managers' career development in the organization.

The interview guide functions as a manuscript which helped me guide the interview. My process of developing interview guides is also a preparation in the theoretical and psychological aspects to meet my interviewees (Brinkmann & Kvale, 2015). Inspired by the modified SCCT model, my interview guides contained questions on five themes on two levels (individual and organizational): interviewee's background, project experience, competences development, organizational career ladder, as well as the organizational supports, refer to Appendix A2. In the process of formulating questions, I concerned to mainly use open questions to allow the interviewee to elaborate. Besides, instead of narrowing down to more specific topics, I tried to begin with easy and broad questions in my interview guide to make the interviewee feel comfortable and relax.

Two pilot interviews were conducted to test my interview guides. Based on the results of the test interviews, I reconsidered the different perspectives of the informants. Thus, I designed and separated two interview guides: one for the project managers and on for the leaders. Based on the same themes, I change follow-up questions to the top managements since they do not participate in the project operation as Project managers, as well as asking them more opinions from the organizational side. I attached them in Chapter Appendix A2.

5.2.4 Data Collection

Followed Chapter 5.2.2 Research Method for Data Collection, I conducted semi-structured interviews in my case study, complemented with several documents to gain more insight into my case company. Focus group was not able to carry due to Covid-19 regulations. However, I triangulate and shape my findings by separating interviews into two rounds with 2-4 weeks in between.

Interview

Regarding my interview plan mentioned before in Chapter 5.2.2 Research Method for Data Collection, the face-to-face interview was my priority compared to a virtual meeting or telephone interviewing. Even the latter is far cheaper and quicker with the potential benefit of offsetting the bias affected by the interviewer when physically present, the quality of data is still inferior (Holbrook et al., 2003). Telephone interviewees tended to be less engaged in the interview process, meanwhile, the interviewer cannot engage in observation to ascertain the questions and responses are clarified. Besides, Lewis-Beck et al. (2003) argue that a telephone interview may encounter a time shortage which is unlikely to be sustainable beyond 20–25 minutes, while a personal interview often lasts more than an hour. Moreover, Shuy (2002) implies that a personal interview is superior for asking sensitive questions, such as a passive work environment, or organizational barriers to career development, which is concerned with my research.

Shown in the Chapter 5.2.3 Sampling interviewees, 25 interviews in total were carried out, which includes an initial face-to-face interview with a leader from head office in the case company to provide me with a better overview of the organization, and excluded two trial telephone interviews with participants from other institutes in the case company to test out and refine my interview guide. However, as a result of Covid-19 regulations as well as some

interviewees located in another city, my interviews were carried out over virtual meeting (Teams). Only one exception was the initial interview which hold in a meeting room at the case company to allow me to present and discuss my research plan.

Different personal characteristics affect the experience of career development. With the intention of sampling well-rounded representatives which gain insight from various perspectives in the case company, my interviewees have a variety of personal characteristics, refer to Figure 5-2 Distribution of Interviewees above. Their positions in the organization also generate different levels of understanding in career development, refer to Figure 6-1 Positions of Interviewees in Organizational Structure below in Chapter 6.1 Case Description. Some interviewees were involved in multiple positions. Their feedback was particular important to illustrate a spiral career moves and development in different specializations than a liner career in a particular field.

Table 5-3 Interviewees Information below consolidates all information about the interviewees, including a pseudonym for anonymity's sake, positions in the organization, and the length of the interviews. Considering that personal characteristics can easily recognize the individuals, hence information about them is kept separately to ensure the anonymity.

During the interview, I took notes on the key words for the answer to my semi-structured interview guide, and formulated follow-up questions. Meanwhile, I also paid attention to the details of interviewees, including body language, mimic, reactions and so on. Video recording for each interview were automatic shot by the Teams, which made it possible to transcribe the interviews verbatim for analysis (Alvesson, 2010). It also allowed me focus on the ongoing interview without disrupted by taking extensive notes. Also, I got the opportunity to understand the mumbling parts afterwards. Although an accident was happened in the very beginning that an interview was failed to record and there was no other recording as a backup, it did not affect my data collection as a whole and remind me to set a safety net when conducting the later interviews. Resulting in the situation that I had to transcribe the almost one-hour interview by memory right away and inevitably loss some information.

TABLE 5-3 INTERVIEWEES INFORMATION

Pseudonym	Head office	Research Director	Research Manager	Chief Scientist	Senior Adviser	Senior Researcher	Researcher	Master's degree	Interview Length
AD						✓			01:31:30
JG						✓			02:13:50
MS		✓							01:50:31
AF						✓			01:40:42
MB						✓			01:14:45
TL				✓					01:04:06
AH		✓		✓					01:29:43
AJ				✓					00:54:22
AT								✓	01:40:54
MW							✓		01:05:53
GK			✓						01:25:48
KB							✓		01:40:49
MO			✓						01:00:20
KB			✓			✓			01:41:39
SK					✓				01:59:41
TD			✓	✓					01:58:09
TM							✓		01:28:05
JS						✓			01:17:34
PN							✓		01:26:08
HS						✓			01:38:25
MB		✓							01:10:52
SH			✓						01:40:04
SM							✓		Failed
MR	✓								01:10:05
TT								✓	01:15:20

Triangulation

Focus group was not able to carry due to Covid-19 regulations. Instead, I careful hold around 10 more interviews to present the finding from previous interviews with keeping the anonymity

and less subjective bias. It functioned same as the focus group to help validate my individual accounts of the collecting data and refine my findings from their feedbacks.

Brinkmann and Kvale (2015) considered interviews as craftsmanship that would be learned through experiences. Half of my interviews were scheduled one month after the previous. Raw interpretations were made in the between, right after finished the first-round interviews. After data accumulated and raw interpretations inspired, some themes in my interview guide reached data saturation and some interesting theoretical ideas developed and reshaped (Alvesson & Sköldberg, 2017). Adjustments were made on the emphasis of topics and follow-up questions in order to capture complexity and contradictions in the data, as well as attain further insights based on the discussion of previous findings. For instant, nearly every interviewee in the first round expressed that "researchers tend to take free ride on the Project managers in big projects in order to focus on the research". Using this project experience as a start point, in the second round, I put more emphasis in the second round on discussion topics of imbalance workload between PM and research, lack of PMO, and barriers in development and transfer of PM knowledge, etc. In this way, interviewees in the second round shown appreciate that I had a brief understanding of their work and organization, and put forwards questions on the topics which they felt challenging and would like to get more support on. Also, I managed to explore deeper on the essential themes and topic in the limited one-hour interviews.

Documents

Several secondary sources and documents were complemented with the interviews to gain more insight into my case company. Documents constituted a very wide range of heterogeneous sources of data to help me gain a basic understanding of their business, organizational structure, and culture, which include the official documents (such as annual reports) and private documents (such as presentation of official promotion criteria, official competence map for leaders, and the organizational career models). Multiple research methods of data collection are beneficial to triangulate my findings as well as offering deeper understanding of the organization (Prasad, 1993). These sources had been used in my empirical finding, refer to Chapter 6.1 Case Description, Chapter 6.2.1 Organizational Design of Career model with Promotion Criteria.

5.2.5 Data Analyze

During my interviews, I experienced an iterative feature (Strauss & Corbin, 1998) between the data collection and analysis. I began analyzing after some data have been collected, then the findings of the analysis shape my next data collection process. To be more specific, after transcribed my recorded interview, the next step is to analyze the qualitative data derived from the transcriptions in my empirical study, then keeping these processes iteratively through my interviews.

In these iterative processes in my qualitative research, I got inspired by grounded theory to analyze my data. Grounded theory was defined as 'a theory that was derived from data, systematically gathered and analyzed through the research process' (Bell et al., 2018). In order to yield the outcomes of grounded theory in terms of, categories, themes, concepts and theory, I used three tools for my data analysis: coding, theoretical saturation, and constant comparison.

Coding is the key tool (Bell et al., 2018), and I started with line-by-line coding. After constantly reviewing my transcripts, I broke down data into parts with assigned labels (codes) to form categories, then use these categories to compose themes, and consequently turned into concepts.

In my case study, due to the limited time scope, I was able to take two rounds of total 25 interviews for data collecting on the purpose of achieving theoretical saturation (Strauss & Corbin, 1998). Following the iterative processes, after developing my initial categories and briefly analyzing data, I started my second-round interviews. Compared to the findings from the first 10 interviews, I gathered some same information repetitively in the latter 15 interviews. On the one hand, it manifested that my qualitative research achieving saturation. On the other hand, it helped me theoretically established my initial categories better.

Constant comparison (Bell et al., 2018) refers to constantly comparing data that being coded under a certain category, comparing the contrasts between categories, comparing categorized data with existing theory in order to generate a thorough new theory. In my analysis, I compared the similarities among the codes to put them in same categories. In addition, an important comparison was made on the theme of career models between individual choice (no PM career path) and organizational design (specialization in PM career paths), which uncover and shed light on the gap of PM career development. Last but foremost, I compared my empirical

findings the theoretical propositions I constructed from the existing theories, so that generate new implication and theory on PM career development in the unique context CRO.

In the next section, I will further illustrate how I applied codification to find analytic paths through the richness of qualitative data.

Coding Data

I careful read my transcriptions and began with line-by-line coding. My concerns are what the Project managers experienced as barriers or enablers of their career development in the CRO. During this process, I determined which conditions are necessary for career development at the individual level in the CRO, and how strategies and supports from organizations influence these activities.

In the coding process, I followed Gioia methodology (Gioia et al., 2013) to conduct my inductive coding. First, I compared and identified similar codes and clustered them in an immense number of first-order categories. Then I looked for the connections among the first-order categories and gathered the similar ones to build the second-order themes. As mentioned before, constant comparison was made including comparing interview data with secondary documents in order to triangulate the data. Next, I reviewed and compared the existing literature to the second-order themes, theoretical concepts gradually emerged which could explain my

empirical findings and contribute to the theory development. The example of coding structure for my research is presented in Figure 5-3 below.

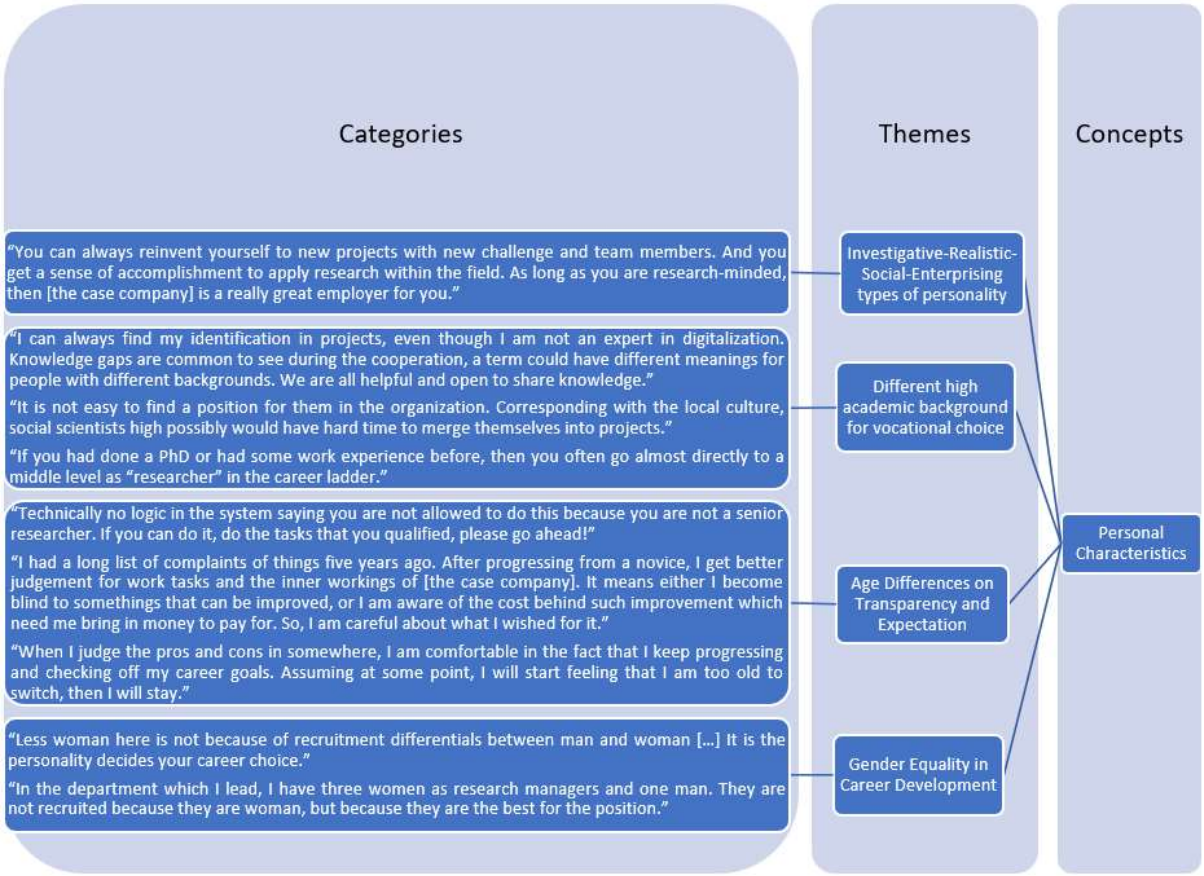


FIGURE 5-3 EXAMPLE OF CODING STRUCTURE FOR ANALYSIS

Presenting findings

There is a consideration regarding the uses of quantification in qualitative research. It is common to use vague quantifiers when reporting findings to describe the distribution of participants, such as a few participants, some, around half, the majority and so on, although some criticizers may argue that there is no place for numbers in the qualitative research as quantifying a qualitative data (Monrouxe & Rees, 2020). Despite this criticism, there are still many qualitative researchers and authors who still prefer this way and argue that it is beneficial to cite these numbers (Maxwell, 2010). I am one of them who believe that there is a place for

numbers and employ descriptive statistics (commonly frequencies and percentages) to evidence the amount of data contributing to themes, depending on the focus in my themes.

To present my empirical findings of demographic characteristics (personal characteristic), for example, tables are probably the most effective way of visual representation to demonstrate the relationships how one theme (age) was likely to influence the other themes (fields of study, academic background). Considering my study of career development that related to a lifetime development, it just makes sense to present the dynamic relationships by tables to speculate about the changing influence on career development resulted from the changing emphasis on relationships between personal characteristics.

Furthermore, Maxwell (2010) argues that quantification can bring precision to statements in terms of the importance, frequency or strength of findings. For instant, these is the theme-Nationality influence on career development that was only discussed by 3 participants, as opposed to the theme-Gender equality in career development that was discussed by 19 out of 20. After considering how strong these themes were, I decide to exclude Nationality influence on career development as one of the main themes in my study. It is also due to the time limitation that does not allow me to cover everything although interesting. However, this theme about Nationality influence on career development will be discussed later in the Chapter 8.2 Future Research.

Analysis of findings

Dubois and Gadde (2002) explain that by addressing the different steps of research iteratively, one is better to get a comprehension of the connection between theory and the empirical findings. Such an approach allows the theoretical framework to develop simultaneously as the data collection and analysis is being conducted.

Applying the modified SCCT model Figure 3-1 Modified SCCT Framework of Career summarizes the whole thematic framework in my study. This coherent structure facilitates a clear overview, and will make it easier for the reader (Yin, 2009) to navigate through themes as I discuss them in individual sections through analysis, discuss and conclusion.

In the analysis of data, I compared my empirical findings with my theoretically constructed propositions, and further enlighten the differences between theory and my findings, hence build

the foundation for the theoretical discussion, then create a new framework which fit to my context-CRO.

5.2.6 Share Findings

To triangulate my findings, I originally designed to conduct focus group like a workshop in the end to gather all my interviewees, present, and discuss the findings, referred to Chapter 5.2.2 Research Method for Data Collection. However, it was not able to carry due to Covid-19 regulations. Instead, I separate interviews into two separate rounds with 2-4 weeks in between. To validate my research findings and attain deeper insights on the themes, I carefully picked some of my interviewees, sharing necessary part of results with them on the base of anonymity and minimize the bias with results in the second round, discussed and review the themes in my research.

Through discussing my thesis, the modified SCCT model got revised based on my findings to emphasis the most important factors which influence the Project managers' career development in the CRO. My research has practical implications of how project practitioners could build their career through research projects, and how organization could provide support for Project manager's career within the revised SCCT model. Besides, this thesis has theoretical implications for the integration of career literature and project management literature and enriches the field of HRM and project-based organization domain in the academy, as present in Chapter 7 Analysis & Discussion and Chapter 8 Conclusion.

After illustrating my research design, it is necessary to aware of what appropriate criteria should be used for evaluating the quality of case study research. Hence, I will discuss the criteria associated with my qualitative research strategy in the following section.

5.3 Research Criteria

It is meaningful to investigate the criteria for evaluating research, since they provide guidance of formulating a proper research design, conducting research properly to access findings for my thesis. Besides, the sampling selection considerations for my study will also be discussed together with its related criterion in this chapter.

Bell et al. (2018) present the three most prominent criteria for the evaluation of management research as reliability, replicability, and validity. In the realm of qualitative management research, replication is quite rare, while the reliability and validity (LeCompte & Goetz, 1982) seem to get played down since measurement is not the major preoccupation. Hence, Guba and Lincoln (1994) assert that qualitative studies should be evaluated according to an alternative set of criteria that differ from those used in quantitative researches. I will employ these two primary criteria for assessing my qualitative study: trustworthiness and authenticity.

5.3.1 Trustworthiness

It consists of four criteria, which parallels with quantitative research criteria (Guba & Lincoln, 1994).

First of all, dependability as an equivalent criterion to reliability, entails thorough documentation, and following up of the entire research process. Guba and Lincoln (1994) also suggest adopting auditors to ensure proper procedures. My supervisor guided me through NSD application for ensure a proper process in my data collection.

Secondly, credibility as an equivalent criterion to internal validity, entails the research methods being carried out appropriately, the developed theoretical ideas are a good match to the researcher's individual accounts, which reflect what the interviewees conveyed through the respondent validation. As mentioned in Chapter 5.2.1 Plan, I ensured the credibility of my literature resources by crossing check data from publishments in the same field. Also, refer to Chapter 5.2.2 Case Design, I used multiple research methods to triangulate the research findings in order to improve the internal validity of my study.

Next, transferability as an equivalent criterion to external validity, concern about the possibility of generalizing the findings to other contexts. Considering the contextual uniqueness in my case study which employed samples in CRO, a thick description was entailed in the Chapter 6.1 case description later, which could provide rich accounts of the context to other researchers as a database to refer to in the future.

Last, confirmability as an equivalent criterion to objectivity, means the researcher should minimize the intrusion of personal bias or theoretical inclinations to the research which sway the findings. As a woman, I was aware of my personal views in terms of gender equality, which

is a factor to be investigated in my research. Hence, I took an effort to eliminate it throughout the process of my study.

5.3.2 Authenticity

In addition to the trustworthiness, Guba and Lincoln (1994) list out five authenticity criteria concerning the wider political impact of the qualitative research.

First of all, fairness is concerning the voice is collected fairly from all representative stakeholders who are relevant to the research, in other words, the heterogeneity of the population (Bell et al., 2018). This provided a guide for selecting interviewees in my case study, which was illustrated in Chapter 5.2.3 Research Method and Design for Sampling.

Then, ontological, educative, catalytic, and tactical authenticity in general focus on the increasing impact of research on its contextual setting, and respectively refer to gaining a better understanding of context, better appreciation of other's interpretation of context, a motivation to change the context, and empowerment to actually conduct action for a change. These authenticity criteria showed a researcher-subject relation with a popular research method, known as action research, defined by Bell et al. (2018) as a method in which the researcher and respondents involved in the research collaborate in the diagnosis of a problem, then figure out a solution based on the 'genuine concern to them'. To my scenario, my study produced a holistic view of career development after uncovering the potential conflicting interpretations from two perspectives of individuals and organizations. It would contribute to an improvement in the alignment of career development in the case company for both sides. Departing from these four provoking authenticity criteria with the significance of the action research, I foreseen my research findings of the PM career development will benefit both the theoretical understanding and practical outcomes for the practitioners and case organization.

The research design with its criteria represented a structure that guided the execution of my research methods and the data analysis. After selecting the case study as my research design, formulating my research steps with methods, and investigating the corresponding criteria, ethical consideration is needed and will be illustrated in the following section.

5.4 Ethical Consideration

Considering the ethical issues, in my research, each interview was recorded under the permission and transcribed verbatim, participation was voluntary with their responses coded as anonymous, and results of the case organization were treated confidentially. Besides, the collection of personal information was reported to the Norwegian Centre for Research Data (NSD) to ensure that data are collected, stored, and shared both safely and legally.

An information letter about how the research is going to be conducted and how the information would be handled was distributed by mails and signed before the interviews, supporting the informed consent in the ethical principles as emphasized by Bell et al. (2018). In my invitation letter, I also informed everyone that each interview would last around one and half hour, which I adhered to, as shown in Appendix A1.

Attempts to familiarize with the interviewees and the organization were made through reading secondary documents of the case company, actively discussing with my contact person in the organization, and reading their available profile on LinkedIn. So, my interviewees are feeling comfortable in the beginning of interviews.

When using the interview materials, which were mainly conducted in English and one in Chinese, I translated the oral English to written English while keeping the meaning as best as I can, but adjusted some formulations for anonymity's sake (Bell et al., 2018). More than half of my interviewees were Norwegian, I was worried that they might feel stress to speak English in the interview. However, the fact shows that they were familiar with working in the international research front and communicate with international partners in English. Moreover, translating Norwegian may cause loss in quality for interpretation due to my capability, which outweigh the strain of having interviews in English for them. In addition, I presented all interviewees with a code without making differentiation on gender, nationality, or their hierarchical level in the empirical findings. Ensuring anonymity and the safety of interviewees was also the special consideration in the NSD application. In order to get the application approved, information regarding how the material would be collected, stored, and handled had to be given, additionally a draft of the interview guide had to be attached to control. These measures were taken to shelter participants from harm in accordance with Bell et al. (2018).

5.5 Personal Reflection

This thesis is the first large qualitative research I have conducted as a novice researcher with a background in PM. My limited experience has led to some big challenges throughout my research.

The first challenge is determining my research topic on combining PM and career development in the context of CRO. I had spent long time on literature reviews in order to find a topic which fit my interests. It was an iteratively processes of making attempts and getting feedback from my supervisor. I was attracted by HRM practices in a PBO at the beginning, then narrowed down to focus on single factor such as competence development. The breakthrough came with the SCCT model (Lent et al., 1994). However, this model is a typical quantitative framework which inspired me the width and causal implications among 10 variables in career development. Afterwards, I modified and adopted it into my qualitative research in the context of CRO, and intensively focus on 6 variables in my modified SCCT model to go deeper on each.

The second challenge for me is the tremendous work from 25 interviews. I was overwhelming and spent long time at the data collection. My supervisor originally gave me suggestion on the minimum number of 10 interviews, meanwhile I followed the theoretical advice to maximize my interviews until reach data saturation. In addition, due to the busy schedule of my case company, I tried to contact more interviewees as backup for the possible changes. Hence, finally I chose 25 participants who are perfectly match my research design with their characteristic distribution and positions. Luckily some of my interviewees are cutting-edge qualitative researchers, who kindly reminded me this amount of work is normally fit a PhD dissertation. Meanwhile, I realized some themes were indeed achieved data saturation after my first 10 interviews. At that point, I was stressful considering “how should I deal with the rest 15 interviews?” “Should I give up for convenience even there are some interesting topics left to explore further with the later ideal interviewees?” When facing to the fact that it was impossible to perform a focus group afterwards in the outbreak of Covid-19, an idea came up that I could carefully utilize the rest 15 interviews as triangulation to validate and refine my findings as a divided version of focus group. Meanwhile, I could get to know more the interesting topics in-depth in the second round.

The third challenge was for my quantitative way of visual representation of my empirical findings in the qualitative research. I believe that my prior education and working experience as a mechanic engineer in a PBO gave me an advantage to interpret the data precisely with figures and tables, and make the thesis become more readable.

Most important, at the gateway to start my career, this research was conducted by my personal interest and motivation. My previous project experience benefits my interviews a lot when it came to asking the right questions linked with PM. Also, I have witnessed many super stars' growth as Project managers or imbalance career development toward Project managers in a cross-function organization. As a graduate, I tend to investigate how Project managers could develop their career better and provide a framework for others to use to develop their PM career.

6 Empirical Finding

This chapter presents the most relevant empirical findings which help me investigate and find answers to my overall research question of:

How could project managers best build their career through contract research projects in project-based organization (PBO)?

Due to the unique context of CRO, the structure of this chapter is start at Chapter 6.1 Case Description which describe the characteristics of my case company. Following it, I will first draw an overall picture of the organization in terms of Chapter 6.2 HRM, Chapter 6.3 PPM, then move through individual perspectives via six different themes: Chapter 6.4 Personal Characteristics, Chapter 6.5 Learning experience, Chapter 6.6 Competence Development, Chapter 6.7 Goal and Success.

The following chapter is based on the public annual report and private documents. However, because of the anonymity requirement, I cannot cite these sources in my thesis.

6.1 Case Description

The case company is one of Europe's largest CRO with international top-level expertise across a wide range of research fields. It has a close strategic and collaborative relationship with universities, national and international research institutes in the fields of technology, natural sciences, and social sciences.

Being a CRO, they are characterized as very bottom-up driven by selling services via billable hours to conduct contract R&D projects. Scope, members and duration of projects varies from small (single person's few hundred thousand project lasting for three months) to big (complex 50 million EU projects involving more than 100 members from external partners for 3 years). Employees can work parallelly on several projects at same time. By the internal working environment survey, the most challenging part of work are the workload and stress, that they work up 500 on-going projects with a large variety of the clients and high flexibility.

With such high workload from projects, the case company still requires each researcher publish at least one scientific publication per year. It is essential for the case company to achieve an appropriate balance between scientific publication and contract-based research in order to

maintain its capacity for innovation and influence. On the one hand, scientific publication contributes to skills development and the generation of new knowledge to reinforce the research quality. As an indicator, it creates awareness of success which is essential to attracting clients and recruiting the best research partners. On the other hand, the implication of new knowledge by clients and society through the contract-based research is the most important form of advertising of the quality of research for the case company.

Considering that projects are created at the lowest level, in the nature of commercially oriented research projects, company is reliant to a large extent on the risk relief provided by basic funding from public sectors like the Research Council of Norway, the European Investment Fund, EERA, and EARTO. EU projects which are strategically important comprise between 30-50% of total projects, rest are industrial projects which are most financially important and research council projects. For this need, the case company achieved high level of academic qualification among employees that nearly 60 per cent of them have a doctoral degree, and it is mandatory to participate internal training programmes of PM.

The case company has a flat structure with four-level career ladder for specialists and a management path on the side to follow. Majority employees are at the middle level with a title of “researcher” which normally reach in two to three years from the academic degree at the bottom. The career model and position description will be elaborated later in 6.2.1 Organizational Design of Career model with Promotion Criteria.

There are about 1000-3000 employees in the case company nationally and oversea which the proportion of women is 35 per cent with the overall turnover under 10 per cent. The case company success in their internationalization strategy: the consolidation of our academic network, participation in the EU’s research programmes, international sales of R&D services, and international recruitment. Following it, employees are mainly high qualified researchers in the global research community with wide spectrum of education and work background, nearly one third of them are attracted from a total of more than 50 countries outside of Norway as the organizational internationalization strategy.

The case company has six institutes which mostly scattered nationwide. Each institute presents an industry and are divided into departments that have more than 20 employees. The department is divided into many research groups which specialized in different subjects and vary from 5 to

20 employees. It is a typical matrix project organizational structure. Employees, on the one hand are separated to groups by their research backgrounds and report to their line managers, on the other hand work on several projects and report to their project managers. The scope of master's thesis limited me to one technology institute which located in two cities. The positions of my interviewees are shown in the Figure 6-1 below.

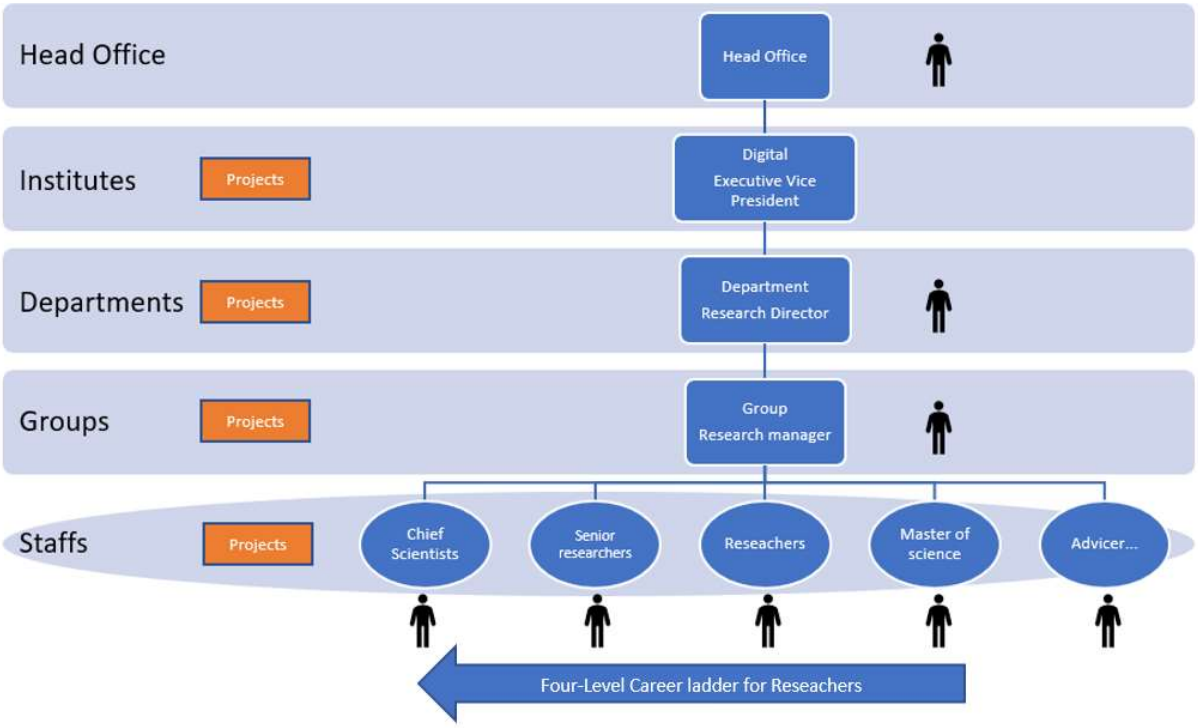


FIGURE 6-1 POSITIONS OF INTERVIEWEES IN ORGANIZATIONAL STRUCTURE

6.2 Influence of Human Resource Management on Career Development

After having an overall picture of my case company above, in this chapter, I will focus on the practices of HRM in the organization from two perspectives: career model and resource allocation. HRM is one of important organizational support for Project managers. Among its practices, the formal career model has a significant influence on the employees' career development. In the CRO, resource allocation is believed to be the most challenging part of work for a project. Chapter 6.2.1 shown the organizational design of career model, while Chapter 6.2.2 illustrate the individual experience of such organizational career model. Then Chapter 6.2.3 describe the resource allocation of personnel and budget in projects. In addition,

I will elaborate the training programmes of HRM together with learning experience in the later Chapter 6.5.1 Formal Learning.

6.2.1 Organizational Design of Career model with Promotion Criteria

Among scientific employees, engineers, technicians, and administrative personnel in the case company, as seen before in Chapter 6.1 Case Description, my interviewees are mainly scientific employees and research leaders in the management path. They described a short career ladder with four levels for scientific position and line management to follow, shown in Figure X.

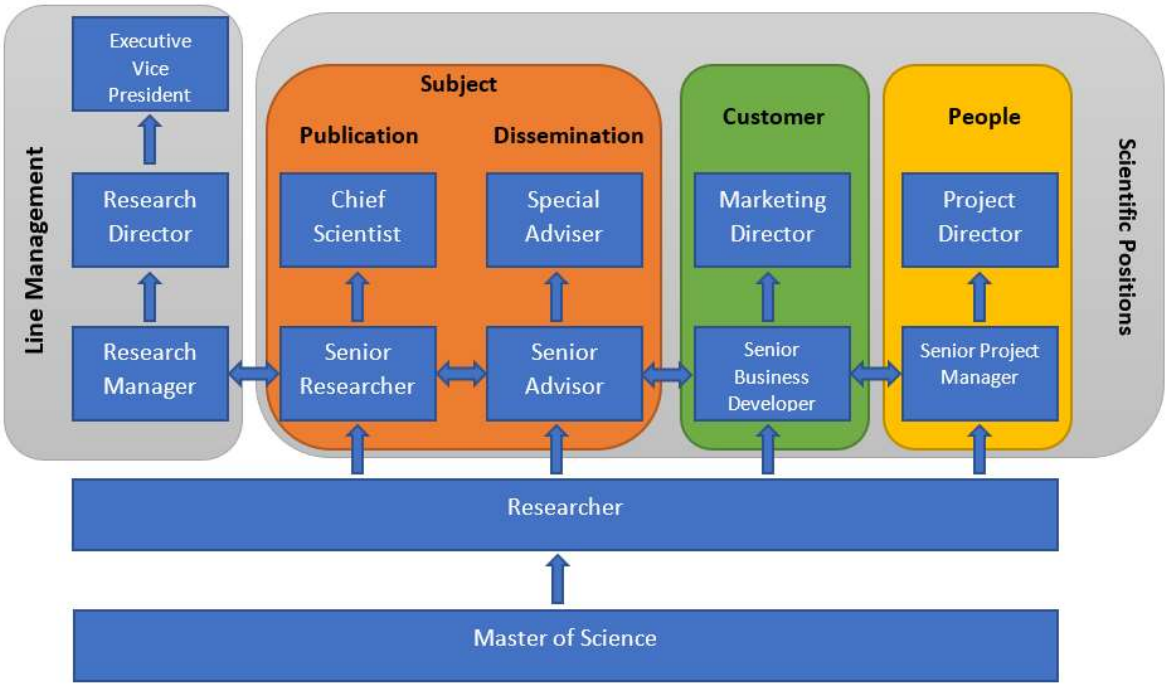


FIGURE 6-2 CAREER MODEL FOR SCIENTIFIC AND MANAGEMENT POSITIONS

The criteria and promotion procedure for each position in different levels are clearly acknowledged by employees. A new employee with master's degree will started at the lowest level with position title as Master of Science. For Level Two where the majority are, researcher need a PhD degree or relevant experience. Level Three of the "Senior" title requires several publications and experience of being Project manager for several successful research projects. In this level, the organization designs four different parallel career models for scientific positions, despite it is not common to shift between ladders due to the specialization.:

- Research ladder is for people who pursue to be up to date on the international research front with academic results like publication, patents, confidential results and so on;
- Adviser ladder is for people who do not do research, but disseminate academic results to public or translate the results into a new business;
- Business developer ladder is focus on marketing, building network within the field, business development and planning with potential customers;
- Project Manager ladder is focus on completed projects successfully and lead good project teams.

In the end, only few people in the whole institute (around 10 out of 500) can reach the top level with completely different setting where shall give strategic advice to the management group. They are like superman who are outstanding at managing projects, meanwhile able to conduct research within these cutting-edge projects.

Department is the smallest profit center. Management is exercised through collaboration among all line managers and decisions are made at the lowest possible level in the organization. The department's research director with research managers from different research groups forms the management team of department. Research managers normally need to balance between conducting their own research and exercising leadership, i.e., personnel management, control customer and market contracts. Department directors and institute leaders do not have room for research anymore, mainly focus on strategic and operational management to facilitate good internal and external collaboration and enhance industrial and political dialogue in order to promote commercial competitiveness and beneficial solutions for society as a whole.

6.2.2 Individual Experience of Career Path

Even though the organization career model builds four parallel senior ladders for scientific employees, most of my interviewees do not perceive the exist of specialization in this low hierarchy PBO and indicated a preference in the research rather than professional PM. Project manager ladder will not support career development in this CRO, as mentioned in Chapter 6.1 Case Description, the case company emphasizes and put all the privileges and rewards on research.

"I was thinking to be a professional Project manager since I got my master education on PM. After working for a while, I changed my mind to be a researcher. One is I find the interests in research, other is because I do not want to take the stressful position as Project manager but with little reward to my career here." – TT

Large EU projects usually need a full-time professional PM position, called "EU project coordinators", support the technical manager, who is the actual Project manager of the project. The EU coordinator does not require to be expert in the project research field but needs certain management skills which suit to the EU framework. He or she has little chance to do technical work nor do research, but only focus on PM. This professionalization leads to a successful collaboration in the complex EU projects. After years, few good senior researchers become professional in this PM role.

"I have a big regret in the last decade. PM itself is interesting for me, and because I am good at it, I have kept being assigned to the professional PM position in EU projects. It led to the fact that I do not have chance or time to publish, which against the organizational requirement on the research. I did consider changing my title to be a Project manager, but the "researcher" title gives me a recognition in research projects that shows I have some understanding of technical content to be able to lead researchers." – A senior researcher on the position of EU coordinator

Besides one senior advisor and managers, all my interviewees are in the research ladder. Even the professional EU coordinator who does not do research for years still choose the title "senior researcher" instead of "Project manager". Project manager ladder is not attractive for researchers on the cost of giving up their research career. It shows that there is no career path for PM. On the contrary, researcher ladder is regarded as superior and keep all good researchers stay in it. Also, there is little difference between PM ladder and research ladder regarding to the actual tasks in projects.

"There is maybe lower than 10 people in the whole company with a Project manager title. After reaching the senior level, work becomes similar linked with managing projects and publication, main difference for the senior Project manager is that they manage more project members in the big project." – AD

Everyone in my study indicates that the organizational culture expects researchers to be good at everything like a superhero, including research, PM, marketing, public science, leadership etc. All of them are inside the criterion for the job and promotion. This organizational culture encourages employees' protean development and self-navigating in all kinds of career paths, as well as motivates employees eventually land in the researcher ladder. Senior interviewees convey a need for specialization in the career ladder.

"Although everyone does almost everything in projects in the past 40 years, I believe that there should be a specialization in career ladder. Even employees are specialized, they can still do some of the other things. But then employees have clear profiles for others in the organization to know their specialized competence." – TL

6.2.3 Resource Allocation by Bottom-Up Method

Projects normally are built up and sold out to customers by researchers themselves, so that the researchers would naturally become the Project manager. For a complex huge EU project, the PM work will be assigned top-down to a merited Project managers who are known to be good. Project managers has full autonomy to allocate resource and make decision in projects. Many interviewees point out that the main challenge for Project manager is recruiting internal personnel resource to compose the project team.

"The popular personnel resources are always competing while the available personnel offered by organization usually unfit. Researchers usually choose work driven by internal motivation, it is unable to tightly manage or assign researchers top-down through the government system." – JG

Multidisciplinary projects need participants across departments or institutes which physical isolated from dispersed buildings in different cities. There are lots of historical legacy from M&A in different departments, so the local culture is diverse. Some departments (Construction or Manufacture) have more control than others (Software) by the different nature of disciplines. Since everyone are in the researcher ladder without a specification, refer to Chapter 6.2.1 Organizational Design of Career model with Promotion Criteria, competence of individual researchers is invisible by their job titles. Moreover, it is impossible to build a costly internal

search engine for resource allocation in this open and network-based organization. Professional social network is the icebreaker to reach out to the right person in unknown disciplines.

"Project managers need to take initiative and be direct, open to cooperate with different internal departments. Also, it is important to adjust to the local logics. The logic from a department who works in structured way should not get applied to a very creative department." – AF

6.3 Influence of Project Portfolio Management on Career Development

The last chapter illustrates the HRM practices in my case company with the individual refection. In this chapter, I will concentrate on the PPM as another important organizational support for Project managers from three representative constructs: Chapter 6.3.1 PMO where presents employees' expectation for PM support, Chapter 6.3.2 PPM formalization where describes the existing PM tools and systems, and Chapter 6.3.3 Top management involvement in the Project managers' career development.

6.3.1 Absence of Project management Office

My findings shows that there is lacking a PMO to manage project portfolio, support project tasks, assure quality of project, assess performance of Project manager, and manage knowledge etc. Employees are looking forwards to a PMO while the organization is uncertain whether need it. PMO need to be highly relevant for all the Project managers instead of a bureaucracy stuffed with unemployed Project managers. Main challenge of building a PMO is how to recruit and keep these excellent Project managers working inside.

"Excellent Project managers all have a career motivation in conducting research instead of working in PMO. Working against their internal motivation will lead to brain drain and higher turnover in organization." – MB

At the moment, department coordinators are close to the portfolio management position since they are the only one have an overview of all the projects within the department. However, they do not involve themselves in the actual project tasks but do the paperwork, such as sending bill to customers, achieve research data, remind Project manager the procedures and checklist. In

the past, there were an EU adviser who involves in all EU projects to help tasks, bridge between different projects and build a corporate memory.

There is a central support department somewhat functioned as part of PMO that supports project tasks, like the legal adviser who help with contract, or the financial worker who make internal cost analysis. But all interviewees ask for more support for PM tasks, especially the administrative work in projects such as documenting, reporting, finding right tools for jobs, etc. So that the Project manager could focus on strategic actions and research.

"It is so limited how much secretaries and financial workers can do. They only work inside the organization boundary. Project managers have to seek out themselves for the key performance indicators in projects which collaborate with external partners, such as economy, time sheet. I hope they can facilitate projects with knowhow and support me with PM competence." – KB

My findings show that performance evaluation of project is not required by the organization, unless the project generate low score in the clients' scoring system. There is a standard QA procedure, but no one actually follow it because *"standardization does not fit to research."* In addition, the QA of project are done by its Project manager or peer audit from the same project. Line managers will conduct an annual evaluation for individual Project managers. However, *"Beside the hard fact of projects, the evaluation lacks a comprehensive picture of Project manager's performance."* – JS

My Interviewees state that there is lack of a knowledge management mechanism to capture knowledge from previous projects and transfer around. The existing quality system has sum up some experience in the written procedure, but knowledge sharing mainly happens through communication with colleagues. In this very open organization, people are willing to share tacit knowledge if there is need and room to share. *"We do not have time or cost for knowledge processes, the billable hours supposed to work on projects."* – PN

6.3.2 Immature Formalization of PPM Process

All employees confirm that the case company is immature in term of PPM process due to the fact that projects are fully authorized to Project managers.

After many years improvement, official PM tools are still difficult to use and lack of standard templates and structure for economy and planning in project. Individual Project managers are left by themselves to develop good tools and templates which adapted to the system from practice and experience.

"The nature of research is opposite to standardization, and projects are different to each other. One size doesn't fit all. But I believe that there are some universal tools and methods that can help us." – HS

Leaders in my interviewee emphasis that Project managers are supposed to follow a formalized project steering system with written documentation as guideline and framework of project process and procedures. However, most Project managers admit that they rarely followed it because it is too generic. In the real world, it is quite flexible for Project managers to run their projects in their own way which they think better suited to meet their clients 'needs.

"Instead of too much formalization with a long checklist which is impractical to follow by Project managers, we need freedom to differentiate projects in different context with different requirements from customers." – AH

The finding shows that when it comes to PM tools and method, formalization will increase profit, creation, publication, and quality in projects; when it comes to the PM process, formalization of project steering system can have a negative impact on the flexibility and autonomy of research projects.

6.3.3 Lack of Top Management Involvement - Perception and Improvement

On organization level, top management travel and attend occasions where they can strategically talk to politicians and their counterparts in the industries, promote the brand of company and exposure its capabilities to public and industries. In this way, employees gain a lot of respect and trust from external partners and customers by holding the logo of organization.

On project level, leaders express a "hands-off" management style to inspire Project managers to take initiatives and leadership. Top management rarely involving in projects besides helping on major collaboration problems between external partners.

On individual level, leaders emphasize that there is high level of trust from top to bottom. And this trust is based on high level of work pride and high capabilities among the employees in the organization.

"Our employees are generally good at everything they do. They are very proud of their work. So even if lacking support, these very conscientious and clever people will somehow manage to solve what needs done with their own resources anyway." –AJ

However, all employees express a feeling that they do not get much support from the top management, they have nothing to do with work as they are living in different planet. *"If the people are able to solve everything themselves, why should the top management bother to provide support?"* After bringing in profit to the company, there is not so much investment comes back top-down on the career development of individual employees.

"Although the investment on individual development will cost money, for instance, or more advanced trainings. I am sure that people would be able to work more effectively, with less stress and create better quality if there is support from the top management." –TD

Many of the chief scientists bring forth that the organization is deeply rooted in the way mentioned above in 6.2.1 Organizational Design of Career model with Promotion Criteria. It needs a big revolution from top management to change career specialization or improvement on the support for individual development. Top management could seek out and learn from a benchmark from other similar CRO who put PM in the scientific context.

The focus is research in this research institute. So that there is not enough attention to other things which should be, especially, PM does not get the same priority in this PBO. Employees will get credit for publications, but not for writing a good proposal, nor managing a good project.

"When a project proposal succeeds, it brings millions in which keep 4 full-time jobs for 4 years. Isn't that more important than one paper in the journal? When managing a project with 110 members (which is more than the size of our internal department) and creating chance for others to publish. Isn't that more important than my own single publication?" – JG

Knowledge management are expected to be more structured by support form top management. The case company prefers everyone becomes a "superhero" to some extent release the loss of

tacit knowledge when people leave. However, the senior advisor suggested *"organization could arrange more internal courses or opportunities to let employees share and transfer knowledge."* – SK

6.4 Influence of Personal Characteristics on Career Development

In the previous part, I have illustrated the organizational influences on career development through HRM and PPM practices. In this chapter I will elaborate the influence from personal characteristics through four aspects: Chapter 6.4.1 Personality which direct personal career choice; Chapter 6.4.2 Academic Background which determine personal choice of work environment; Chapter 6.4.3 Age which impact on work performance, and personal expectation; Chapter 6.4.4 Gender which could link to equity on jobs.

6.4.1 Investigative-Realistic-Social-Enterprising types of personality for Vocational Choice in Contract Research

According to Figure 5-2 Distribution of Interviewees in Chapter 5.2.3 Sampling Interviewees, all interviewees have high academic qualification with a long education time, and naturally emphasized their strong vocational interest in the applied research career which has great freedom to work on interesting projects in diverse industries.

The environment is consistent in the case company, as well as the congruence between person and environment. Researchers could be involved in multiple research projects at the same time, for example, their own independent research project which requires independent contribution and publication results as a scientist, or a 4-year EU project which requires strategic and focused work to collaborate with many external project members. On the one hand, it is a project-based work which requires the Project managers to plan, market, sell, and lead implementation of projects within given time and cost. On the other hand, it is more a scientific research work, projects mainly based on Project managers' scientific work which need them be update on international research front, be recognized in their subject, and establish professional networks. The forefront is always research as the base of fund and income, whereas the part of internal administrative work is not billable.

"We have the rule of thumb that everyone is expected to do enough research, take part in projects acquisition and has an inclination of taking the Project manager role. Depends on personality, there is exception like few people who are not PM type do not take that role." –MS

It is quite different from a consultancy where conducts repetitive tasks to apply mature methods to solve problems in projects. Moreover, it is not purely academic research in universities with 100% basic funding. Theories are test out, and methods are invented to apply in order to solve problems which are come from customers in industries. When the contract research goes flourish, stable collaborations was established in the subject within industry, and promise potential large sales in the market, Project managers might create a spin-off for themselves.

The finding implies that interviewees who prefer a career in my case company combine with Investigative-Realistic-Social-Enterprising types of personality.

"You can always reinvent yourself to new projects with new challenge and team members. And you get a sense of accomplishment to apply research within the field. As long as you are research-minded, then [the case company] is a really great employer for you." –AH

6.4.2 High Academic Background for Vocational Development in CRO

According to Figure 5-2 Distribution of Interviewees in Chapter 5.2.3 Sampling Interviewees, majority of the interviewees have a technical background in the case company which exploiting opportunities created by technology and technology transformation. The academic qualifications of interviewees are in a range of disciplines. To provide a basis for identification of educational background differences in career development, the interviewees in my study can be categorised into two groups by educational background: Technical and Social science. Meanwhile, considering the institutional reform in education and intergenerational knowledge transfer, a categorisation (Colombo, 2019) was adopted to distinguish Senior (born 1947-1981) from junior researchers (born 1982-1992) in this study, shown in the Table 6-1. Education background by generation below.

Nearly half of the Senior interviewees have degrees in social sciences which contribute to a multidisciplinary knowledge base for the case company to apply across a wide range of research fields, industries, and society. One of senior researcher who have background in psychology

emphasizes that projects nowadays in general are multidisciplinary and need collaboration across many departments.

TABLE 6-1. EDUCATION BACKGROUND BY GENERATION

	Technical	Social Science	Total	%
Senior (1947-1981)	10	7	17	68%
Junior (1982-)	7	1	8	32%
Total	17	8	25	100%
%	68%	32%	100%	

"I can always find my identification in projects, even though I am not an expert in digitalization. Knowledge gaps are common to see during the cooperation, a term could have different meanings for people with different backgrounds. We are all helpful and open to share knowledge." – AF

However, finding indicates a change on individual study fields through generation. Despite the sample size is insufficient to draw a reliable conclusion, only one of seven junior interviewees have the academic qualification in social science. It might imply that the technology context of organization is influential nowadays, and the nature science background becomes a dominated entry path to PM career in the case company. A HR leader expressed an impression of social scientists: *"It is not easy to find a position for them in the organization. Corresponding with the local culture, social scientists high possibly would have hard time to merge themselves into projects."* – MR

According to Chapter 6.1 Case Description, the case company achieved high level of academic qualification among employees that in general 60 per cent of them have a PhD degree. In my study, 84 per cent of interviewees hold a PhD degree or higher, only three juniors are on

master's degree and one senior project manager stays with a bachelor's degree from 48 years ago, shown in the Table 6-2 Level of Academic Qualification by Generation below.

TABLE 6-2 LEVEL OF ACADEMIC QUALIFICATION BY GENERATION

	Bachelor	Master	PhD	PostDoc	Total	%
Senior (1947-1981)	1	0	12	4	17	68%
Junior (1982-)	0	3	2	3	8	32%
Total	1	3	14	7	25	100%
%	4%	12%	56%	28%	100%	

As elaborated in 6.2.1 Organizational Design of Career model with Promotion Criteria, in the case company scientific personnel are required to pass master's level in a relevant subject area, because the core business is R&D which require high education level. In addition, *"If you had done a PhD or had some work experience before, then you often go almost directly to a middle level as "researcher" in the career ladder."* A young senior researcher stated. Moreover, the threshold of being a Project manager in EU projects funded by European Research Council is a PhD degree. Otherwise, it is equally qualified if achieving the high level in the organizational career ladder as senior researchers.

6.4.3 Age Differences on Development Opportunities and Expectation of Support

To identify the influence of age differences on the positions in the organization career model, the interviewees are categorized into two groups by their positions according to the four-level career ladder for specialists which mentioned in Chapter 6.1 case description, shown in the Table 6-3 below.

Findings show a potential link between the age and the levels in the organizational career model. Same as any other organizations, the senior participants are generally at senior or higher positions while the junior participants are developing mainly at the middle level or lower.

Noticeably, 25% of the Junior in my interview developed well to the senior level and claimed the transparency of opportunities for their development.

TABLE 6-3 POSITIONS BY GENERATION

	Middle Level and lower	Senior level and higher	Total	%
Senior (1947-1981)	1	16	17	68%
Junior (1982-)	6	2	8	32%
Total	7	18	25	100%
%	28%	72%	100%	

There are lots of opportunities for the junior to grow in the case company. Title of position will not hinder junior to participant in projects as long as being capable. In other words, there is no direct connection between the complexity of project and the participants' levels in the career model. Development opportunities are transparent that employees are aware of how they can progress within the organization, and the requirements they need to fulfil on different levels. Despite few shutting the juniors away, majority are glad to work with them in diverse projects. At the very beginning, the juniors can still take part in larger projects as the assistants for Project managers, gaining experience and building competence through the junior tasks, such as administrative work.

"Technically no logic in the system saying you are not allowed to do this because you are not a senior researcher. If you can do it, do the tasks that you qualified, please go ahead!" –TM

In general, age is not the criteria for promotion, but age reflect on the different performance which is of importance in the career ladder. And it is the inner motivation rather than driven ambitions which speed up career development in the case company.

A distinction of expectation of organizational support was drawn between the juniors and the seniors due to differences in the competence and understanding of the organization. Participants at junior level tend to have a long list of complains and expectation for organization because of lacking skills for work and uncertain about their identification. On the contrary, participants at senior level shows less concern to the potential internal improvement that comes with certain cost that eventually need themselves to bring in money to pay for.

"I had a long list of complaints of things at the beginning. After progressing from a novice, I get better judgement for work tasks and the inner workings of [the case company]. It means either I become blind to somethings that can be improved, or I am aware of the cost behind such improvement which need me bring in money to pay for. So, I am careful about what I wished for it." –HS

As a result, less expectation of organizational support leads to a relative higher work satisfaction, which manifest in lower mobility rate among the senior employees as mentioned in Chapter 6.1 case description.

"It's not because I don't look at opportunities elsewhere, but when I judge the pros and cons, I'm comfortable in the fact that I am keep progressing and checking off career goals for myself. At some point I start feeling I am too old to switch, then I'll stay." –GK

Contrarily, the juniors in my study who chose to leave is not only for trying other opportunities elsewhere in the research field, but also admitted the lack of organizational support.

"The board in the strategic level decided to build a research group in this field, and I was the first employee joined this group. With my group manager, we were only two in the group to explore the opportunities and build everything from scratch within a budge from [the case company]. I was the newest employee but also the 'most experienced' employee in my group at that time." –SM

The most interesting is age differences also show influence on both hard skills and soft skills of individual competence development. I will illustrate diversity in project performance and social network later in Chapter 6.6 Influence of Competence Development on Career Development.

6.4.4 Gender Equality in Career Development

According to Figure 5-2 Distribution of Interviewees in Chapter 5.2.3 Sampling Interviewees, the gender distribution in my sample (9 out of 25) is nearly same as the proportion of women in the company (35%), as mentioned in Chapter 6.1 case description. The majority of participants in this study and majority of employees in the case company are man, to some extent, reflecting the structural imbalances within the educational establishments in various technical fields through recruitment practices. The case company has a recruitment policy, which focus on skills and expertise. A female group manager stated, *"Less woman here is not because of recruitment differentials between man and woman […] It is the personality decides your career choice. The gender distribution is already different in the study field."*

In general, Norway is relatively high in the cultural practices of gender equality. Furthermore, interviewees from management level depicted that the company is aiming actively to recruit women and to develop female managers from its own ranks. The participants indicated that female Project managers are treated equally as their male counterparts, and no gender differences were stated among employees in terms of how they perceive their career development. In the Chapter 8.2 Future Research, the theme about Gender influence on career development will be discussed further.

"In the department which I lead, I have three women as research managers and one man. They are not recruited because they are woman, but because they are the best for the position." – a Research Director

6.5 Influence of Learning Experience on Career Development

As mentioned in Chapter 6.2, HRM also support individual learning experience. Learning is the main way for individual competence development. In this chapter, I categories two types of learning experience: Chapter 6.5.1 Formal Learning which includes academic education and organizational training; Chapter 6.5.2 Informal Learning which includes mentor model and spontaneous learning from job.

6.5.1 Formal Learning

Interviewees describe two types of formal learning through academic education and internal training programme. Together with the professional skills development, the formal learning

also provides arenas for employees to build professional network. A newcomer said, *"Planned internal courses are the best chance for similar ages employees from different departments to meet each other."* – AT

To identify the significance of formal PM qualification in career development of interviewees in this study are categorized into two groups shown in the Table 6-4 below.

TABLE 6-4 PROJECT MANAGEMENT QUALIFICATION BY GENERATION

	PM qualification	Non-PM qualification	Total	%
Senior (1947-1981)	2	15	17	68%
Junior (1982-)	1	7	8	32%
Total	3	22	25	100%
%	12%	88%	100%	

Few of interviewees have professional PM qualifications such as academic degrees in PM, or professional certificate from PM associations. A senior adviser who took an MBA stressed that *"PM competency is important for individual career development in CRO, there is a gap towards PM training in the case company for long time that need improved."* – SK

Majority Project managers do not have a formal PM qualification. They indicated that they mainly learned their craft through practice on work besides a basic two-day mandatory internal training course in PM offered by organization. The head of organizational training programme explained that for the juniors who have little PM experiences, a formal education would support their PM competent development. For senior level, a learning organization (such as PMO) would support PM competent development through individual reflection, performance evaluating, and experience sharing. He further elaborates that the internal PM course is considerably concerned with hard skills and soft skills, such as how organization system support

PM in the financial track or QA, HSE content and issues related to research ethics. A senior researcher who lectures the internal PM course, expressed his views about traditional PM qualification will not contribute to individual career, because managing research projects is more like art instead of science, that does not conform the traditional iron triangle in PM, and the breakthrough often comes from intuition and luck instead of time and cost.

"The well-known PM certifications is so far outside scope of our projects. Limited things you learnt would contribute to your work, whereas most need to be modified and adapted to fit the logic of research project." – AD

As mentioned in Chapter 6.2.2 Resource Allocation by Bottom-Up Method, one size does not fit all in this very diverse multidisciplinary organization. He further pointed out that: "*The short internal PM course lacks both PM theoretical frameworks, and application part about how to apply it in practice."*

In addition, there are also a general mandatory internal course for all line managers which cover a comprehensive management responsibility for Leadership, Client, Research, Employee and Good operations. Greater emphasis is being placed on consolidating effective interaction across scientific and organizational boundaries as part of the "One Company" concept.

Moreover, junior employees mentioned a very popular Ph.D. programme where employees can get support for three years Ph.D. study with normal salary while taking 20 per cent workload in company. However, this programme only supports for technical specialization. There are no more formal advanced learning opportunity nor organizational support on better PM where the senior Project managers were overwhelmed by the lack of support.

6.5.2 Informal Learning

There is lots of tacit knowledge which impossible to formulate nor write down, that need to learn by experience. Project managers agree on the best way to transfer that knowledge of PM is by working together with experienced co-workers in the projects. *"It is a good way of learning because I can try myself and learn through real cases."* – TT

For informal learning, junior interviewees elaborated a planned development with both mentor model and supervisor from line managers. Others further added that they do not feel passively

supervised doing work, but rather they take the responsibility to get the job done. *"I can easily ask my mentor and my line manager, but also other seniors like charismatic leader in the group to answer my questions, it is both formal and tacit contact that they would help me."* – TT

Besides, much learning mainly occurs spontaneously on the job, including self-learning, learning from others and peer-reflection. Some employees illuminated that both short positional distance and location distance facilitate the vertical and horizontal information flow. The low hierarchy structure reduces barriers which tied to positions.

"Me and my Project manager could change positions in another project. I got a senior researcher as member in my project, he helped me with his knowledge how to do projects, but I am the one who is the Project manager and do it." – MW

Mixing employees and managers of same research field together in an open landscape make it easier to access to each other, hence increase knowledge sharing. *"A group of professionals within a subject are sitting in an open office including the group manager. We are open for approaching."* In this way, employees are encouraged to seek information, propose new ideas, and enhance knowledge processes. – KB

6.6 Influence of Competence Development on Career Development

Refer to Chapter 6.5 Influence of Learning Experience on Career Development, individual competence development is developed by training and practices. A researcher recalled his experience of competence development, considered the limitation of individual potential competence seems to be as same as colleagues' competence in surrounding.

"I gain most 80% soft skills from my mentor who holds high-level competence in PM, for instant, sharing his network with me. The rest 20% are hard skills which he points me the direction or resource to learn myself." – TM

Inspired by this, I will separately illustrate the competence development from Chapter 6.6.1 hard skills like expertise, Chapter 6.6.2 soft skills like professional social network, and Chapter 6.6.3 Balance between hard skills and soft skills. The finding shows age differences on both hard skills and soft skills, which further influence on individual career development.

6.6.1 Diversity in Expertise

Personal performance is discussed regularly in the employee interviews, with a focus on measure for competence development. As part of the beauty in research, the performance has nothing to do with age. Junior researchers could be better than the seniors as an oncoming star in the projects. *"I feel young people in general have a better performance in research projects."* A chief scientist asserted. The juniors usually have quite strong initiative to develop, also they have the time and freedom to focus on the technical work in only one project at the beginning of their career. Whereas the seniors in general involve in several projects and take the management or strategic tasks.

"An experienced senior researcher would tend to directly assign you a task or tell you what to do. As a junior, I cannot disagree with them." – SM

To be more specific, young people deserve most credit by conducting detailed technical work, but often they get the least because their senior bosses are the person who present and review the results.

"We have the whole spectrum of researchers on all levels. Some will become great regardless of age, while some seniors never have a decent rate of publication nor projects that they bring in, …, they do not get their hands dirty by leaving technical work to youth, such as writing the report, implementing, and testing the software with the users and so on." – A junior researcher at senior level position

6.6.2 Diversity in Professional Network

For the competence development, all interviewees emphasized on the importance of professional network among other factors in the organizational competence chart for Project manager. Age shows difference on the professional network. On the one hand, the seniors tend to have both good internal and external professional network to access to stakeholders and partners after many years collaboration in projects. On the other hand, a good professional network enables employees to reach senior level in their career.

"It is very useful in the meeting that the seniors give advice based on their professional network, such as remind a relevant work from someone or bring relevant resource into projects. They

always know someone who are important in the industry that can give us new projects or help us in projects" – a senior researcher

For many junior researchers, they focus on access to data to develop professional skills in subjects but might not realize the importance of building professional relationships in their career development.

"I have been the Project manager in three projects for the same client. After my contact person leave that company, unfortunately I have not found opportunities to bring in new projects because lacking relations. This leads me start consider whether I am fit here." – A junior researcher

6.6.3 Balance between Expertise and Professional Network

Overall, interviewees agree on that competence development is based on the individual internal motivation rather than a hard standard driven by organization. Mentioned in Chapter 6.1 Case Description, it is essential for case company to achieve an appropriate balance between scientific publication and contract-based research.

Correspondently, the Project manager role requires much higher competence than only being a hardcore researcher. Besides a bigger professional network, it also takes away around 1/3 of time from research to coordinating stakeholders, managing project, writing administrative documents, reporting, and so on. However, as the primary work of researchers, producing knowledge and papers is the only way prevent them from moving away from research field. A chief scientist emphasizes that good Project managers would separate roles between research and management and go between them.

"They don't need do everything themselves but managing technologies and coordinating their work packages' managers to assure project quality. Taking the role of Project manager is a win-win situation by taking initiative to manage projects and creating room for publication." – AJ

To balance the competence development is also balance between individual wish and organizational need. Researchers point out the direct way to balance with research is by giving out the Project manager position and limit the number of projects which you participate. Since the case company prefers not to hire part-time, if there is no capacity to do projects, organization will put them on hold or turn down.

6.7 Influence of Goal and Success on Career Development

The individual career goals which include career direction, progression, work opportunities, social awards are dynamically adjusted by reflection and self-evaluation. Interviewees conclude their goals are keeping the same as creating new projects, better outcomes of project, and better publication. These goals only can be achieved by leading projects, which creating work for whole project team, and room for more publications. By developing towards these goals, eventually individuals achieve their career success. In this part, I categories the individual success into Chapter 6.7.1 Objective Career Success and Chapter 6.7.2 Subjective Career Success.

6.7.1 Objective Career Success as Safeguard

The case company provides a platform with well-equipped facilities and cutting-edge professional teams for researchers to apply funds to do their research. Employee rights are safeguarded by policies and guidelines which have been incorporated into the management system and code of ethics, by means of collective salary agreements between professional associations and unions, and an inclusive work environment. In addition, there is little use of temporary employment contracts in order to keep a stable employment relationship.

"In general, salary or flexible working hour is not my motivation, but the freedom and interest of projects. We get a very flexible rules allows us to work from home or go on vacation whenever we want to. We have a decent salary. But it is below average for consultancy which most of us can apply for. Also, it is a little bit funny that you do not earn much more or gain anything else after you promote to a senior researcher." – a senior research

My finding shows that the case company does not do work to motivate employees. Instead, the organization support their internal motivation with confirmable attainments. Those financial rewards or incentive are too weak to attract and motivate researchers in the competition with other organizations.

6.7.2 Subjective Career Success as Motivation

The results are evidence that employees in general achieve subjective career success emerged in terms of continuing progress in key areas such as job satisfaction, recognition, belief in the future and team spirit.

"In the end, it is the new interesting research projects attract people to stay and motivate me to keep progressing." – MO

Most appreciate the efforts from their line managers, and top management who take care, support and offer unique opportunities for their career development. The organization give a lot of freedom and autonomy to individual Project managers. Employees are motivated by working on the research which they find interesting. They take initiative to find projects from their research ambition. The significance of projects with generated awards brightens employees' CV to present their competence of research and PM, which help them gain credit and recognition 'in the professional network and build an identity in the field of subject.

7 Analysis and Discussion

This chapter uses the modified SCCT framework presented in the chapter 3 as a structure to analyse the applicability of my propositions listed in chapter 5 with empirical findings presented in the chapter 6, and to discuss how my study coincides with the theoretical foundation. Throughout the analysis and discussion, the propositions will be evaluated and revised to answer my research questions:

Overall RQ. How could project managers build their career through contract research projects in project-based organization (PBO)?

RQ1. How do project managers experience their career development in contract research organization (CRO)?

RQ2. How does contract research organization (CRO) influence the careers development of project managers?

The following subchapters analyze each factor of the to determine whether my propositions are supported by empirical findings for career development. I will first explain the theory from where the proposition stems. Then I will present empirical findings which support or against the propositions. Finally, I will summary my propositions on their merit or the need to revise. Based on the results of the analysis, I discuss the further theoretical implications of the modified SCCT framework. The discussion will provide the basis to answer my research questions.

Finally, I will have an overview of how the revised propositions answer my two sub-research questions. Then creating a new SCCT framework specific for project managers' career development in CRO.

7.1 Personal Characteristics

To unfold the individual experience of career development in CRO which will give answers to my sub-research question one (RQ1), propositions relating to personal characteristics in the modified SCCT framework are analyzed in the following subchapters.

The three factors connected to these propositions are *personality* which impacts the direction of career choice; *academic background* which is relevant to the congruence between employees

and organizational environment; and *age* which determines the performance, expectation of organizational support and mobility rate.

7.1.1 Personality

The proposition related to the influence of personality on the individual career development is as follows:

Proposition 1: People who have a personality type in Social-Enterprising more likely to prefer a career in project-based organization.

The proposition revolves around the influence of personality types on career choice which explained by Holland (1997)'s RIASEC model as presented in the Chapter 3.1.1 Personality. Theories shows the personality types are the main drivers for individual vocational choice, and most individual's personality has a unique combination of several of the types (Holland, 1994). Combing with Paton et al. (2010) finding of Project managers shows to have a Social-Enterprising personality (Paton et al., 2010), and Hogan and Roberts (2004)'s socio-analytic model of identity development.

Empirical findings from the following sections contribute to evaluate this proposition in the CRO: Chapter 6.1 Case Description, 6.2.1 Career model with promotion criteria, 6.4.1 Investigative-Realistic-Social-Enterprising types of personality for Vocational Choice in Contract Research, 6.4.2 High Academic Background for Vocational Development in CRO, 6.6.1 Diversity in Expertise, 6.6.2 Diversity in Professional Network.

Supporting the proposition

In Chapter 6.4.2 High Academic Background for Vocational Development in CRO, nearly half of my senior interviewees are expert in social science and contribute to the multidisciplinary projects in the organization such as psychology. Their social research fields with the nature of their work could indicate that some employees have a Social type of personality to support them do research in the field of social science, and further support them build a career in the case company.

Following the line of thought, the employees emphasized in Chapter 6.4.1 Investigative-Realistic-Social-Enterprising types of personality for Vocational Choice in Contract Research,

that coordinating a large scale of EU project combines with numbers of external partners require lots of efforts in social networking, like communicating between partners, motivating project members to build a good project team, and so on. A Social type of personality allow the employees to have strong abilities to handling those people-oriented activities in the long duration of projects.

For acquisition and recruitment phases in the research projects in CRO, in Chapter 6.6.2 Diversity in Professional Network, all interviewees emphasized on the importance of professional social network in the career development. Internal social network is the key for recruiting right project members, and external social network is the foundation of creating opportunities for acquiring new research projects. Both statements are supportive towards my propositions that Social type of personality is important for employees to be consistent with this network based CRO.

In Chapter 6.4.1 Investigative-Realistic-Social-Enterprising types of personality for Vocational Choice in Contract Research, interviewees emphasized that being a project manager is one of the main tasks in the CRO. Leading various research projects with administrative work indicates a leadership ability oriented with an academic entrepreneurship which manifest the Enterprising type of personality in my proposition. Apart from consultancy companies or universities, creating a spin-off based on successful contract research project in the other way develop the Enterprising type of personality of the Project managers.

Opposing the proposition

In Chapter 6.4.2 High Academic Background for Vocational Development in CRO, majority of my interviewees have a technical background. They emphasized their strong vocational interest in the applied research that focus on solving realistic problems from industries, which differentiating from the theoretical research in universities. This emphasis on the application of research to industries indicate a Realistic type of personality which is not included in my proposition.

Described in Chapter 6.6.1 Diversity in Expertise, despite experienced senior researchers are good at giving advice and bring resource into projects based on their professional social network, young employees deserve more credit by conducting realistic technical work, such as programming and testing software in the technology institute. This is, to a certain degree,

supported by both senior and the young interviewees that realistic technical work is as important as the strategic work which contribute to the performance of research projects. It indicates that researchers need a Realistic type of personality to develop their careers in the CRO.

Employees in Chapter 6.4.1 Investigative-Realistic-Social-Enterprising types of personality for Vocational Choice in Contract Research, emphasized as well that the forefront of their work in the case company is always research as the base of their income. Considering this scientific research projects, Project managers have to keep their recognition as researchers as the premise and keep themselves updated on research front. The transparent criteria towards career model are described in 6.2.1 Career model with promotion criteria, the publication rate and science dissemination are considered important to the identification of a researcher which indicate their scientific abilities. According to the organizational culture, the nature of research projects, the criteria towards career model, Project managers in my findings all indicated a research mind which linked to an Investigative type of personality as their motivation to support their career development in the research field.

Conclusion

The empirical findings revealed more personality types for Project managers among RIASEC model in addition to Social-Enterprising, which show inclination to choose a career in the CRO: Realistic and Investigative. Thus, I would argue that proposition 1 is partially support by my findings. In fact, for a research career in CRO need combine with Social, Enterprising, Realistic, and Investigative types of personality. I would rephrase the proposition by making it the following instead:

Proposition 1: People who have Investigative-Realistic-Social-Enterprising types of personality prefer to choose a career as project managers in CRO.

Theoretical Implication

I bring up four categories for individual personality type in my analysis, but only two of which are covered by the theory. I would consider the traditional project manager role is not specific refer to the context in CRO, so that realistic and investigative types of personality are not in discussion about the career for project managers.

Paton et al. (2010) find that many Project managers are linked to a Social-Enterprising type of personality rather than being Conventional to take routine work. My finding shows the personality of project managers who take roles as both leaders and coordinators in projects to continues create new opportunities in research. It shows that the theory about personality for Project manager that Paton et al. (2010) present applies to the role for Project managers in CRO.

However, the types of personality which is not considered in theory for Project manager is Realistic and Investigative. This is likely because all authors focus on the role and career of Project manager, rather than the industry in which this career occurs. I find that realistic and investigative types of personality are common to see in the CRO. Investigative is important personality for scientist researchers and Realistic is needed to the technology implementation.

Moreover, Hogan and Roberts (2004) explicated that individual experiences will reciprocally influence on the development and refinement of personality over time. This theory is also supported by my analysis which found that all interviewees steering their career choice by their interest on the research. For the juniors who experienced higher freedom on the development of professional skills, they would choose to take more technical tasks in their career which shows more Realistic type of personality, while for the seniors who enjoyed the people-oriented activities, they would go for management path in their career which shows more Social of personality.

Hence, my discussion is partially in line with the theories of personality for PM career. It shows that people who choose a career to be Project manager in CRO in general have Investigative-Realistic-Social-Enterprising types of personality.

7.1.2 Academic background

Two propositions related to the influence of academic background on the vocational choice are as follows:

Proposition 2a: People with the study fields of technical background are predominated employed in the technology institute.

Proposition 2b: People with higher education level and high academic performance expect to a career linked with research.

As presented in the chapter 3.1.2 Academic Background. Theories show the influence on the individual vocational choice that result from study fields, and education level with academic performance. Cano et al. (2017) claim that people with a technical background has higher interest to work in the same field. Also, people with higher education level and high academic performance prefer to find a career corresponding to their knowledge level, such as research career. Chapter 2.4 CRO demonstrates that knowledge workers are the main competitive force for CRO, and they need high autonomy from organization to support their research projects.

Empirical findings from 6.1 case description, 6.2.1 Organizational Design of Career model with Promotion Criteria, 6.2.2 Individual Experience of Career Path, 6.4.2 High Academic Background for Vocational Choice in Researcher, 6.4.3 Age Differences on Career Development, and 6.7.2 Subjective Career Success as Motivation contribute to evaluate my two propositions in the CRO.

P2a: Supporting the proposition

For proposition 2a, my empirical finding supports the notion that in the field of technology, the candidates who have a study field of technical would be prevailed in the vocational choice. There are two reasons: First, as mentioned in the Chapter 6.1, the case company has lean research groups where encourage professional development for expert in one field instead of a versatile person. Second, the evidence in Chapter 6.4.2 shows that holding same professional background will help employees avoid the issues with technical terms and gap between collaboration and knowledge transfer on the jobs.

All the interviewees with a social science background more or least experience the prevalent issues on the knowledge gaps towards technology. They have to spend time on learning basic knowledge in the technical field rather focus on their own research path. In this case, their workmates who are expert in the field also have to spend more time on communication or help them understand the terms before being able to collaborate on the interdisciplinary projects. The HR leader also stated the shift on the recruitment that after the senior social science professionals grow mature in the technical field, less resources would put on professional training for junior social science workers. It would be a technical requirement for the employees to enable themselves to merge into the local culture.

P2a: Opposing the proposition

To analyze proposition 2a, my empirical finding in Chapter 6.4.2 shows that almost half of the senior interviewees have degrees in social sciences. They contribute to a multidisciplinary knowledge base for the institute to apply across a wide range of research fields. It is contradicted to my proposition 2b and indicate that some years ago, the technology context of organization is not influential on entry path to the case company. Instead, the group of professions have been formed by a balance between technical and social science educational background.

P2a: Conclusion

Based on the theory and data, the technical professionals are always predominated to hire by the technology institute. It can be simply understanded as the organization need specialists support its core business, although there is a need for other background professionals to compensate on interdisciplinary projects. The leaders perceived a strategic shift by organization to build lean research groups by predominated recruiting specialists who has background in the same field. Hence, I would say proposition 2a of people with the study fields in technical background are predominated employed in the technology industry is supported.

P2a: Theoretical Implication

Cano et al. (2017) state the field of study is a decisive factor for career choice. They claim that people in the study fields of technical background are predominated employed in the technical field which largely explained by the approach of technical study in the development and commercialization of products and services. My empirical data supports their statement as it shows that all the time the employees who are with technical background prevails in this technology institute. Although the employees in the study field of social science claims to find their position in the organization and contribute to the interdisciplinary research, core business is still conduct by collaboration with project members who are in the field of technical background. Leaders in my study indicated that nowadays the lean research groups tend to hire employees with relative technical background. This is also support Cano et al. (2017) statements. Hence, my discussion is in line with existing theory identifying the influence of the field of study on the career choice (Cano et al., 2017).

P2b: Supporting the proposition

For proposition 2b, it is easily to understand by the empirical findings in Chapter 6.1 and Chapter 6.4.2 that education level and academic performance both has influence on

occupational choice in career development. On the one hand, the core business in the CRO is commercially oriented R&D projects which largely rely on the national and international public fundings which has high threshold for the participants' education levels. The case company achieved high education level among employees that majority of them have a doctoral degree. On the other hand, all participants in Chapter 6.7.2 emphasized a strong interest in the research career after dedicated long time in education with a high academic performance. The freedom on research and new projects' opportunities are their motivation to develop. Even though four interviewees in my study have resigned, temporarily left for a PhD position, or considered leave the case company in Chapter 6.4.3, eventually they are still working in the research field, share the same professional networks, and represent important contributions to skills development in industry and the public sectors.

P2b: Opposing the proposition

For proposition 2b, although it seems like a common perception that people with higher education and high academic performance prefer a research career, my findings show there are also people who are not. A question that comes to mind when considering career path is whether the research career is chosen by inner motivation or a direct consequence of the organizational requirement. This is exemplified in Chapter 6.2.2 that a junior professional with academic qualification in PM has changed his career path to research because of the fact that PM are not perceived as a priority by organization. This is also supported by a senior researcher who is actually on professional Project manager career path and expect a PM career which does not support by the organization. In addition, all managers and directors in my findings referring to Chapter 6.2.1 have a research background and relevant experience but landed in the line management career path in the end.

P2b: Conclusion

My findings present that all my interviews are researchers or working in a career which linked to research. Also, they all hold a high education level with high academic performance in order to fit the high demand of this research career. However, my research group is limited to draw interviewees from a CRO, by natural all employees choose a research career as the result of congruence between their individual interest and the research organizational requirement. Thus, limited samples in this context cannot support a proposition which applies to all different occupations. To be more specific, it is common sense that many high educated people are

working in other organizations or careers which is out of my research scope. Thus, I would consider that proposition 2b is not supported in this setting. I would revise the proposition as:

Proposition 2b: People who pursue a research career tend to have higher education level and high academic performance.

P2b: Theoretical Implication

Other two factors that can influence the career choice is the education level and the academic performance. Cano et al. (2017) illustrate that students with higher education level expect to find research career which corresponding to their knowledge level. McGee et al. (2009) mention that students with a high academic performance have stronger interest to be employees in research compared to other students. My analysis showed that all interviewees are research-minded and have a higher education level with cutting-edge academic performance from both study and work. This supports these two theoretical views.

However, there are questions raised about to what degree my interviewees are research-minded, what their upmost priority for career choice is in the ideal world, and in what context these two theories will fit to. The line managers who change their career path from research to management imply that their career choice is not research but leadership, contradicting Cano et al. (2017) and McGee et al. (2009). Two Project managers chose a research career path to compromise with the organizational value indicate that there are more complex considerations direct their career choice than education level and academic performance. In other words, the theoretical implication is not support by my findings because there might be another explanation. Furthermore, my findings support both theories in the unique context CRO, and further support claim from Dul et al. (2011) as academic researchers are the main competitive force within CROs. However, there is lack of evidence from my single case study to support them in other organizations or contexts.

Thus, my discussion contradicts theories on education level (Cano et al., 2017) and academic performance (McGee et al., 2009), and finds that the high education level and high academic performance are necessary conditions for developing a research career. In addition, individual career choice tends to be congruent with organizational requirements. It means that people who pursue a research career will have higher education level and high academic performance, even though whether this career is what they most wanted is not entirely unambiguous.

7.1.3 Age

The proposition related to the influence of age on the individual career experience is as follows:

Proposition 3: Senior project professionals have a lower expectation of organizational support and lower mobility rate.

The proposition is based on the theory in Chapter 4.1.4 The Integrated Career Model and Perceived Career Experience which shows that turnover rate is determined by the divergence between individual project practitioners' expectations on career development and the practical realization of these expectations. Also, the theory in Chapter 3.1.3 Age, which states that age shows different influence on expectation of organizational support and mobility rate in the individual career development.

Empirical findings from the following sections contribute to evaluate this proposition in the CRO: 6.1 Case Description, 6.2.1 Organizational Design of Career model with Promotion Criteria, 6.4.3 Age Differences on Development Opportunities and Expectation of Support, 6.5.2 Informal Learning, 6.6 Influence of Competence Development on Career Development, 6.6.1 Diversity in Expertise, and 6.6.2 Diversity in Professional Network**.**

Supporting the proposition

To analyze proposition 3, on the one side, my empirical findings show that senior project professionals in general are more competent to deal with work. Chapter 6.5.2 reveals that senior Project managers in my study are more experienced and have more tacit knowledge than the juniors to deal with work. In addition, Chapter 6.6.2 shows that senior Project managers tend to have better professional network than juniors to bring resource into projects, while Chapter 6.6 presents that junior Project managers need learn from their senior mentors to develop their competence. On the other side, my collecting data shows that senior project professionals have a better understanding of the organization. Chapter 6.4.3 exposes that the seniors either become blind after getting used to some problems or understand the cost behind the improvement which need themselves to pay for by work.

Based on it, senior employees manifest a relative higher work satisfaction and lower mobility rate. They also expressed value job security as too old to switch. Those findings support my

proposition that senior professionals have a lower expectation of support from the organization with relative lower mobility rate.

Opposing the proposition

Chapter 6.2.1 present a transparent organizational career model with promotion criteria. It implies that in this flat organization, development opportunities are transparent for everyone. The junior employees are aware of how they can progress within the organization, and the requirements they need to fulfil on different levels, as mentioned in Chapter 6.4.3. Moreover, Chapter 6.5.2 exposes that the case company facilitate a very open culture and low hierarchy to increase knowledge sharing, such as open landscape which make it easier for employees to access to each other. Based on my findings, the case company actually gives more support to young people to grow. Chapter 6.6.1 describe that the juniors usually have quite strong initiative to develop, so the organization give them more time and freedom to focus on the hard skills development with less workload from projects to handle at the beginning of their career. Hence, my senior interviewees admit that the juniors professionals could be better than the seniors on performance, while some seniors would complain on lack of support, which opposing to my proposition.

Overall, the young professionals are satisfied to work and develop themselves in this environment which conductive for their individual development. The turnover is also low (under 10%) proved in Chapter 6.1.

Conclusion

In the empirical findings, there are multiple examples which show that senior project professionals in general develop more competence to deal with work and have better understanding of the organization. Junior project professionals, however, get more support from organization for individual support. Nevertheless, I find the proposition to be supported as it shows junior professionals by nature tend to have more expectation of organizational support and relative higher mobility rate in their later career to try out different opportunities.

Theoretical Implication

Zacher and Griffin (2015) assert that senior Project managers tend to have lower expectation of organizational support. My empirical data indicates that senior Project managers develop more

competence to deal with work and have better understanding of the organization. It leads to a high work satisfaction which supports their theory as the senior employees shows a lower expectation of organizational support and lower turnover. Lower expectation means that it is easier for organization to support and realize it. This finding supports Rhoades and Eisenberger (2002) who state that turnover is significantly determined by the divergence between individual project practitioners' expectations on career development and the practical realization of these expectations. On the contrary, the junior who has higher expectation implies a relative higher turnover, exemplified by the resigned junior interviewee who value flexibility to pursue different career, also the junior Project manager who changed to the researcher career. This analysis is supporting Mlodzik and De Meuse (2010), and implies that to deal with the relative higher expectation from the juniors, the organization need a multiple career directions (Rhoades & Eisenberger, 2002) which would contribute to a lower turnover rate by establishing a balance in the career development for project professionals. I will discuss it further in Chapter 7.5 Human Resource Management.

7.2 Learning Experience

The proposition related to the influence of learning experience on the individual competence development is as follows:

Proposition 4: A spontaneous development with informal learning is the main learning experience of project professionals' careers

The proposition is based on the theories in Chapter 3.2 Learning Experience which categorize learning experience into formal and informal learning and point out that spontaneous leaning on the job is the main way match the project-based work. Furthermore, theories about project-based work are drawn from Chapter 2.3 Project-based Work.

Empirical findings from the following sections contribute to evaluate this proposition in the CRO: 6.1 Case Description, 6.5.1 Formal Learning, and 6.5.2 Informal Learning.

Supporting the proposition

Chapter 6.5.1 Formal Learning shows that majority Project managers in the case company do not have a formal PM qualification. Besides a basic two-day internal training PM course, project professionals expressed that they mainly learn on the job. Chapter 6.1 Case Description

illustrate that the main work is project-based research. So, the traditional PM qualification as a formal learning is criticized being unrealistic to fit all multidisciplinary research projects in the CRO, because research projects are more like art instead of science, that does not conform the traditional iron triangle in PM, the breakthrough often comes from intuition and luck instead of time and cost. Chapter 6.5.2 Informal Learning further illustrates the importance of spontaneous informal learning for project professionals. There is lots of tacit knowledge only can be learnt by experience and learn from mentors and peers.

Opposing the proposition

Chapter 6.5.1 Formal Learning gives evidence to support the formal learning as it is a timely and effective way for the junior professionals to develop competence. The case company encourages junior employees to take Ph.D. programme to further academic education in technology. Hence, the formal learning is supported by professionals who have taken academic qualification as they perceive the gap in the PM formal learning and individual PM competency.

Conclusion

The organization has built training PM programme to support PM professionals with formal learning. However, it is too generic and does not fit to project-based work. Although the Ph.D. qualification is prioritized and support by organization to develop hard skills for junior researchers, it is not linked with individual PM competency. My empirical findings find the proposition favorably as all project professionals admit that informal learning is their main way of learning. The tacit knowledge is mainly learnt on the job through spontaneous self-learning, mentor, and peer reflections.

Theoretical Implication

Referred to Chapter 3.2 Learning Experience, Savelsbergh et al. (2016) build a taxonomy for Project managers' learning experience, and point out that formal leaning carried through training and education, while informal learning is happened mainly on the job. My empirical data indicated the case company does the same, and therefore support this theory. Both Day et al. (2014) and Crawford et al. (2006) elaborate the reason why most learning occurs on the job spontaneously as to match the complexity of project-based work. In addition, Huemann et al. (2004) argue that planned development is unrealistic to projects. My findings support it as the traditional PM knowledge from formal learning does not fit all multidisciplinary research

projects in the CRO. In addition, the characteristics of research projects in my finding support Braun et al. (2012), who indicate the uncertainty and discontinuity in the project-based work, refer to Chapter 2.3 Project-based Work. In the same chapter, Paton et al. (2010) state PM as an accidental profession that many project professionals start the project-based work by accident and lack of the required PM competencies. My empirical finding supports this statement as majority Project managers in the case company do not have any formal PM qualification.

Hence, my discussion is in line with the existing theories about learning experience of PM professionals and the project-based work. A spontaneous development with informal learning is the main learning experience of project professionals' careers in the CRO.

7.3 Competence Development

The proposition related to the influence of competence development on the individual career development is as follows:

Proposition 5a: Soft skills are more essential than hard skills for project managers' competence development.

Proposition 5b: Young project professionals tend to pursue hard skills development in professional knowledge while senior project professionals develop more on their soft skills.

The two propositions stem from theories presented in 2.3 Project-based Work, 3.3 Career Competencies, and 3.1.3 Age. Project managers' competence is consisted of hard skills and soft skills. In recognition of the growing complexity and uncertainty of the international research projects, soft skills represented the more essential than hard skills. Both skills can be acquired from experiences, or qualification programmes. Junior project professionals tend to gain focus on hard skills growing, while senior project professionals tend to develop soft skills.

Empirical findings from the following sections contribute to evaluate my propositions: 6.1 Case Description, 6.2.2 Individual Experience of Career Path, 6.2.3 Resource Allocation by Bottom-Up, Method 6.3.2 Immature of PPM Process, 6.3.3 Lack of Top Management Involvement, 6.5.2 Informal Learning, 6.6.1 Diversity in Expertise, 6.6.2 Diversity in Professional Network, and 6.6.3 Balance between Expertise and Professional Network.

P5a: Supporting the proposition

My empirical findings present soft skills from two perspectives which supporting my proposition: interpersonal skill and leadership.

My case company use the bottom-up approach in the resource allocation process. As mentioned in Chapter 6.2.3, professional network is the icebreaker to reach out to the right person in unknown disciplines for recruiting project team member. Same as depicted in Chapter 6.6.2 Diversity in Professional Network, all interviewees emphasized on the importance of professional network which enables employees to access to personnel resources for projects, thereby help them reach senior level in their career. On the contradictory, there is an example of hardcore researcher who struggled to create new projects because of lack professional relationship.

Chapter 6.6.3 further states the importance of leadership and teamwork in PM, in order to take initiative to manage projects effectively to build a cooperative effort within the team and create room to facilitate their hard skills development. Those findings indicate that for a long-term development, soft skills are more essential than hard skills.

P5a: Opposing the proposition

It is noticeable that in the CRO, Project managers normally have another role as researchers, so that hard skills also include the competence for research. So, my empirical findings show hard skills from two perspectives which opposing my proposition: technical knowledge for research, and PM system and tools.

On the one side, some senior employees in Chapter 6.6.1 Diversity in Expertise emphasize that the organization should give more credits to the technical work which directly impact the performance of projects. Following this line of thought, Chapter 6.1 Case Description stresses the strategic importance of scientific publication for case company to generate new knowledge as the foundation of this CRO. It is exemplified in Chapter 6.2.2 Individual Experience of Career Path that a professional Project manager admitted his regret on career for only focus on PM on the cost of moving away from research. He is well-known by great soft skills in the organization, but his career got hindered by the missing hard skills on research.

On the other side, all employees in Chapter 6.3.2 confirm that the case company is immature in term of PPM process, which lead to the result that there is lack of good PM governance system and tools, known as hard skills, to increase profit, publication, and quality in projects.

P5a: Conclusion

Employees show hard skills is their foundation of research and can solve their day-to-day PM work effectively and efficiently, in the end improve the performance of projects. However, unless being a hardcore researcher without leading projects, for the long-term perspective, lack of soft skills is found undermining their PM career development in the CRO. Thus, I find the proposition 5a is partly supported due to the relatively importance of hard skills for research. I would rephrase the proposition as:

Proposition 5a: Soft skills in the long-term perspective are more essential than hard skills for project managers' competence development

P5a: Theoretical Implication

In terms of PM competence, our discussion offers support to Savelsbergh et al. (2016), who refer contents of hard skills like project governance and tools, and contents of soft like interpersonal skills, leadership, and teamwork. My findings are in accordance with El-Sabaa (2001) view on soft skills which have the greatest influence on PM practices and represent the most essential project manager's skills. All interviewees point out that the CPM from the PMBOK® Guide fall short of supporting large and complex research projects, so that will not contribute to individual career, which providing support to Winter et al. (2006). For the large, complex, dynamic and diverse CRO, Svejvig and Andersen (2015) and Katz (1991) are in line with my findings that more attention has been moved from hard skills to the soft skills, on the purpose to manage projects effectively to build a cooperative effort within the team.

Then I move forwards with the discussion to look at hard skills in terms of research competence. My empirical findings support the argument from Gareis and Huemann (2000) that many organizations match the needed project manager's competencies with their projects classification, depending on the type and scope of the projects. In the contract research projects from my case company, almost all project managers have another role as researchers. Their expertise in research field supports their primary work of producing knowledge, which is the

foundation and priority in the case company, according to my empirical data. Thus, a great emphasis is put on the hard skills development as the core competence for researchers. Despite the focus on expertise in the temporary research projects, the soft skills will be more enduring to support future project acquisitions and career development, supporting Manning (2010).

Hence, based on the context and organization value, I would consider the hard skills in research expertise is as important as soft skills in PM for researchers. A Project manager in the CRO need to have two skills sets, one would be expertise based on scientific research, and another would be the PM skill. But for competence development in terms of PM, soft skills in the long-term perspective are more essential than hard skills.

P5b: Supporting the proposition

Findings in Chapter 6.5.2 and Chapter 6.3.2 shows that junior project professionals learn a lot of tacit PM knowledge from the senior mentors, including the project tools and templates, known as hard skills, which built by themselves from practice and experience. Meanwhile, the seniors in Chapter 6.6 are open to share their good internal and external professional network, known as soft skills, to juniors for their development. It shows the different priority in competency development for the juniors and the seniors.

For junior project professionals at the beginning of their career, illustrated in Chapter 6.6.1 and 6.6.2, they focus on access to data and the technical work with a strong initiative to develop professional skills in subjects. Some junior interviewees shows that they ignore the importance of building professional relationships in their career development. Whereas the seniors in general take the management roles in multiple projects and develop their network through collaboration, leaving technical work to youth without getting their hands dirty.

P5b: Opposing the proposition

The evidence from Chapter 6.5.1 Formal Learning shows that the motivation for junior employees to participate internal training programmes is not only for the PM skills development, but also to build internal professional network through such arenas. It can indicate that junior project professionals also aware the importance of soft skills in the career development, but they need more experience and practice compared to the seniors.

In addition, my empirical findings in the Chapter 6.3.3 present that nearly all project professionals tend to focus on the technical management work in projects due to their priority on research in the CRO. The actual PM work such as coordinating stakeholders, writing administrative documents, reporting, gets not enough attention. It implies that hard skills of research are prioritized utmost for everyone in my case company based on organizational value.

P5b: Conclusion

My empirical data shows that the hard skills of research expertise are prioritized by every project professional on the influence of organizational value in the CRO. However, the juniors have a strong initiative to develop technical skills in subjects, while the seniors more focus on develop their soft skills in PM. Overall I think the proposition 5b is supported in my case company.

P5b: Theoretical Implication

My empirical findings support Savelsbergh et al. (2016) statement on the different contents from the competence development phase of project professionals. In the beginning of career, they tend to gain professional knowledge and focus on hard skills growing. Compared to the later phase of career, the seniors tend to develop soft skills in a people-oriented way of thinking and acting.

As a result, the learning on the hard skills, like project government and expertise, decreases with raising on the career position level; gaining on the soft skills, like leadership and professional network, increases with raising on the career position level. This analysis is further support theory from Hölzle (2010).

7.4 Goal and Success

The proposition related the influence of goal and success on the individual career development is as follows:

Proposition 6: Subjective career success has a greater impact than objective career success on individual long-term goals in project management.

The proposition is based on the theories shown in Chapter 3.5 Career Goal and Success. Personal goals are the fundamental aspect of personal agency, which helps guide and sustain a

person's behaviors in career development. Achieving career success is a lifetime continuing process, which keeps interplaying with other factors in SCCT models and feeding beck complex impact on individuals career goals. Long-term career goals seem to get more influence from the subjective rather than objective career success.

Empirical findings from the following sections contribute to evaluate this proposition in the CRO: 6.7 Influence of Goal and Success on Career Development, 6.7.1 Objective Career Success as Safeguard, and 6.7.2 Subjective Career Success as Motivation.

Supporting the proposition

Chapter 6.7 conclude interviewees' goals as creating new projects, getting better outcomes of project, and generating better publication.

My empirical findings from Chapter 6.7.1 shows that the financial rewards or flexible working hour are too weak to attract and motivate researchers in the competition with other organizations. It indicates that the objective career success cannot motivate my interviewees to pursue their career goals.

Chapter 6.7.2 enumerates that Project managers in general achieve subjective career success in the CRO in terms of personal progression, gaining professional recognition, building professional networks, obtain freedom and autonomy on work, support and contribute to other individuals' success. To pursue individual career goals, it turns out that the employees in my case company does not get motivated by the organization, but by themselves through working on the research projects which they find interesting and continuously achieving the subjective success listed above.

Opposing the proposition

My empirical data in Chapter 6.7.1 describes that the organization motivate individuals to chasing career goals by supporting them achieving objective success as the safeguard. In addition to a decent salary, the case company provides well-equipped facilities, cutting-edge professional teams, inclusive work environment, and a stable employment relationship to Project managers for applying funds to do their interesting research. It indicates that as the safeguard and foundation, objective career success has a significant influence on the personal career goals.

Conclusion

My empirical findings show that the case company does not actively motivate employees. Instead, the organization support employees' internal motivation with confirmable attainments, known as objective career success. To pursue individual career goals in the CRO, Project managers have their internal motivation based on continuously achieving the subjective career success.

Hence, my findings support the proposition in the aspect of individual long-term goals in PM that subjective career success has a greater impact than objective career success.

Theoretical Implication

My empirical data support the model from Mayrhofer et al. (2016) that captures career success from growth, design for life, and material outcomes. The previous two are referred as subjective success in my study, while the latter one is regarded as objective success. This finding is somewhat consistent with literature from Spurk et al. (2019) and Heslin (2005) who distinguishes two career success.

My interviewees all have inner motivation led by their goals for better research projects and performance, which guide their behaviors in career development, supporting theoretical views from Lent and Brown (2006). Seibert and Kraimer (2001) consider that subjective career success has bigger influence than objective career success on personal long-term career goals, which is congruence with my empirical data as the subjective career success continuously spurs the individual motivation in their career development.

7.5 Human Resource Management

The proposition related to the influence of HRM on the individual career development is as follows:

Proposition 7: A career model, if is accompanied by adequate qualification opportunities or parallel career directions, will positively support the project managers' career development.

The proposition revolves around the theories in Chapter 4.1 Human Resource Management and POS which illustrates a design of career model with qualification opportunities or parallel career

directions, and the divergence between the organizational career model and individual Project managers' career experience.

Empirical findings from the following sections contribute to evaluate this proposition in the CRO: 6.2.1 Organizational Design of Career model with Promotion Criteria, 6.2.2 Individual Experience of Career Path, 6.2.3 Resource Allocation by Bottom-Up Method, 6.3.3 Lack of Top Management Involvement - Perception and Improvement, 6.5.1 Formal Learning, and 6.5.2 Informal Learning.

Supporting the proposition

My findings in Chapter 6.2.1 show that the organization has develop a clear career model and relevant criteria linked with different positions. The empirical data indicates that there are four parallel career directions along with the Project manager career path: researcher, advisor, business developer and line manager. The flexibility provided by the parallel career models support employees to changer their career directions during development, like an interviewee in Chapter 6.2.2 address his shift of career orientation from Project manager to researcher.

In addition to the parallel career directions, Chapter 6.5.1 Formal Learning elaborate accompanied qualification opportunities provided by the case company to support researchers' development in different career directions. The empirical data shows that the case company provides basic training for PM and line management career, and places great emphasis on enhancing employees' research expertise with abundant training opportunities for the researcher career. It makes the researcher ladder is regarded as superior and keep all good employees stay in it, which support the researchers career development.

Chapter 6.5.2 Informal Learning further give evidence to articulate that Project managers mainly learn their PM competence on the job motived by personal agency. Most interviewees consider the qualification opportunities for PM career path is not adequate to facilitate their PM competency development. It leads to a negative impact on daily PM work and performance of projects, even become a barrier for Project managers' career development, confirmed by some senior Project managers in Chapter 6.5.1 Formal Learning.

Opposing the proposition

Despite the organization designed many other career directions aligned with the Project manager career ladder, my empirical findings in Chapter 6.2.2 are contradicted to the proposition that most individuals do not perceive the parallel career directions. It turns out that there is no PM career in the case company. My interviewees accentuate the researcher career and address its criteria as to be good at everything like a "superhero" which actually covering all the criteria for four parallel careers. It implies that the organizational value, mentioned in Chapter 6.1, which put all the privileges and rewards on research, the organizational value overwhelms the HRM practices and drives employees' career orientation to research.

Following the same influence from the organizational value, PM does not get relatively equitable recognition and rewards as research in the CRO. Even if employees had adequate PM qualification and competence, it is still unable to support their career development on the Project manager ladder. It was exemplified by the professional Project manager in Chapter 6.3.3 who has not done research for years and creates enormous value by professionally managing large projects, but still stay in the researcher career ladder only for the identification. It results in inferior performance on other specializations in career model and big challenge in the project resource allocation due to the lack of profiles for personal specialized competence.

Conclusion

Although the parallel career ladders or qualification opportunities will support career development for Project manager, the majority of employees still choose the researcher ladder which is compatible with the organizational value. This is, to a certain degree, supported by leaders who want to put focus on the research without have any specialization in career ladder. A career model without aligned with the organizational value, existing as a superficial endorsement, may not be perceived as supportive for the Project manager'career development. It leads me to conclude that the top management should not hinder the specialization in career model, but rather adapt the career model to communicate the organizational value as well as fit the career orientations of employees and facilitate their career development. I will further analyse and discuss on top management later in the Chapter 7.6.3 Top Management Involvement.

Hence, I find the proposition to be not supported. I would rephrase it as following:

Proposition 7: A career model, if is compatible with the organizational value, accompanied by parallel career directions and adequate qualification opportunities, will positively support the project managers' career development.

Theoretical Implication

The prime thought of career model is communicating the organization values and employees' commitment (Rhoades & Eisenberger, 2002). My analysis, however, find the incompatible organization values make the specialization in parallel career directions become unrealistic for employees. There is little rewards or recognition which motivate Project managers to develop in the same direction against organizational value, supporting Hölzle (2010). Nevertheless, it shows that there is no career path for PM in the case company, even everyone is managing projects as daily work. Researcher ladder is regarded as superior and keep all good employees stay in it, at the expense of quality of projects and PM competence development. Hence, a career model without aligned with the organizational value, existing as a superficial endorsement, may not be perceived as supportive for the Project managers' career development.

The senior advisor in my study who has professional PM qualification supports statement from Zhang et al. (2012) that qualification opportunities will enhance the positive impact of the organizational career model. However, my analysis find out that due to the fact of lacking long-term career for PM, the basic internal PM training programme to some extent is perceived by researchers as a burdensome aside the stressful workload which would not benefit their career (Gavino et al., 2012). In my analysis, the project professionals in CRO are facing challenges in mapping out a clear career path and accessing the related qualifications required to progress their PM careers. It supports Larsen (2002) and Debourse and Archibald (2012) who state Project manager need a flexible career model with minimum system and multiple aligned career directions to create their own career path. So, my case company utilizes the 'talent management model' (Bredin & Söderlund, 2013) for the development of Project managers which providing training opportunities on the individual needs.

My analysis presents that Project managers in the CRO act as "heroes" independently doing almost everything in most of research projects, since the top management does not differentiate the Project managers' career path from the researchers and line managers. This supports Hölzle (2010) theory which puts forwards a matrix to integrate organizational career model setups with

individual perceived career experience. My empirical findings hence give insight into building a 'Ture' Project manager career path in the CRO. Implying the top management could adjust the organizational value to facilitate Project managers' career development by promoting a specialization in career ladder – a sophisticated setup for Project manager career and providing more opportunities for PM competence development.

7.6 Project Portfolio Managements

To unfold the influence of organizational support on Project managers' career development in CRO which will give answers to my sub-research question two (RQ2), propositions relating to PPM in the modified SCCT framework are analyzed in the following subchapters.

The three factors connected to these propositions are *PMO* which support PM from supportive functions, project quality assurance, performance assessment of Project manager, and knowledge management; *PPM process* which support PM from project portfolio management, PM tools and systems; *top management involvement* which support PM from strengthen the Project managers' position and sponsor supportive infrastructure and systems.

7.6.1 Project Management Office

The proposition related to the influence of PMO on the individual career development is as follows:

Proposition 8: A project management office will positively support the project managers' career development.

The proposition stems from Chapter 4.2.1 Project Management Office and Chapter 3.3.2 Soft Skill where point out the core functions of PMO as supporting project managers with managerial activities, implementing audits and reviews of projects, and managing repositories of knowledge.

Empirical findings from the following sections contribute to evaluate this proposition in the CRO: 6.3.1 Absence of Project Management Office.

Supporting the proposition

My empirical findings in Chapter 6.3.1 show that there is no PMO in my case company. Nevertheless, distributed roles from different corners in the institute somewhat function as different part of a PMO and support the Project managers' career development.

Department coordinators take supportive function of administrating all projects within the department. Interviewees point out that this role will help bridge between projects and contribute to the corporate memory. Moreover, there are also legal adviser and financial worker support projects with their expertise. However, it is not enough. My data presents an urge from all interviewees who asking more support for executing PM tasks like a project coordinator. It indicates that Project managers want to focus on strategic actions and technical management to strengthen their research competence.

My findings shows that the quality of projects usually assured by Project managers and peer audit with the project professionals. Line managers will also conduct evaluation of project performance annually or in the closing phase. However, the focus is always on the hard fact of projects. It implies the lack of performance assessment for Project managers which would help them accelerate PM competence.

Knowledge sharing in my study are naturally occurred between colleagues or happened via mentoring. Employees show their willing to share tacit knowledge but there is limited budget from organization to support a knowledge management mechanism which would facilitate knowledge transferring.

Opposing the proposition

There is evidence in Chapter 6.3.1 shows the concern of building a PMO in the CRO that if it became a bureaucracy stuffed with unemployed, then it will not be relevant for supporting projects nor career development of all Project managers. Hence, the main challenge of building a PMO is how to recruit and keep excellent Project managers to working inside PMO, because it is contradictory to their career motivation as conducting research projects.

Conclusion

Although there is no PMO in my case company due to challenge on recruitment, my findings show distributed roles in the organization somewhat function as different part of a PMO and

support the Project managers' career development. As such, the proposition is supported by my analysis that a PMO will positively support the Project managers' career development.

Theoretical Implication

My findings support Aubry et al. (2011) who states the core functions of PMO as supporting project managers with managerial activities, implementing audits and reviews of projects, and knowledge management. For the temporary–permanent dilemma of developing competencies through individual projects, my analysis assert that there is need to build repositories of knowledge to manage and transfer the inter-project skills and personal tacit knowledge, supporting the research from Prencipe and Tell (2001).

7.6.2 Formalization of PPM

The proposition related to influence of formalization of PPM progress on the individual career development is as follows:

Proposition 9: The formalization of PPM process can have a negative impact on the career development of project managers.

The proposition origins from Chapter 4.2.2 Formalization of PPM process which state the formalization of PPM on portfolio level and project level, and the relationship with individual perceived organizational support on Project managers' career development.

Empirical findings from the following sections contribute to evaluate this proposition in the CRO: 6.3.2 Immature of PPM Process.

Supporting the proposition

On a portfolio level, my empirical findings in Chapter 6.3.2 shows that is immature in term of PPM process. Projects are created from bottom to up and fully authorized to individual Project managers. Project managers also participate in decision-making of portfolio management together with line managers, so that the local research group could efficiently find and adjust to a composition of portfolio which fit the current need and align with the local strategies. This result of project portfolio is deemed to be supportive to the interviewees' career development due to their participant in the process.

On a single project level, leaders in Chapter 6.3.2 shows evidence of the formalized project steering system which Project managers are supposed to follow. However, it turns out that research projects are opposite to standardization, one size does not fit all. There is local guideline in the real world, and all Project managers manage their projects flexibly in a way best suited to meet requirements from customers. This result indicates that formalization of PM process is too generic and bureaucratic which diminish the flexibility and autonomy of research projects.

Opposing the proposition

My empirical findings in Chapter 6.3.2 shows that official PM tools are difficult to use, so Project managers are left by themselves to develop good tools and templates to follow economy and planning in projects. Based on their experience, most of interviewees believe that there could be universal tools and methods that can support Project managers. This result implies that formalization of PM tools and methods will increase profit, creation, publication, and quality of research projects which further benefit individual career development.

Conclusion

I find on the project level, when it comes to PM tools and method, formalization of PPM process will be beneficial for the quality of projects; when it comes to the project steering system, formalization of PPM process will diminish the flexibility and autonomy of research projects, hence have a negative impact on the quality of projects. Moreover, on a portfolio level, immature of PPM process means Project managers can participate in decision-making which will be supportive to compose the local project portfolio to fit the Project managers' career need.

Overall, I think my proposition is supported in the CRO where Project managers need freedom and autonomy for managing research projects.

Theoretical Implication

My findings suggest that formalization of PPM determines the degree of procedures and tools standardization in the project conduction, supporting the statement from Nahm et al. (2003) on the project level. It implies an increasing administrative responsibility from top management which conflict with the high autonomy for project managers in the CRO. Based on the discussion, I believe the view from Rhoades and Eisenberger (2002) that Project managers need

freedom to support their research projects. However, in my analysis formalization of PM tools and method is proved to be beneficial for the quality of research projects in CRO which positively linked with Project managers' project performance.

On a portfolio level, the formalization of decision-making process for project portfolio implies a shift of responsibilities from project managers to line managers, which therefore in line with the views from Jonas (2010) and Allen et al. (2003) who believed the lack of participation in decision-making is considered as less supportive for Project managers. As the result, the formalization of PPM process could hinder the career development of Project managers. My case company reach balance in the decision-making process for project portfolio by Project managers creating projects from bottom-up and line managers using "hands-off" management style from top-down. This synergy facilitates career development of Project managers in the CRO by giving them almost full autonomy on projects.

7.6.3 Top Management Involvement

The proposition related to influence of top management involvement on the individual career development is as follows:

Proposition 10: A high degree of top management involvement which strengthen the position of project managers is of significance for the career development of project managers.

The proposition revolves around strengthening the position of Project managers by top management involvement, presented in Chapter 4.2.3 Top Management Involvement. This support could be done by driving implementation of career model, enhancing PPM tasks execution, providing effective and efficient PPM process, and facilitating knowledge transfer, and individual training programmes.

Empirical findings from the following sections contribute to evaluate this proposition in the CRO: 6.2.2 Individual Experience of Career Path, 6.3.1 Absence of Project Management Office, 6.3.2 Immature of PPM Process, and 6.3.3 Lack of Top Management Involvement - Perception and Improvement.

Supporting the proposition

My empirical findings do not reveal any evidence that is opposing this proposition. Interviewees were very clear that increasing Project managers' position by top management involvement would be important to their career development. I can see the reason as the rooted organization priority on research.

On organization level, currently top management mainly working on the strategical interaction with industries and politics. My findings in Chapter 6.2.2 give evidence of the unbalanced career development between research and PM. Even though the core business for the CRO is research, it is also a PBO which is significantly dependent on the competence of PM. In order to strengthen the position of Project managers in the CRO, many senior researchers in Chapter 6.3.3 explicitly express that the specialization in career model need top management to drive a top-bottom revolution to change the rooted organizational value which only focus on research. Then Project managers would receive equitable recognition and rewards as researchers. The organization would allocate more resource and support on PM. In the end, flourishing the career of Project managers in the CRO.

On project level, as shown in Chapter 6.3.3, leaders express that they believe their employees perform their best, portraying how the top management carries out a "hands-off" leadership based on trust and belief of employees' capability. However, all researchers in Chapter 6.3.2 perceived problems on current projects tools and methods and lack of support on project coordination tasks. This is interpreted as a signal of the weak position of Project managers in the organization. After many years, the PPM process is still immature towards universe PM tools. Most researchers get used to take a free ride on others who take PM tasks in projects. The key for top management to solve these problems is strengthen position of Project managers, therefore benefit on career development for all employees.

On individual level, based on trust for employees which I just illustrated above, all interviewees in Chapter 6.3.3 express that they do not get much support from the top management. There is not so much investment on individual employees from top management after they bring profit to the company, for example, advanced PM training programmes or knowledge transfer mechanism as mentioned in Chapter 6.3.1. One of the top managements points out that the department has very small margin on business, so that there is no budget for such competence development and knowledge management. Improving knowledge management in CRO with a

margin can have substantial consequences, as knowledge is a central part of the organization economy. Considering my case company as a whole, it implies a lack of support for both individual and organizational competence development in the local strategy which need higher degree of top management involvement.

Conclusion

My findings indicate that top management involvement is of significance for the Project managers' career development from on three levels by strengthen their positions in the CRO. Thus, I would say the proposition holds true.

Theoretical Implication

My analysis shows that there is strong expectation for top management involvement to strengthen the position of project managers in the CRO. It indicates that both R. Turner (2016) and Jonas (2010) are correct as saying a high degree of top management involvement reflects the significance of project management in the organization. In line with the statements from Unger et al. (2012) and Young and Poon (2013) who emphasize that developing career for PM are much easier in organizations where top management supportively involving with the supportive infrastructure, the career model, PPM process, knowledge management mechanism for PM will naturally be build up in my case company due to the importance of Project managers. As the results, the Project managers would gain more opportunities for competence development, work more efficiently in projects, and create better quality for projects.

7.7 Answering the Sub-Research Questions

The purpose of this chapter is to explain how project manager experience their career development and how organization influence individual project managers' career development in the contract research organization. Based on the answers, I will create a new SCCT framework specific for project managers' career development in CRO.

7.7.1 Sub-Research Question 1

How do project managers experience their career development in contract research organization (CRO)?

Based on my analysis and discussion of the factors in the modified SCCT framework from individual level, five propositions remain the same while three is revised. These propositions below in the Table 7-1 Propositions from individual level help me answer Sub-Research Question 1.

TABLE 7-1 PROPOSITIONS FROM INDIVIDUAL LEVEL

Proposition 1 (Revised)	*People who have Investigative-Realistic-Social-Enterprising types of personality prefer to choose a career as project managers in CRO.*
Proposition 2a	*People with the study fields of technical background are predominated employed in the technology industry.*
Proposition 2b (Revised)	*People who pursue a research career tend to have higher education level and high academic performance.*
Proposition 3	*Senior project professionals have a lower expectation of organizational support and lower mobility rate.*
Proposition 4	*A spontaneous development with informal learning is the main learning experience of project professionals' careers.*
Proposition 5a (Revised)	*Soft skills in the long-term perspective are more essential than hard skills for project managers' competence development.*
Proposition 5b	*Young project professionals tend to pursue hard skills development in professional knowledge while senior project professionals develop more on their soft skills.*
Proposition 6	*Subjective career success has a greater impact than objective career success on individual long-term goals in project management.*

Looking at the individual perspective of career development, my findings show that the employees in the CRO are self-managed to develop their career, and able to solve their work independently by extensive communication and utilizing their co-workers.

At the entry of the career, individual with Investigative-Realistic-Social-Enterprising types of personality tend to choose a career in the CRO, and technical background is prevailed for the technology industry. Later, employees tend to have higher education level and high academic performance for their research career. However, informal and spontaneous development is their main way of learning. Soft skills in the long-term perspective are more essential than hard skills for competence development. Young Project managers tend to pursue hard skills development while the seniors prefer to develop soft skills. It also shows that the seniors have a lower mobility rate with less expectation for organizational support. Regarding individual career goals and success, subjective success has a greater impact than objective success on Project managers' long-term goals.

7.7.2 Sub-Research Question 2

How does contract research organization (CRO) influence the careers development of project managers?

Based on my analysis and discussion of the factors in the modified SCCT framework from organizational level, three propositions remain the same while one is revised. These propositions below in the Table 7-2 help me answer Sub-Research Question 2.

Looking at the organizational perspective of career development, my findings are quite divergent between organizational set-up and individual perceived organizational support. Despites managing projects is part of daily job for every researcher, my findings show that there is no career for project manager in my case company because the organizational value puts all focus on research. There is a career model built by HRM with a specialization in PM career direction. However, without aligning with the organizational value, it exists as a superficial endorsement, not be perceived by most of employees. In addition, there is almost no PPM practices perceived by individuals in the CRO.

My analysis found assumption of how to support the project managers' career development. In terms of PPM, the organization could avoid formalize the PPM process besides building a

universe PM tools and methods. Top management could build up a PMO and provide higher degree of involvement to strengthen the position of project managers in the CRO, accordingly adjusting the organizational value. In terms of HRM, the organization can promote a career model which communicates the new organizational value and accompanied by parallel career directions and adequate qualification opportunities.

TABLE 7-2 PROPOSITIONS FROM ORGANIZATIONAL LEVEL

Proposition 7 *(Revised)*	*A career model, if is compatible with the organizational value, accompanied by parallel career directions and adequate qualification opportunities, will positively support the project managers' career development.*
Proposition 8	*A project management office will positively support the project managers' career development.*
Proposition 9	*The formalization of PPM process can have a negative impact on the career development of project managers.*
Proposition 10	*A high degree of top management involvement which strengthen the position of project managers is of significance for the career development of project managers.*

7.7.3 New SCCT Framework for Project Manager in Contract Research Organization

Based on the answers to my sub-research questions, a new SCCT framework specific for project managers' career development in CRO is created. My intention is to produce a framework that can be used by both project managers and CRO to facilitate career development.

In light of my analysis and discussion, I revise my theoretical framework shown below in Figure 7-1 Revised theoretical framework. I find that the most important factor (bolded in the figure) to influence Project managers' career development in the CRO is the PPM. Frankly, I am surprised at there is no career for Project manager in my case company which is a typical PBO doing business on contract research projects. In addition, there is almost no PPM practices perceived by individuals (dash line in the figure). I believed this is result from the specific context – CRO, where put all focus on the research. Thus, even a career model built by HRM

with a specialization in PM career direction, without aligned with the organizational value, existing as a superficial endorsement, not be perceived by employees. It led me to conclude that PPM is of significance for communicating the career model to individual project managers to facilitate their career development (connection in the figure), like a higher degree of top management involvement, building a PMO, formalization of PPM process. Hence, the new SCCT framework will continue guide Project managers and CRO how they could build a career for Project managers, but with a sharper focus on PPM relative to other five factors.

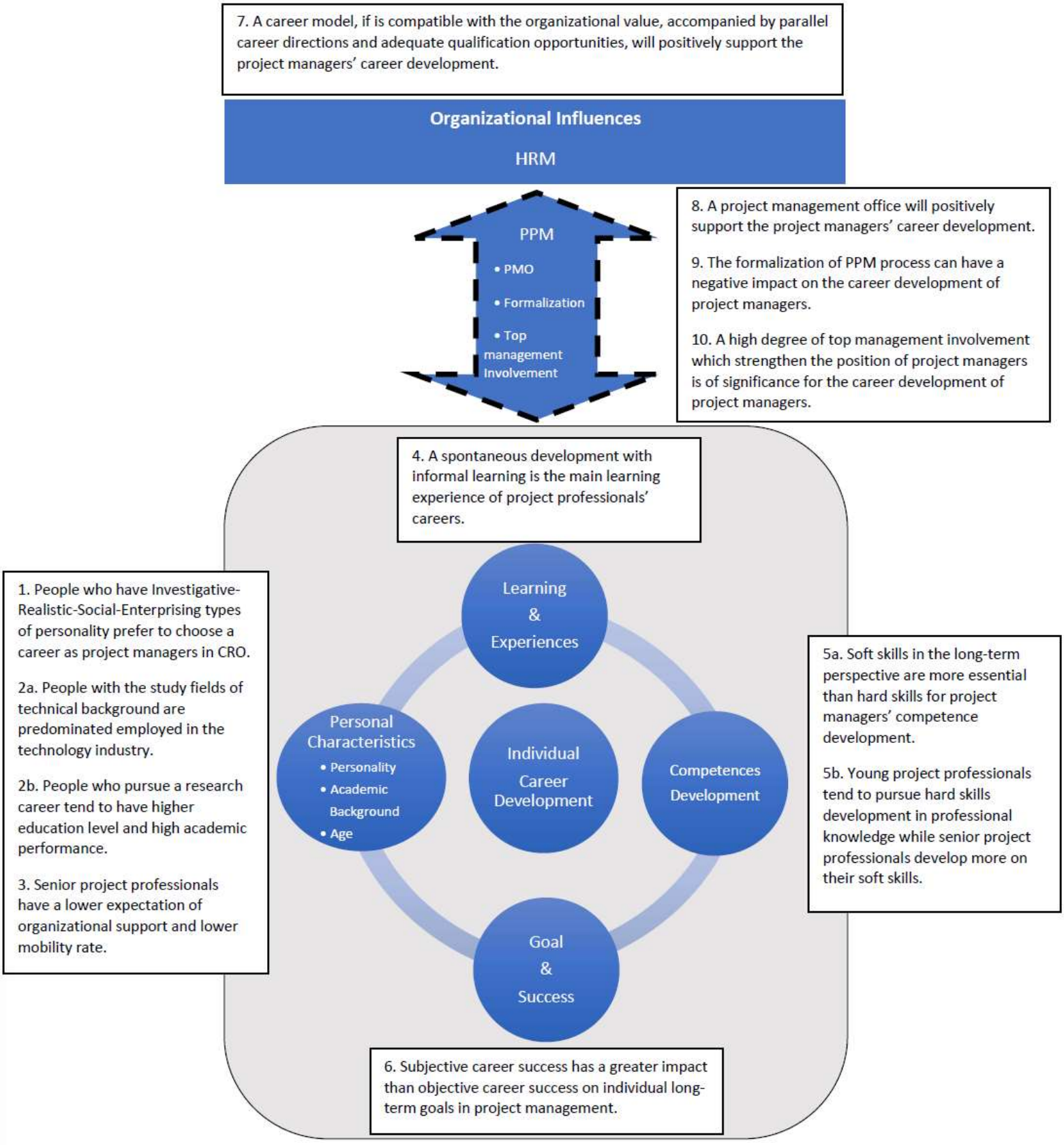


FIGURE 7-1 REVISED THEORETICAL FRAMEWORK

8 Conclusion

The purpose of this thesis is to investigate how project managers in the specific context of contract research organization (CRO) could develop their career and how this can be supported by organization. The purpose is summarized by the following research question:

Overall RQ. How could project managers build their career through contract research projects in project-based organization (PBO)?

My research shows that the factors of the modified SCCT model apply differently to career development in the context of CRO and does not necessarily match the theories which claim to apply to project managers' career development in general. Theoretical Implication of my research has been illustrated by individual factors through the modified SCCT framework in Chapter 7 Analysis and Discussion. To answer my overall research question, please refer to Chapter 7.7 Answering the Sub-Research Questions where I also discussed the empirical implication.

My case company is a typical project-based organization as well as a research-based organization which builds business on contract research projects. The organizational value puts all focus on research. Correspondingly, employees are research-oriented, but creating, selling, and managing projects to bring profit to the CRO. In this way, project managers in the CRO are working like a "superhero" among research projects to do everything themselves in their spiral careers which across fields in research, dissemination, business development, project management. They show a high degree of individual agency, capabilities, and work pride to self-manage to develop their career by extensive professional social network and utilizing their co-workers. However, the HRM had built an organizational career model for employees with specialization in four different career directions. Without aligning with organizational value or sponsorship by top management, this career model exists as a superficial endorsement, is not perceived by most of employees. Moreover, project managers expect more PPM practices from the CRO to support their career development. In sum, project managers perceive little support in terms of HRM and PPM practices from the CRO. My findings indicate that there is no career path for project manager in my case company due to the divergence between organizational set-up and individual perceived organizational support.

During investigating project managers' perceptions of career development in the CRO, a strong willingness comes up to develop a career for project managers. I find assumptions of how to support the project managers' career development. Among all individual and organizational influence, I find the PPM has the highest impact on project managers' career development, at least in the case I examined in the CRO. Hence, modification has been made on the SCCT framework to make it more specific to the context CRO, referring to Chapter 7.7.3 New SCCT Framework for Project Manager in Contract Research Organization. This new theoretical framework with a sharper focus on PPM relative to other five factors can be used by both project managers and the CRO. Project managers could flourish in their specialized career path, while CRO could create better quality of research projects by facilitating project managers' career development.

8.1 Limitations

My study is conducted in Norway. The constructs from the area of career development in my study are without doubt partially dependent on cultural differences (Peltokorpi et al., 2015). The Scandinavia cluster, Norway, Sweden and Denmark (Schramm-Nielsen et al., 2004) is relatively high in the cultural practices of equality, consensus-seeking, low power distance, empowerment, informality, direct communication, participation and process-oriented, decency and conflict avoidance, and focus on caring for the individual. Thus, future studies on career development in project management could apply for different cultural and national contexts. This could be highly beneficial, since organizations and projects become increasingly international in general (Bredin & Söderlund, 2013).

I conduct my research through an in-depth case study in one company due to my time limitation of the dissertation. The context influence in my research is limited on the organizational level and individual level and in a certain period. However, external environmental factors play an important role in the sustainability of career, and career research in the real world is related to a lifetime development. I foresee more research will be carried out in a broader context and longer duration.

There is also limitation on the participants for this research. They are drawn from current employed project professionals in the CRO. As a result, the views of those who resigned and left their career in the organization have not been gathered. Besides, I also notice the influence

of nationality on my samples. I would consider the limitation as little opportunity for individual from eastern countries to enter the career in my case company. I managed to invite few of them to my study, but they stated that nationality limit them to participate in high confidential level research projects. Thus, in my context, the barriers on career led by nationality are far outweigh than its normal influence on career.

8.2 Future Research

In the previous section, I conclude that a broader scope of comparison could be carried in different cultural and national contexts. Gender and nationality, as factors of personal characteristic, were omitted in my revised SCCT. It will be interesting to investigate both influences on individual project managers' career development in different culture and nations.

On the one hand, there is general agreement that gender makes a distinct disadvantage for females on career development (Crawford et al., 2013). Female project workers perceive less opportunity and support from the organization because they are less inclined to self-promote with more reserved self-efficacy than man, which makes differences in their career success (Marcus, 2014). However, Norway is relatively high in the cultural practices of gender equality. My findings indicated that female Project managers are treated equally as their male counterparts, and no gender differences were found in terms of career development.

On the other hand, recent researchers also shown the national variations within career decision-making profiles between individuals from western countries and eastern countries, such as Asia. Employees from individualistic cultures (western countries) are generally score higher than people from collectivistic cultures (eastern countries), on the value of autonomy, self-direction, and have less willingness to compromise (Guan et al., 2015). However, because of the national IP protection in technology industry, especially in the context of CRO, foreign employees in my case company are mainly come from western countries. Little distinction was drawn between international and Norwegian employees after overcoming the language barriers.

In addition, the organizational influences in my study concentrated on two aspects from HRM practices and three topics from PPM maturity. Future research could integrate new factors of project managers' POS, for instant, other HRM practices from Huselid (1995) in the project management context. Influence from other mediators on career development could also be

investigated, such as affective organizational commitment (El Akremi et al., 2014). For instant, a possible research question: *Who, how and to what extend support and facilitate project managers' career development in PBO?*

Regarding longer-term research, De Vos et al. (2019) imply a shift from career development as a one-off lifetime occupational choice towards a multiple dynamic career choice across life span perspectives. My finding shows that achieving career success is not an endpoint but a continuing process. Thus, a longitudinal study could be conducted to investigate the influence from independent variables in my revised SCCT model on career success for Project managers in following years.

Regarding the context, future study could extend out the boundary of organization, investigate project managers' career development in a broader context of the networks and project ecologies, including the industrial level (Wright & Boswell, 2002), social level (Huemann, 2016), and the private life level (Lent & Brown, 2006). A comparative design could be applied if future researchers are able to access multiple case companies to compare different career models in their HRM.

8.3 Concluding Remark

I hope my small contribution to career and project management is fruitful for project managers in CRO. The new SCCT framework I create provides a set of guidelines for project managers to develop their career in the CRO.

Project management is of important in the CRO, my findings show that in general it is not valued by both Project managers and company. As the upmost organizational value is on the research, there is nearly no career for project managers in the CRO. The new SCCT framework which I develop based on my finding in the technology institute in a CRO, offer a specific approach to develop and facilitate a career for Project managers. The key factor which has significant impact on career development is highlight. Aimed with this new SCCT framework, Project managers could flourish in their specialized career path, while CRO could create better quality of research projects.

Reference

Akkermans, J., & Kubasch, S. (2017). # Trending topics in careers: a review and future research agenda. *Career Development International*.

Akkermans, J., Seibert, S. E., & Mol, S. T. (2018). Tales of the unexpected: Integrating career shocks in the contemporary careers literature. *SA Journal of Industrial Psychology*, *44*(1), 1-10.

Akkermans, J., & Tims, M. (2017). Crafting your career: How career competencies relate to career success via job crafting. *Applied Psychology*, *66*(1), 168-195.

Allen, D. G., Shore, L. M., & Griffeth, R. W. (2003). The role of perceived organizational support and supportive human resource practices in the turnover process. *Journal of Management*, *29*(1), 99-118.

Alvesson, M. (2000). Social indentity and the problem of loyalty in knowledge‐intensive companies. *Journal of management studies*, *37*(8), 1101-1124.

Alvesson, M. (2010). *Interpreting interviews*. Sage.

Alvesson, M., & Sköldberg, K. (2017). *Reflexive methodology: New vistas for qualitative research*. sage.

Aubry, M., Müller, R., & Glückler, J. (2011). Exploring PMOs through community of practice theory. *Project Management Journal*, *42*(5), 42-56.

Bailyn, L. (1991). The hybrid career: an exploratory study of career routes in R&D. *Journal of engineering and Technology Management*, *8*(1), 1-14.

Baruch, Y. (2004). Transforming careers: from linear to multidirectional career paths. *Career Development International*.

Baruch, Y., & Rosenstein, E. (1992). Human resource management in Israeli firms: Planning and managing careers in high technology organizations. *International Journal of Human Resource Management*, *3*(3), 477-495.

Bell, E., Bryman, A., & Harley, B. (2018). *Business research methods*. Oxford university press.

Blichfeldt, B. S., & Eskerod, P. (2008). Project portfolio management–There's more to it than what management enacts. *International Journal of Project Management*, *26*(4), 357-365.

Bloch, D. P. (2005). Complexity, chaos, and nonlinear dynamics: A new perspective on career development theory. *The career development quarterly*, *53*(3), 194-207.

Braun, G. P., Gowan, M. A., & Strefeler, J. M. (2006). From Accounting Professional to Accounting Professor: The Gravitational Hypothesis as an Explanation for Career Change. *The Accounting Educators' Journal*, *13*.

Braun, T., Müller-Seitz, G., & Sydow, J. (2012). Project citizenship behavior?–An explorative analysis at the project-network-nexus. *Scandinavian Journal of management*, *28*(4), 271-284.

Bredin, K. (2008). People capability of project-based organisations: A conceptual framework. *International Journal of Project Management*, *26*(5), 566-576.

Bredin, K., & Söderlund, J. (2011). The HR quadriad: a framework for the analysis of HRM in project-based organizations. *The International Journal of Human Resource Management*, *22*(10), 2202-2221.

Bredin, K., & Söderlund, J. (2013). Project managers and career models: An exploratory comparative study. *International Journal of Project Management*, *31*(6), 889-902.

Brinkmann, S., & Kvale, S. (2015). *Interviews: Learning the craft of qualitative research interviewing* (Vol. 3). Sage Thousand Oaks, CA.

Briscoe, J. P., & Hall, D. T. (2006). The interplay of boundaryless and protean careers: Combinations and implications. *Journal of vocational behavior*, *69*(1), 4-18.

Bryman, A. (2016). *Social research methods*. Oxford university press.

Cano, J. A., Tabares, A., & Alvarez, C. (2017). University students' career choice intentions: Guesss Colombia study. *Revista Espacios*, *38*(05).

Cao, L., Hirschi, A., & Deller, J. (2014). Perceived organizational support and intention to stay in host countries among self-initiated expatriates: the role of career satisfaction and networks. *The International Journal of Human Resource Management*, *25*(14), 2013-2032.

Chesbrough, H. W. (2003). *Open innovation: The new imperative for creating and profiting from technology*. Harvard Business Press.

Colombo, G. (2019). *An Exploratory Study of Intergenerational Knowledge Transfer: Within the Project Management Profession*. LAP LAMBERT Academic Publishing. https://books.google.no/books?id=nSHTzQEACAAJ

Connell, J., & Burgess, J. (2006). The influence of precarious employment on career development. *Education+ Training*.
Cooper, R., Edgett, S., & Kleinschmidt, E. (2001). Portfolio management for new product development: results of an industry practices study. *r&D Management*, *31*(4), 361-380.
Crawford, L. (2005). Senior management perceptions of project management competence. *International Journal of Project Management*, *23*(1), 7-16.
Crawford, L., French, E., & Lloyd-Walker, B. (2013). From outpost to outback: project career paths in Australia. *International Journal of Project Management*, *31*(8), 1175-1187.
Crawford, L., Morris, P., Thomas, J., & Winter, M. (2006). Practitioner development: From trained technicians to reflective practitioners. *International Journal of Project Management*, *24*(8), 722-733.
Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches*. Sage publications.
Dalland, O. (2000). *Metode og oppgaveskriving for studenter*. Gyldendal akademisk.
Day, D. V., Fleenor, J. W., Atwater, L. E., Sturm, R. E., & McKee, R. A. (2014). Advances in leader and leadership development: A review of 25 years of research and theory. *The leadership quarterly*, *25*(1), 63-82.
De Vos, A., Akkermans, J., & Van Der Heijden, B. (2019). From occupational choice to career crafting. *The Routledge companion to career studies*, 128-142.
Debourse, J.-P., & Archibald, R. (2012). Proposals to accelerate advancement from project manager to senior executive. *PM World Today*, *14*, 1-17.
DeFillippi, R. J., & Arthur, M. B. (1994). The boundaryless career: A competency‐based perspective. *Journal of organizational behavior*, *15*(4), 307-324.
Dubois, A., & Gadde, L.-E. (2002). Systematic combining: an abductive approach to case research. *Journal of business research*, *55*(7), 553-560.
Dul, J., Ceylan, C., & Jaspers, F. (2011). Knowledge workers' creativity and the role of the physical work environment. *Human Resource Management*, *50*(6), 715-734.
Eby, L. T., Butts, M., & Lockwood, A. (2003). Predictors of success in the era of the boundaryless career. *Journal of organizational behavior*, *24*(6), 689-708. https://doi.org/10.1002/job.214
Eder, P., & Eisenberger, R. (2008). Perceived organizational support: Reducing the negative influence of coworker withdrawal behavior. *Journal of Management*, *34*(1), 55-68.
Ekrot, B., Rank, J., Kock, A., & Gemünden, H. G. (2018). Retaining and satisfying project managers–antecedents and outcomes of project managers' perceived organizational support. *The International Journal of Human Resource Management*, *29*(12), 1950-1971.
El-Sabaa, S. (2001). The skills and career path of an effective project manager. *International Journal of Project Management*, *19*(1), 1-7.
El Akremi, A., Colaianni, G., Portoghese, I., Galletta, M., & Battistelli, A. (2014). How organizational support impacts affective commitment and turnover among Italian nurses: A multilevel mediation model. *The International Journal of Human Resource Management*, *25*(9), 1185-1207.
Galbraith, J. R., & Galbraith, J. R. (1977). *Organization design*. Prentice Hall.
Gareis, R., & Huemann, M. (2000). Project management competences in the project-oriented organization. *Gower handbook of project management*, *3*.
Gavino, M. C., Wayne, S. J., & Erdogan, B. (2012). Discretionary and transactional human resource practices and employee outcomes: The role of perceived organizational support. *Human Resource Management*, *51*(5), 665-686.
Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational research methods*, *16*(1), 15-31.
Guan, Y., Chen, S. X., Levin, N., Bond, M. H., Luo, N., Xu, J., Zhou, X., Chen, P., Li, C., & Fu, R. (2015). Differences in career decision-making profiles between American and Chinese university students: The relative strength of mediating mechanisms across cultures. *Journal of Cross-Cultural Psychology*, *46*(6), 856-872.
Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. *Handbook of qualitative research*, *2*(163-194), 105.
Hall, D. T. (1976). *Careers in organizations*. Goodyear Pub. Co.

Heslin, P. A. (2005). Conceptualizing and evaluating career success. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, *26*(2), 113-136.

Heywood, L., Gonczi, A., & Hager, P. (1992). *A guide to development of competency standards for professions*. AGPS Canberra.

Hobday, M. (2000). The project-based organisation: an ideal form for managing complex products and systems? *Research policy*, *29*(7-8), 871-893.

Hogan, R., & Roberts, B. W. (2004). A socioanalytic model of maturity. *Journal of Career Assessment*, *12*(2), 207-217.

Holbrook, A. L., Green, M. C., & Krosnick, J. A. (2003). Telephone versus face-to-face interviewing of national probability samples with long questionnaires: Comparisons of respondent satisficing and social desirability response bias. *Public opinion quarterly*, *67*(1), 79-125.

Holland, J. L. (1994). *The self-directed search*.

Holland, J. L. (1997). *Making vocational choices: A theory of vocational personalities and work environments*. Psychological Assessment Resources.

Hölzle, K. (2010). Designing and implementing a career path for project managers. *International Journal of Project Management*, *28*(8), 779-786.

Huemann, M. (2016). *Human resource management in the project-oriented organization: towards a viable system for project personnel*. Routledge.

Huemann, M., Keegan, A., & Turner, R. (2007). Human resource management in the project-oriented company: A review. *International Journal of Project Management*, *25*(3), 315-323.

Huemann, M., Turner, R., & Keegan, A. (2004). Managing human resources in the project‐oriented company. *The Wiley guide to managing projects*, 1061-1086.

Huselid, M. A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal*, *38*(3), 635-672.

Jonas, D. (2010). Empowering project portfolio managers: How management involvement impacts project portfolio management performance. *International Journal of Project Management*, *28*(8), 818-831.

Katz, R. (1991). Skills of an effective administer. *Harvard Business Review, Business Classics: Fifteen Key Concepts for Managerial Success*.

Keegan, A., Ringhofer, C., & Huemann, M. (2018). Human resource management and project based organizing: Fertile ground, missed opportunities and prospects for closer connections. *International Journal of Project Management*, *36*(1), 121-133.

King, Z. (2004). Career self-management: Its nature, causes and consequences. *Journal of vocational behavior*, *65*(1), 112-133.

Larsen, H. H. (2002). Oticon: Unorthodox Project-Based Management and Careers in a" Spaghetti Organization". *Human Resource Planning*, *25*(4).

LeCompte, M. D., & Goetz, J. P. (1982). Problems of reliability and validity in ethnographic research. *Review of educational research*, *52*(1), 31-60.

Lent, R. W., & Brown, S. D. (2006). On conceptualizing and assessing social cognitive constructs in career research: A measurement guide. *Journal of Career Assessment*, *14*(1), 12-35.

Lent, R. W., & Brown, S. D. (2013). Social cognitive model of career self-management: Toward a unifying view of adaptive career behavior across the life span. *Journal of counseling psychology*, *60*(4), 557.

Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of vocational behavior*, *45*(1), 79-122.

Lent, R. W., Brown, S. D., & Hackett, G. (2000). Contextual supports and barriers to career choice: A social cognitive analysis. *Journal of counseling psychology*, *47*(1), 36.

Lent, R. W., Brown, S. D., & Hackett, G. (2002). Social cognitive career theory. *Career choice and development*, *4*, 255-311.

Lewis-Beck, M., Bryman, A. E., & Liao, T. F. (2003). *The Sage encyclopedia of social science research methods*. Sage Publications.

Lindgren, M., & Packendorff, J. (2006). What's new in new forms of organizing? On the construction of gender in project‐based work. *Journal of management studies*, *43*(4), 841-866.

Lindgren, M., & Packendorff, J. (2009). Project leadership revisited: Towards distributed leadership perspectives in project research. *International Journal of Project Organisation and Management*, *1*(3), 285-308.
Lindkvist, L. (2004). Governing project-based firms: promoting market-like processes within hierarchies. *Journal of Management and Governance*, *8*(1), 3-25.
Lloyd-Walker, B., French, E., & Crawford, L. (2016). Rethinking researching project management. *International Journal of Managing Projects in Business*.
Manning, S. (2010). The strategic formation of project networks: A relational practice perspective. *Human Relations*, *63*(4), 551-573.
Marcus, B. (2014). New study reveals senior executive women still struggle with self-promotion. *Forbes Magazine [On-line]. Retrieved*, *27*.
Markman, G. D., Siegel, D. S., & Wright, M. (2008). Research and technology commercialization. *Journal of management studies*, *45*(8), 1401-1423.
Maxwell, J. A. (2010). Using numbers in qualitative research. *Qualitative inquiry*, *16*(6), 475-482.
Mayrhofer, W., Briscoe, J. P., Hall, D. T. T., Dickmann, M., Dries, N., Dysvik, A., Kaše, R., Parry, E., & Unite, J. (2016). Career success across the globe: Insights from the 5C project.
McDonald, P., Brown, K., & Bradley, L. (2005). Have traditional career paths given way to protean ones? *Career Development International*.
McGee, J. E., Peterson, M., Mueller, S. L., & Sequeira, J. M. (2009). Entrepreneurial self–efficacy: Refining the measure. *Entrepreneurship theory and Practice*, *33*(4), 965-988.
Mlodzik, K. J., & De Meuse, K. (2010). A scholarly investigation of generational workforce differences: Debunking the myths. *Retrieved March*, *20*, 2014.
Monrouxe, L. V., & Rees, C. E. (2020). When I say… quantification in qualitative research. *Medical education*, *54*(3), 186-187.
Nahm, A. Y., Vonderembse, M. A., & Koufteros, X. A. (2003). The impact of organizational structure on time-based manufacturing and plant performance. *Journal of operations management*, *21*(3), 281-306.
Ng, T. W., Eby, L. T., Sorensen, K. L., & Feldman, D. C. (2005). Predictors of objective and subjective career success: A meta‐analysis. *Personnel psychology*, *58*(2), 367-408.
Paton, S., Hodgson, D., & Cicmil, S. (2010). Who am I and what am I doing here?: Becoming and being a project manager. *The Journal of Management Development*, *29*(2), 157-166.
Patton, W., & McMahon, M. (2006). The systems theory framework of career development and counseling: Connecting theory and practice. *International Journal for the Advancement of Counselling*, *28*(2), 153-166.
Peltokorpi, V., Allen, D. G., & Froese, F. (2015). Organizational embeddedness, turnover intentions, and voluntary turnover: The moderating effects of employee demographic characteristics and value orientations. *Journal of organizational behavior*, *36*(2), 292-312.
Piekkari, R., Welch, C., & Paavilainen, E. (2009). The case study as disciplinary convention: Evidence from international business journals. *Organizational research methods*, *12*(3), 567-589.
PMI, A. (2013). guide to the project management body of knowledge (PMBOK guide). Project Management Institute,
Prasad, P. (1993). Symbolic processes in the implementation of technological change: A symbolic interactionist study of work computerization. *Academy of Management Journal*, *36*(6), 1400-1429.
Prencipe, A., & Tell, F. (2001). Inter-project learning: processes and outcomes of knowledge codification in project-based firms. *Research policy*, *30*(9), 1373-1394.
Rhoades, L., & Eisenberger, R. (2002). Perceived organizational support: a review of the literature. *Journal of applied psychology*, *87*(4), 698.
Rousseau, D. (1985). Issues of level in organizational research: Multi-level and cross-level perspectives. *Research in organizational behavior*.
Rousseau, D. (1995). *Psychological contracts in organizations: Understanding written and unwritten agreements*. Sage publications.
Savelsbergh, C. M., Havermans, L. A., & Storm, P. (2016). Development paths of project managers: What and how do project managers learn from their experiences? *International Journal of Project Management*, *34*(4), 559-569.
Savickas, M. L. (2002). Career construction. *Career choice and development*, *149*, 205.

Schramm-Nielsen, J., Lawrence, P., & Sivesind, K. H. (2004). *Management in Scandinavia: culture, context and change*. Edward Elgar Publishing.

Seibert, S. E., & Kraimer, M. L. (2001). The five-factor model of personality and career success. *Journal of vocational behavior*, *58*(1), 1-21.

Shenhar, A. J., & Dvir, D. (2007). *Reinventing project management: the diamond approach to successful growth and innovation*. Harvard Business Review Press.

Shore, L. M., & Tetrick, L. E. (1991). A construct validity study of the survey of perceived organizational support. *Journal of applied psychology*, *76*(5), 637.

Shuy, R. W. (2002). In-person versus telephone interviewing. *Handbook of interview research: Context and method*, 537-555.

Spurk, D., Hirschi, A., & Dries, N. (2019). Antecedents and outcomes of objective versus subjective career success: Competing perspectives and future directions. *Journal of Management*, *45*(1), 35-69.

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research techniques*. Sage publications Thousand Oaks, CA.

Stuer, D., De Vos, A., Van der Heijden, B. I., & Akkermans, J. (2019). A sustainable career perspective of work ability: the importance of resources across the lifespan. *International journal of environmental research and public health*, *16*(14), 2572.

Svejvig, P., & Andersen, P. (2015). Rethinking project management: A structured literature review with a critical look at the brave new world. *International Journal of Project Management*, *33*(2), 278-290.

Teller, J., Unger, B. N., Kock, A., & Gemünden, H. G. (2012). Formalization of project portfolio management: The moderating role of project portfolio complexity. *International Journal of Project Management*, *30*(5), 596-607.

Thomas, J., & Mengel, T. (2008). Preparing project managers to deal with complexity–Advanced project management education. *International Journal of Project Management*, *26*(3), 304-315.

Turner, M. (2016). Beyond the iron triangle: reflections of an early career academic. *International Journal of Managing Projects in Business*.

Turner, R. (2016). *Gower handbook of project management*. Routledge.

Turner, R., Huemann, M., Anbari, F. T., & Bredillet, C. N. (2010). *Perspectives on projects*. Routledge.

Turner, R., Huemann, M., & Keegan, A. (2008). Human resource management in the project-oriented organization: employee well-being and ethical treatment. *International Journal of Project Management*, *26*(5), 577-585.

Turner, R., & Müller, R. (2003). On the nature of the project as a temporary organization. *International Journal of Project Management*, *21*(1), 1-8.

Unger, B. N., Kock, A., Gemünden, H. G., & Jonas, D. (2012). Enforcing strategic fit of project portfolios by project termination: An empirical study on senior management involvement. *International Journal of Project Management*, *30*(6), 675-685.

Van der Heijden, B. I., & De Vos, A. (2015). Sustainable careers: Introductory chapter. In *Handbook of research on sustainable careers*. Edward Elgar Publishing.

Walker, J. W. (1976). Let's get realistic about career paths. *Human Resource Management*, *15*(3), 1-7.

Whitley, R. (2006). Project-based firms: new organizational form or variations on a theme? *Industrial and corporate change*, *15*(1), 77-99.

Winter, M., Smith, C., Morris, P., & Cicmil, S. (2006). Directions for future research in project management: The main findings of a UK government-funded research network. *International Journal of Project Management*, *24*(8), 638-649.

Wright, P. M., & Boswell, W. R. (2002). Desegregating HRM: A review and synthesis of micro and macro human resource management research. *Journal of Management*, *28*(3), 247-276.

Yin, R. K. (2009). *Case study research: Design and methods* (Vol. 5). sage.

Young, R., & Poon, S. (2013). Top management support—almost always necessary and sometimes sufficient for success: Findings from a fuzzy set analysis. *International Journal of Project Management*, *31*(7), 943-957.

Zacher, H., & Griffin, B. (2015). Older workers' age as a moderator of the relationship between career adaptability and job satisfaction. *Work, Aging and Retirement*, *1*(2), 227-236.

Zhang, Y., Farh, J.-L., & Wang, H. (2012). Organizational antecedents of employee perceived organizational support in China: a grounded investigation. *The International Journal of Human Resource Management*, *23*(2), 422-446.

Appendix

Information letter and my interview guides will be presented in the following pages.

A1 Information letter

Are you interested in taking part in the research project:

"Project Managers' Career Development in Project-Based Organization"?

This is an inquiry about participation in a research project where the main purpose is to understand the project managers' career development in project-based organization. In this letter we will give you information about the purpose of the project and what your participation will involve.

Purpose of the project
It is a master's thesis. The purpose of this thesis is to understand how the career development is perceived and experienced by project managers in the project-based organization (PBO) and how does the PBO influence on personal career development.
The thesis answers the following research questions:
Overall RQ. How is the Project Managers' Career Development in PBO?
RQ1. How do project managers experience their careers and development in PBO?
RQ2. How does the PBO influence on the experience of project managers' careers and development?

Who is responsible for the research project?
The Department of Industrial Economics and Technology Management (IØT), Norwegian University of Science and Technology (NTNU) is the institution responsible for the project.

Why are you being asked to participate?
A total sample size consists of around 10 interviews from SINTEF will be invited to participate this research through purposive sampling and snowball sampling that makes initial contact via my network in SINTEF School, then access the potential respondents by following up on referrals from the initial contact.

The participants should be representative of all relevant persons of interest in the SINTEF to achieve the authenticity demand in this research. Hence, one group with project roles up to 8 people with different gender, age and technical background, who involved in the projects in SINTEF, are invited to input their individual experience and perception of career path in the PBO. Another group up to 2 representatives are selected from the HR department who are in charge of PM training programs, and familiar with the ideas underlying organizational career models design and development. In addition, 1 top manager should also be engaged to gain the insight of management philosophy about organizational support on the career for project managers.

What does participation involve for you?
If you chose to take part in the project, this will involve that you participate a semi-structure interview. It will take approx. 1.5 hour. Your answers will be recorded electronically. The interview includes topics about: Personal background includes education and work, project experience with career goal and motivation, PM competence development with learning experience and qualification opportunities in organization, perception of career ladder in organization, perception of organizational support for project managers' career (PM formalization and standardization, top management involvement).

Participation is voluntary
Participation in the project is voluntary. If you chose to participate, you can withdraw your consent at any time without giving a reason. All information about you will then be made anonymous. There will

be no negative consequences for you if you chose not to participate or later decide to withdraw. It will not affect your relationship with your employer.

Your personal privacy – how we will store and use your personal data
We will only use your personal data for the purpose(s) specified in this information letter. We will process your personal data confidentially and in accordance with data protection legislation (the General Data Protection Regulation and Personal Data Act).

- In connection with the Department of Industrial Economics and Technology Management (IØT), Norwegian University of Science and Technology (NTNU), Bingyang Huang, as the student for the master's thesis, will have access to the personal data. Ola Edvin Vie, as the supervisor, will together be responsible for the project.
- Your personal information (e.g. name, age, occupation, position etc.) will be replaced with a code. The list of personal information and respective codes will be stored separately from the rest of the collected data on a notebook and locked away to ensure that no unauthorized persons are able to access the personal data.

In publication, personal information will be anonymised, and participants will not be recognizable.

What will happen to your personal data at the end of the research project?
The project is scheduled to end 30.11.2021. All collected data, including the personal data and digital recordings, will be deleted at the end of the project

Your rights
So long as you can be identified in the collected data, you have the right to:
- access the personal data that is being processed about you
- request that your personal data is deleted
- request that incorrect personal data about you is corrected/rectified
- receive a copy of your personal data (data portability), and
- send a complaint to the Data Protection Officer or The Norwegian Data Protection Authority regarding the processing of your personal data

What gives us the right to process your personal data?
We will process your personal data based on your consent.

Based on an agreement with Norwegian University of Science and Technology (NTNU), NSD – The Norwegian Centre for Research Data AS has assessed that the processing of personal data in this project is in accordance with data protection legislation.

Where can I find out more?
If you have questions about the project, or want to exercise your rights, contact:
- Ola Edvin Vie via Bingyang Huang.
- Our Data Protection Officer: Department of Industrial Economics and Technology Management (IØT), Norwegian University of Science and Technology (NTNU).
- NSD – The Norwegian Centre for Research Data AS, by email: (personverntjenester@nsd.no) or by telephone: +47 55 58 21 17.

Yours sincerely,

Project Leader (Researcher/supervisor)	Student (if applicable)
Ola Edvin Vie	Bingyang Huang

Consent form

I have received and understood information about the project *[insert project title]* and have been given the opportunity to ask questions. I give consent:

- ☐ to participate in an interview

I give consent for my personal data to be processed until the end date of the project, approx. 30.11.2021.

(Signed by participant, date)

A2 Interview Guides

Interview Guide- Employee

Name: Gender: Age: Position Title:

1) Personal background

1. Could you talk about your education, career background?
2. Do you have any qualifications connected with Project management?
3. How long have you been working as a project manager?
4. How long have you been working in SINTEF as a project manager?
5. What is attracting you to work in SINTEF? If you are not a researcher, what kind of job would you like to take?

2) Project Experience

6. Can you tell me about your project experience?
    a. How did you become a project manager?
    b. What is the scope of projects which you have participated in?
    c. What kind of collaboration and network have you built as a project manager?
7. How will you describe your treatment that you got as a project manager in SINTEF?
8. What opportunities did you get by being a project manager?
9. What main challenges did you meet as a project manager?
10. Can you tell me how do you feel about your balance between scientific publication, contract-based research, and project management work?
11. Do you notice age differences may exist in career development? Compared senior Project managers to the younger generation Project managers. (gender/nationality)

3) Learning Experience

12. Can you talk about your learning experience in SINTEF?
13. What training programmes in SINTEF have you participated? Can you talk about the contents?
14. Considering Competence Development, how do you balance between the organizational requirements and your personal needs?
15. What kinds of Support or Obstacles for competence development did you perceived as a project manager?

4) Career Ladder

16. How do you perceive the career ladder in the SINTEF?
17. How do you perceive a formalized career path for project managers in SINTEF?
18. Is there alignment between different career paths that give you chance to shift postions?
19. How would you describe the promotion criteria towards different career paths in the SINTEF?
20. To what degree do you perceive the qualification programmes for PM contribute to your career path?
21. How do you consider about your career goal and success?
22. How does SINTEF motivate you work towards your career goals?

5) Project Support from SINTEF

23. How would you descirbe the formalization and standardization of Poject Management in SINTEF?
24. What kind of Top Management Support for project manager did you experienced in SINTEF?
25. In a ideal life, as a Project manager what kind of support would you like to get from SINTEF?

6) Thanks for your time, do you have anything to add?

Interview Guide- Leader

Name: Gender: Age: Position Title:

1) Personal background

26. Could you talk about your education, career background?
27. Do you have any qualifications connected with Project management?
28. Have you been working as a project manager?
29. How long have you been working in SINTEF?
30. What is attracting you to work in SINTEF? If not in SINTEF, what kind of job would you like to take?

2) Project Experience

31. Can you tell me about your project experience? (If had)
    a) How did you become a project manager?
    b) What is the scope of projects which you have participated in?
    c) What kind of collaboration and network have you built as a project manager?
32. How will you describe the treatment for project manager in SINTEF?
33. What are the opportunities to be a project manager in SINTEF?
34. What are the main challenges for a project manager in SINTEF?
35. Do you notice age differences may exist in career development? Compared senior Project managers to the younger generation Project managers.
36. Do you notice gender differences may exist in project manager's career development?
37. Do you notice nationality differences may exist in project manager's career development?

3) Learning Experience

38. Can you talk about learning system in SINTEF?
39. What Qualification and Training Programmes does SINTEF have? Can you talk about the contents?
40. How does SINTEF support competence development for a project manager?
41. How does SINTEF balance competence development between the organizational requirements and individual needs?

4) Career Ladder

42. Can you talk about the career ladder in SINTEF?
43. How do you perceive a formalized career path for project managers in SINTEF?
44. Is there alignment between different career paths that give employees chance to shift postions?
45. How would you describe the promotion criteria towards different career paths in SINTEF?
46. To what degree do you perceive the Qualification and Training Programmes contribute to Project manager's career path?
47. How do you consider about career goal and success in SINTEF?
48. How does SINTEF motivate employees work towards their career goal and success?

5) Project Support from SINTEF

49. How would you descirbe the formalization and standardization of Poject Management in SINTEF?
50. What kind of Top Management Support for project manager did you perceived in SINTEF?
51. In a ideal life, what other support from SINTEF would you like to give to Project managers?

6) Thanks for your time, do you have anything to add?

Bingyang Huang

NTNU
Norwegian University of
Science and Technology