

行政院國家科學委員會專題研究計畫成果報告

科技人員事業前程剖析，尤其是專案計畫導向者

Exploring the Career Issue of Technical People, Especially the Project-oriented

計畫編號：NSC 87-2416-H-006-028

執行期限：86 年 8 月 1 日至 87 年 7 月 31 日

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一、中文摘要

透過事業前程與激勵理論，本研究對科技人員的事業前程相關議題作深入剖析。所研究的工作態度變項包括事業前程導向、組織承諾、工作涉入、工作認知、工作滿意度、理想的工作特性、及一些工作上自我檢討態度。研究重點主要在針對科技人員之昇遷傾向，探討這些變項與科技人員事業前程選擇間之關聯性，尤其是那些具專案計畫導向而對於昇遷抱持無所謂之態度者。本文亦對不同事業前程選擇群間之人口變項特質作比較。根據研究結果，本研究並討論這些結果在實際上所隱含的意義。

關鍵詞：事業前程、專案計劃導向、工作態度

Abstract

Career issues pertaining to technical people were conducted via both the career and motivation theories. The variables of job attitudes tested include career orientation, organizational commitments, job involvement, work perception, job satisfaction, ideal job characteristics and some job attitude variables in self-evaluation. The focus is on the linkage between these variables and technical people's career choice toward advance, especially to those oriented in project-typed work irrespective of promotion. Demographic profiles among groups of different career choices are also compared. Practical implications in terms of the research outcomes are discussed.

Keywords: Career, Project-oriented, Job Attitudes.

PRELIMINARY

Various career orientations have been found in the engineering professionalism of the West. Several studies reported a large proportion of technical staff, 45% to 58%, preferring project

assignments despite of advancement over the traditional ladder rewards. Raudsepp's attitude survey (1989) also showed 15% of engineers indicating them lacking the ambition needed to get ahead. Advancement has long been presumed as an effective factor in motivational theory at work. Its ignorance by employees surely presents a dilemma to human resource management. Marginal performance may be resulted by those remaining in the present position.

Badawy (1988) pointed out that task itself can generate the greatest motivational potential of engineers. To our knowledge, prior empirical research seldom explicitly examined the differences of work experiences or job attitudes between engineers who have clear advancement aspiration and those who have not. The present study focuses on the research issues in this regard, especially to those oriented in project-typed work irrespective of promotion.

RESEARCH FRAMEWORK

Career anchor is an internalized value structure that determines individuals' specific choices of career path and has an impact on people's perceptions of work experiences (Schein, 1978). While the detailed formats vary from company to company, the career ladders in engineering are usually organized based on two career settings – technology and management. In accordance with this traditional ladder perspective, the technical and managerial routes are the two types of career orientations mostly assumed in the engineering career arena. Other career patterns in pursuits of personal needs independent of advancement have also been identified, which include searches of challenging projects, own business, retiring,

security, autonomy, lifestyle and sense of service (e.g., Allen and Katz, 1986; Garden, 1990; Steiner and Farr, 1986; Igarria, Greenhaus and Parasuraman, 1991).

The relative frequencies of the three career orientations - managerial ladder, researcher/technical ladder, and challenging projects irrespective of promotion – have been mostly compared for engineers and scientists from different countries. Specifically, a large amount of the technical respondents were found oriented in project type of work. For example, Mckinnon (1987), Allen and Katz (1995), and Hesketh, et al. (1992) respectively found 58%, 48%, and 45% of technical people in two surveys in US and one survey in Australia preferring project assignments despite of advancement. Those favoring managerial and technical ladders in these three surveys were in the range of 20% to 30%. A smaller proportion (20%) oriented in project-based career and a larger proportion (46%) in management were carried out in Garden's (1990) investigation of UK high-tech software developers. Garden argued this distinction might cause by cultural factors and differences of organizational size in the tests. The analysis given by Allen and Katz (1992) also revealed that educational background and age may play a significant role in the shaping of engineers' career preferences.

While the empirical tests showed a significant number of technical staff inclined to project assignments, a review of literature suggests that most engineers define success in terms of movement upwards continuously. Garden (1990), for example, stated from her interviews of UK software engineers that mere moving around from one project to another without gaining increased technical or managerial responsibilities would be a sign of failure. Engineers, like others, want more responsibilities, more authority and more money; they want to get ahead (Raudsepp, 1989). No one has tenure in a project-oriented engineering management (Thamhain, 1992, p. 495). If that is so, why are there engineers who overlook or hesitate to choose the ladder opportunities when providing them with such options for selection? Job attitude is a personal predisposition in reaction to one's task environment, giving subsequent effects to people's actual work behaviors and performances, favorably or unfavorably (Steers and Porter, p. 256, 1991). Do engineers with obscure aspiration in status change upward hold different job attitudes from those clearly giving such an indication? A linkage between engineers' job attitudes and

career choice toward advance should provide a way to address these questions.

Except the project-oriented engineers, those who choose an "indecisive" option among various career alternatives, including ladder opportunities and project-typed work, are another staff group not explicitly recognizing the organizational advance policy for motivation. In view of this similarity, it is reasonable to refer them together the advance-obscured people, and quest for the similarities of their attitudes toward their careers and jobs.

Personnel policy is greatly based on the presumed effectiveness of the traditional ladder reward (Allen and Katz, 1995). Employees' disinterest in it should reveal a paradox. As suggested by Garden (1990), examining the solutions adopted by innovative, smaller high tech companies may help to interpret the problem of large companies in motivating technical specialists. A look into the feature of young engineers in the private high tech firms of less industrialized countries, like Taiwan, may also provide an insight for it. Specifically, the current study focusing on the following three issues formulated from the above argument:

(1) What are the relative frequencies of the various types of career preference among a particular sample from the high tech engineering of Taiwan where the basic research is less encouraged compared to the West? Would there be fewer people interested in project-typed work independent of promotion?

The project-oriented engineers and those who are indecisive about their career options are both people hesitating to identify themselves holding a desire to advance when showing them the upward alternatives to choose. Therefore,

(2) Are they similar in the attitudes toward their jobs and organizations?

(3) Are their job-related attitudes different from those showing an advance preference?

MEASURING INSTRUMENT

Porter and Miles (1991) asserted that a comprehensive motivation model at work should address itself to at least three important sets of variables that constitute the work situation. Those are, variables unique to individuals (attitudes, interests and needs, etc.), variables arise from the nature of job itself (degrees of autonomy, level of responsibility and amount of feedback, etc.), and variables from the work environment (peer, supervisor, reward practices and organizational climate,

etc.). Based on Porter and Milies' model, the current study designed a questionnaire attempting to cover the three task motivational levels and several job-related variables. Specifically, it comprises a career choice inventory, 6 career orientation statements, 17 items for 3 job attitudinal scales (6 for job involvement, 4 for work perception, 7 for organizational commitment), 4 single items for the overall job satisfaction and evaluation, and 15 items for the characteristics of an ideal job. The definition and purpose of each measure are described as follows.

Career Choice and Career Orientation. A career consists both of the external functions which someone has occupied, i.e., the career ladder, and the internal identity which is an individual's perception of his or her working life (Wees and Jansen, 1994). Therefore, an inventory for the external career choices and a scale for detecting engineers' internal career orientations were developed. The career choice inventory was derived from the career preference questions proposed by Allen and Katz (1986). The career orientation scale consisted of 6 items, derived from Aryee and Leong's 8-item scale (1991), in which two factors - technical and managerial orientations - were derived. Their internal consistency reliabilities were 0.82 and 0.83 respectively.

Job Involvement and Work Perception. Two 7-point Likert-type scales were designed to measure involvement with a specific job and work in general. To prevent confusion, the former was named Job Involvement Scale and the latter Work Perception Scale. The former had 6 items and the latter had 4, both taken partly from Kanungo (1982). Their internal consistency reliabilities were 0.84 and 0.89 respectively.

Organizational Commitment. A 7-item scale, taken from the OC Questionnaire of Mowday et al. (1979), was used to measure the respondents' attitude of organizational commitment. The internal consistency reliability of the scale was 0.90.

Overall Job Satisfaction and Self-evaluation. Among the four single items, two were designed to assess the extents of respondents' depression regarding jobs not well done by them and their avoidance of taking extra duties and responsibilities in jobs; the other two were for measuring the overall job satisfaction and the self-evaluated work performance.

Ideal Job Characteristics. Fifteen items for

measuring the ideal characteristics of a job were developed, which can be classified into two categories of the various natures arise from the job itself and factors pertaining to the work environment.

THE SAMPLE

A questionnaire was distributed to technical staff employed in 9 privately owned, high technological firms, located in Hsinchu Science Based Park of Taiwan. Their products are electronic and computer facilities. The participants were chosen from different sizes of organizations for a more generalized sample. Two of the participating organizations had employees more than 2800, three between 500-1400, and four between 40-130. The organizations were approached by the authors through several technical managers, who promised to take responsibility of the questionnaire distribution. Within each questionnaire was a statement that explained the general purpose of the research, the voluntary nature of participation, and assured participants' confidentiality, which was retained by providing a prepaid postage for returning the questionnaire directly to the authors if a respondent preferred to do so.

About 450 questionnaires were distributed: 200 to the two large companies, 140 to the three medium companies, and 110 to the four small companies. A total of 205 (45.6%) usable questionnaires were returned. Since some of them (about 30%) were returned individually and anonymously, it was impossible to calculate the response rates for different sizes of organizations. However, for the 70% returned through the people in charge of the questionnaire distribution, the response rates ranged uniformly between 42.8% - 49.4% across the three organizational sizes. Thus, the sample should cover engineers from different sizes of organization.

The respondents had an average age of 29.53 years, ranging from 23 to 45, 62.7% of them under 30, 36.8% under 40 and 0.5% over 40. Among them, 13.2% were women and 36.4% were married. Their average tenure at the current position was 2.05 years, with a total work experience of 3.49 years. Regarding to education, 2.4% of them held doctoral degrees, 31.9% held master degrees, 39.7% held bachelor degrees, and the remaining 26.0% graduated from the junior colleges in technology. Most of them were in a position of "engineer" title. Only ten indicated that they were in a research status. All respondents were classified as either

'managers' or 'subordinates' according to their own indications on the questionnaire, where they marked either 'manager' or 'non-manager' - a perceptual factor, in the questionnaire. The data showed that 9.9% of the respondents rating themselves in management, and 90.1% in non-management (subordinate) position. In general, the data present a younger sample than the high tech R&D population of Hsinchu's science park, which has an average of 31.5 years old, whereas the education level is consistent (Executive Yuan, 1996). It is the purpose of this paper to obtain a sample of young engineers, who have not yet taken broad managerial responsibilities. This also gives the current sample a lower percentage of engineers in management condition.

EMPERICAL RESULTS

The empirical results of the current study have the following features. The detailed analyses are illustrated in Table 1 to Table 5 in Appendix.

(a) *The relative proportions among the three standard career patterns chosen by the current sample* were different from those studied in the West (Please refer to Table 1). Specifically, Compared with those engineers and specialists studied in the large Western organizations, the high tech engineers in this study seem more preferring the technical ladder career, while less interested in the project type of work. Those choosing the managerial ladder were not so often as Garden's report (1990) for small sized organizations either.

(b) *Age, education, gender, and work experience seem to be the most determinant demographic variables* in affecting the career choice and indecision of this particular sample (Please refer to Table 1). In particular, compared with those who chose an alternative among the three given paths, the indecisive group was the youngest, the lowest in the education level, getting the least pay, and having the least work experience and percentage in a manager position. On the average, the education level of the advance-obscured, including the project-oriented, was lower than that of those oriented in a managerial or technical ladder. Additionally, gender might also be influential. Women seem more indeterminate than men in making the career choice, and more interested in managerial ladder and project type of work, but less interested in technical ladder than men. In general, the study showed that engineers would make up a career choice before age 35 when showing them the three career patterns for selection. However, the later they make the

determination, the more possible they would choose the project work irrespective of advancement, which seems because of older engineers giving up on promotion (Please refer to Table 5).

(c) *The positivity of inter-relationships among career orientations and job attitudes* revealed that those who oriented highly toward technical (managerial) career were also interested in managerial (technical) route, and had higher organizational commitment; those involved more with their jobs were more likely to gain job satisfaction; those more satisfied with their jobs were more committed to their organizations. Regarding the past performance evaluation, the attitudes of willing to take on extra duties and feeling depressed when jobs not well done seem to affect positively on respondents' rating of their work outcomes and the other job attitudes in general. These positive outcomes are consistent with the literature reports, suggesting a validity of the measuring instrument developed in this study (Please refer to Table 2).

(d) *The linkage between career choice, job-related attitudes and advance orientation* showed that engineers' uncertainty of career choices or choice of project-typed work irrespective of promotion do relate to their job attitudes (Please refer to Table 3). Specifically, their ratings on job involvement, work perception and job self-evaluation were significantly lower than those oriented in advance. All these might imply that the deficiency of a clear assertiveness needed by the project-oriented and the indecisive to get ahead are due to their lower centrality toward work, which seems primarily induced by their past cultural socialization and might further affect their engagement with their current jobs. In other words, the disregard of upward opportunities of these two groups of people is more internally originated. Employees with such a predisposition would be more difficult to motivate, including those indicating a certain extent of job satisfaction or organizational commitment, like, for example, those claiming holding a project orientation in this study. The following discussions on the lower ratings of various ideal job characteristics of these engineers also support such an argument.

(e) *The linkage between career choice, ideal job characteristics and advance orientation* showed that the ratings given by the advance-obscured were significantly lower than the advance-oriented on all of the 15 characteristics, implying that those obscured in promotion were

less concerned if a job have the 15 ideal characteristics (Please refer to Table 4). In other words, it would be more difficult to motivate the advance-obscured engineers by either designing their jobs with the qualities of autonomy and creativity, etc., or by offering them the tangible rewards and advance opportunity, etc. Furthermore, the project-oriented group rated higher on most of the attributes inhabiting in a job, while rated lower on all of the work environmental variables, than the indecisive group. In terms of these differences, the indecisive people seem easier to motivate than the project-oriented by offering them advance opportunities. They seem not so desperate in progress up as those indicating a preference of project route irrespective of promotion.

DISCUSSION

For sometime now, the idea of dual ladder rungs has been advocated to reward and motivate the performances of engineers as technologists rather than managers in the Western industries that have strong research tradition. Much of the work on the career issues of technical people has been studied focusing on this hypothesis. However, different dual ladder implication and the consequent career perspectives may be carried on in the sector with weak research background. The present paper attempted to explore the relationships between the career choices and job-related attitudes of high tech engineers in a sample from the private electronic industry of Taiwan, where research based projects are less encouraged than the Western countries and even a technically oriented position involves administrative work. The contribution of this paper is to provide an initial empirical base for the needs and attitudes of such technical specialists in response to various career and job experiences, which can be summarized as follows.

(a) Maybe the most distinct contribution of this paper is the findings of two kinds of engineers not willing to explicitly express their desire to advance to either a managerial or technical position that organizations can offer. They were engineers claiming a preference of project-typed work irrespective of promotion and those giving an indecisive indication about the career options. The indecisive people, with more than a quarter of the total respondents, were first detected in the current research. Compared to those indicating an advance preference, the analyses showed that these two groups of advance-obscured engineers held lower average educational level, and rated lower in most

job-related variables, including work centrality, job involvement, managerial/technical orientations, and various ideal job characteristics.

(b) Another noticeable result was that those who could not decide their career preferences in the younger ages seemed inclined to select the project-typed work irrespective of promotion when they turned older. It is obvious by these data that engineers' obscurity in advance orientation does give a negative impact on their job attitudes and subsequent behaviors. The problem seems more individually originated. Simply trifling with alternative career paths organization-wide might not be useful in motivation.

(c) According to the current findings, those interested in getting ahead in either management or technology are people more positive to their working life and more desirous to have a job with various ideal job characteristics that are possibly provided by the organizations. In view of this, what engineering managers should do first for motivation may be to arouse the advance conscience of those who are lacking of. Generally, to achieve this, managers should understand engineers' aspirations, provide a possible achieving goals, develop a "can-do" mentality, catch individuals' limitations early and rectify them, recognize employees' accomplishments, and provide tangible rewards to validate the perception of success. Other activities include development of career program and provision of retraining education to improve engineers' education deficiency. Specifically, all these activities have to be accommodated when engineers are young, before them turning to the orientation of working from one project to another and giving up on advancement.

(d) The most difficulty that appeared in this study for motivation might be with those in project orientation despite of promotion, because this group of engineers responded that they were relatively satisfied with their current job status and committed to their organizations, whereas reacted relatively low in internalized engagement with their jobs. They also showed least care in organizational actions, including rewards, advance system and colleague interactions. It seems that they are people having low achievement motivation. They are also possibly persons preoccupied by some engrossment, but not the daily jobs, in their minds. Since they are not very concerned about tangible rewards or supervisor/peer

communications, what left for managers to deal with them may be the adoption of directive supervisory behavior if not to let them go. In particular, when assigning tasks to them, managers may have to clearly state the job goal, the due day of the assignment, the priority of the task, what is expected of them, and the pivotal persons involved in the task fulfillment, etc.

(e) While structured in terms of engineers' dual interests in management and technology analogous to those in the West, the advancement policy in Taiwan's high tech firms is multiple in essence. Whether the differences of the career perspectives between the present and other studies are caused by this particular organizational structure or a generalized phenomenon due to different definition of "professional/ technical" career route in the less developed countries remains to be discovered. Nevertheless, the solutions adopted by this particular group of sample may help to interpret the difficulty of the Western large corporations in motivating the technical specialists.

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APPENDIX: Table1 – Table 5.

Table 1. Demographic Profiles and Career Preferences

Variables	Total Average	Career Choice in the Next 10 Years				F-value
		Management Ladder (N=41)	Technical Ladder (N=89)	Project (N=21)	Indecisive (N=54)	
Manager position	9.9%	14.3%	9.2%	15.0%	6.1%	0.71
Female	13.2%	19.5%	5.6%	19.1%	18.5%	2.67**
Married	36.4%	43.2%	37.5%	42.9%	26.5%	0.85
Age	29.53	30.67	29.30	30.36	28.73	2.02

Years on current position	2.05	2.44	1.97	2.41	1.74	1.87
Total years in occupation	3.49	3.70	3.29	4.69	3.19	1.29
Education ^(a)	3.12	3.22	3.20	3.05	2.94	1.32
Monthly income (US\$) ^(b)	1,182	1,216	1,223	1,236	1,068	3.23**

(a) Coding: Junior college graduate 1; Bachelor 2; Master 3; Ph D 4.

(b) Current exchange rate: TW\$ 33 : US\$ 1.

** p < 0.05

Table 2 Sixth-Order Partial Correlations between Career and Job Attitude Variables ^(a)

Variables	1	2	3	4	5	6	7	8	9
1. Technical orientation	-								
2. Managerial orientation	0.71*	-							
3. Organizational commitment	0.50*	0.47*	-						
4. Job satisfaction	0.40*	0.32*	0.69*	-					
5. Job involvement	0.18***	0.22**	0.51*	0.39*	-				
6. Work perception	0.10	0.17***	0.22**	0.11	0.64*	-			
7. Self-evaluated performance	0.29*	0.37*	0.41*	0.52*	0.30*	0.17***	-		
8. Depression when jobs not well done	0.27*	0.31*	0.28*	0.23**	0.20**	0.04	0.21**	-	
9. Avoidance of taking extra duties	-0.16***	-0.18***	-0.18***	-0.21**	-0.04	0.01	-0.14***	-0.25*	-

(a) Controlling variables: gender, age, education, income, manager position, and tenure on current job

p < 0.001; **p < 0.01; ***p < 0.05.

Table 3 Relationships between Career Choice, Job-related Variables and Advance Orientations ^(a)

Variables	Total Average	Career Choice in the Next 10 Years				4-group F-value	(1) vs. (2) t-value	(3) vs. (4) t-value	Advance ^(c) -oriented vs. -obscured t-value
		Advance- oriented		Advance-obscured					
		(1)	(2)	(3)	(4)				
		Management Ladder (N=41)	Technical Ladder (N=89)	Project (N=21)	Indecisive (N=54)				
Technical orientation	5.56 (0.93)	5.53 (0.84)	5.81 (0.87)	5.43-- (0.96)	5.22- (0.98)	5.03*	-1.71	0.85	3.40*
Managerial orientation	5.41 (0.92)	5.46 (0.93)	5.52 (0.96)	5.42-- (1.02)	5.20- (0.76)	1.43	-0.30	1.07	1.85
Organizational commitment	4.93 (0.87)	4.97-- (0.95)	5.05 (0.91)	5.06 (0.91)	4.66- (0.69)	2.54	na	na	na
Job satisfaction	4.87 (1.16)	4.88-- (1.23)	5.02 (1.18)	5.00 (1.00)	4.57- (1.13)	1.78	na	na	na

Job involvement	4.45 (0.90)	4.58 (0.92)	4.57 (0.96)	4.30-- (0.82)	4.21- (0.78)	2.36	0.07	0.44	2.64*
Work perception	4.35 (1.23)	4.48 (1.30)	4.54 (1.20)	4.08-- (1.40)	4.05- (1.14)	2.20	-0.25	0.11	2.56*
Self-evaluated performance	5.01 (1.00)	5.15 (0.96)	5.07 (1.02)	4.86- (0.91)	4.87-- (1.03)	0.88	0.42	-0.03	1.57
Depression when jobs not well done	5.43 (1.13)	5.49 (0.98)	5.55 (1.07)	5.38-- (1.53)	5.21- (1.16)	1.08	-0.29	0.54	1.67
Not avoiding ^(b) taking extra duties	4.33 (1.30)	4.57 (1.30)	4.36 (1.33)	4.29-- (1.55)	4.11- (1.13)	1.01	0.86	0.54	1.42

(a) Scale is 1 to 7 (Strongly disagree to strongly agree); (.): standard deviation.

(b) Reversed scores.

(c) Advance-oriented: (1)&(2); Advance-observed: (3)& (4).

- The lowest mean; -- the second lowest mean among the 4 groups.

* $p < 0.01$; ** $p < 0.05$.

Table 4 Relationships between Career Choice, Ideal Job Characteristics and Advance Orientation ^(a)

Variables	Total Average	Career Choice in the Next 10 Years				4-group F-value	(1) vs. (2) t-value	(3) vs. (4) t-value	Advance ^(b) -oriented vs. -obscured t-value
		Advance- oriented		Advance-obscured					
		(1)	(2)	(3)	(4)				
		Management Ladder (N=41)	Technical Ladder (N=89)	Project (N=21)	Indecisive (N=54)				
Job Attributes:									
Opportunity to pursue idea	5.71 (1.02)	5.98 (1.01)	5.90 (0.99)	5.43-- (1.08)	5.33- (0.93)	5.21*	0.42	0.38	3.93*
Opportunity to build reputation	5.39 (1.15)	5.49 (1.14)	5.53 (1.11)	5.14- (1.56)	5.19-- (0.99)	1.47	−0.22	−0.14	2.10**
Opportunity to gain feedback	5.88 (1.05)	6.12 (0.93)	6.03 (0.99)	5.43- (1.43)	5.63-- (1.00)	3.80**	0.48	−0.69	3.27*
Autonomy in job	5.85 (1.02)	6.02 (0.98)	6.03 (0.96)	5.57-- (1.03)	5.54- (1.04)	3.75**	−0.05	0.13	3.37*
Freedom to be creative	5.73 (1.06)	5.93 (1.10)	5.83 (1.05)	5.62-- (1.12)	5.46- (0.99)	2.00	0.47	0.59	2.34**
Professional work	5.78 (1.12)	5.90 (1.02)	5.98 (1.11)	5.67-- (1.35)	5.39- (1.05)	3.45**	−0.37	0.94	3.05*
Challenging in skill	5.83 (1.03)	5.98 (1.04)	5.99 (0.97)	5.84-- (1.06)	5.46- (1.06)	3.35**	−0.07	1.45	2.79*
Significance to organization	5.61 (1.09)	5.61 (1.16)	5.81 (1.09)	5.38-- (1.24)	5.38- (0.93)	2.10	−0.94	0.01	2.33**
Work Environmental Factors:									
Clear rules and procedure	5.22 (1.14)	5.42 (1.22)	5.33 (1.16)	4.80- (1.28)	5.06-- (0.96)	1.92	0.40	−0.93	2.28**
Explicative supervisor	5.52 (1.14)	5.61 (1.20)	5.61 (1.14)	5.00- (1.45)	5.52-- (0.93)	1.72	0.01	−1.84	1.42
Communicative supervisor	5.98 (1.03)	6.17 (0.92)	5.99 (1.15)	5.81- (1.12)	5.89-- (0.86)	0.80	0.89	−0.33	1.20
Capable colleagues	5.66 (1.15)	5.66 (1.32)	5.90 (0.94)	5.10- (1.55)	5.48-- (1.09)	3.50*	−1.05	−1.22	2.73*
Easy -to-get-along colleagues	6.04 (1.05)	6.12 (1.03)	6.16 (0.93)	5.48- (1.57)	5.99-- (0.95)	2.57	−0.19	−1.43	1.94**

Opportunity for advancement	5.86 (1.19)	6.10 (1.09)	6.05 (1.11)	5.19- (1.60)	5.65-- (1.10)	4.23*	0.25	-1.41	3.21*
Reasonable salary raising system	6.17 (1.01)	6.24 (1.02)	6.30 (0.93)	5.86- (1.20)	6.04-- (1.03)	1.55	-0.30	-0.65	2.03**

(a). Scale is 1 to 7 (Strongly disagree to strongly agree); (.): standard deviation.

(b) Advance-oriented: (1)&(2); Advance-obscured: (3)& (4).

- The lowest mean; -- the second lowest mean among the 4 groups.

p < 0.01; ** p < 0.05

Table 5 The Relative Frequencies among Different Ages and Career Choices

Career Choice Age	Management Ladder (N=41)	Technical Ladder (N=89)	Project (N=21)	Indecisive (N=54) ^(a)	Total
20-25	10.0% (2)	45.0% (9)	25.0% (5)	20.0% (4)	100.0% (20)
26-30	16.7% (18)	47.2% (51)	5.6% (6)	30.6% (33)	100.0% (108)
31-35	28.0% (14)	34.0% (17)	8.0% (4)	30.0% (15)	100.0% (50)
36-45 ^(b)	25.9% (7)	44.4% (12)	25.9% (6) ^b	3.7% (1)	100.0% (27)

(a) One missing variable.

(b) Only one had age between 40-45, who was in the project group.