

DETERMINANTS OF SUBJECTIVE AND OBJECTIVE SUCCESS AMONG CANADIAN AND FRENCH ENGINEERS

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Abstract:

The paper explores the determinants of objective and subjective career success among professionals, based on empirical research conducted on a broad sample (1500) of Canadian and French engineers. A model for analyzing the predictors of professional career success-- socio-demographic characteristics, organizational career management policy, contextual variables, commitment and motivation, and career values—is proposed and tested. Two main research questions are explored: what are the predictors of professional career success, and do the set of predictors for objective success differ from those of subjective success.

Résumé

Cet article a pour principal objectif d'examiner l'influence d'un certain nombre de déterminants sur le succès objectif et perçu auprès d'une population 1500 ingénieurs québécois et français. Cinq groupes de variables ont été mis en relation avec les critères de carrière soit les caractéristiques socio-démographiques, les politiques organisationnelles de gestion de carrière, les variables contextuelles, les attitudes au travail et les ancrés de carrière.

Mots-clés: Career success, engineers, subjective career

1. Introduction

The career literature is devoting increasing attention to career models that are diverging from the idea of progression within a single firm: traditional vehicles for organizational career success, namely hierarchies, have been flattening, and external labour markets have gained increasing influence over the employment environment.

An established definition of career that exemplifies this trend is “the unfolding sequence of a person’s work experiences over time” (Arthur, Hall & Lawrence, 1989: 8). This definition emphasizes the relevance of time, rather than adopting a static view of work arrangements. It also avoids constraining assumptions about where people work or what career success represents. In addition to introducing a definition of “non-organizational” career, the authors propose a model of the determinants of career success. Research on career success has focused on the objective external environment or, on the contrary, on the subjective internal perspective (Mirvis & Hall, 1994; Ng, Eby, Sorensen & Feldman, 2005). Objective career success is measured by indicators that can be seen, and therefore evaluated, objectively by others, such as compensation, promotion and hierarchical level (Judge, Cable, Boudreau & Bretz, 1995). In contrast, subjective career success may be defined as the individual’s internal perception and evaluation of his or her development, across any dimensions that are important to that person.

To date, much of the empirical research on career has adopted a traditional view which emphasizes objective career success. People that earn higher salaries and who are promoted faster are typically regarded as more successful in their careers. However, there is an increasing emphasis on examining people’s subjective evaluations of their careers (e.g. career satisfaction) to gain a more comprehensive understanding of career success (Judge et al., 1995; Poole, Langan-Fox & Omodei, 1993; Seibert & Kraimer, 2001).

This paper explores the determinants of objective and subjective career success among professionals. We propose and test a model for analyzing the predictors of professional career success (Figure 1). The model includes five sets of predictors: socio-demographic characteristics, organizational career management policy, contextual variables, commitment and motivation, and career values. We will explore two main research questions: 1) What are the predictors of professional career success? 2) Do the set of predictors of objective success differ from those of subjective success? In other words, are the factors that lead professionals to be more successful (from an objective point of view) the same ones that make professionals feel satisfied with their career?

Insert Figure 1 about here

An empirical study has been conducted on a broad sample (1500) of Canadian and French engineers. The participants completed a questionnaire designed to explore their professional development and perception of career success.

This study seeks to contribute to the literature in three main ways. First of all, following the suggestion of Ng et al. (2005), we included in our model a “non-standard” and heterogeneous set of predictors of career success. The traditional models used for the analysis of the predictors of career success (e.g. Jaskolka, Beyer & Trice, 1985, Judge et al., 1995) have been enriched in this study to include variables thought to be especially important for the careers of professionals, e.g. commitment and career values. Second, most of the previous literature on career success has focused on objective career success indicators such as pay level and pay progression. Consistent with the growing body of literature on the boundaryless career model, we adapted our model to include objective career success variables that value the whole

career of the professional: at different organizations and throughout his/her entire lifetime. This approach is consistent with views of boundaryless careers as involving “opportunities that go beyond any single employer” (DeFilippi & Arthur, 1996: 116) and reflecting greater “independence from, rather than dependence on, traditional organizational career arrangements” (Arthur & Rousseau, 1996: 6). Third, to develop a career success model that distinguishes objective and subjective career success, as suggested by some scholars (Jaskolka et al., 1985; Wayne, Liden, Kraimer & Graf, 1999), we look for the similarities and differences between predictors of these two concepts.

2. Determinants of career success

Socio-demographic characteristics

It is well established in the literature that certain socio-demographic characteristics (such as human capital, work experience and gender) can either help or hinder individuals in their pursuit of success.

Human capital theory proposes that employees make rational choices regarding investments in their own human capital (Becker, 1964), in terms of education, training, and experience. Level of education attained has frequently been linked to objective career success: Judge et al. (1995) and Melamed (1996) found significant returns from educational attainment in terms of compensation level. Other than education, work experience, indicated by number of years in the labour force, has been shown to be related to career attainment (Jaskolka & Beyer, 1985). Chênevert and Tremblay (2002) advance that personal investments in education and experience represent the strongest and most consistent predictors of managerial progression. According to Eddleston, Baldrige and Veiga (2004), education level has a direct influence on compensation level and an indirect influence (mediated by marketability) on management level. More recently, Ng et al. (2005) found support for the hypothesis that human capital may directly signal one’s worth to the organization itself and therefore is more frequently associated with salary growth and promotional opportunities.

Concerning subjective success, some researchers did not find a significant effect of human capital variables on subjective career success (Ayree, Chai & Tan, 1994; Kirchmeyer, 1998), whereas other scholars (Cox & Harquail, 1991) reported a significant positive relationship between work experience, indicated by number of years spent in the labour market, and career satisfaction. In their well known study, Gattiker and Larwood (1988) found limited evidence of the relation between socio-demographic variables and career satisfaction: older, married and less educated individuals were more satisfied with their present position and salary than their colleagues with different demographics. Nevertheless, education did not significantly explain any other subjective career success aspect (e.g. personal growth or family life).

Regarding gender, many studies have demonstrated a significant career success differential between men and women (Kirchmeyer, 1998; Melamed, 1995 and 1996; Chênevert & Tremblay, 2002). Gender discrimination and stereotypes are often assumed to be the main factors underlying differences. Nonetheless, stereotypes only partially explain job status and wage gaps. As some previous research found (Tharenou, Latimer & Conroy, 1994), gender gaps are mainly based on individual (e.g. motivation, education, leadership style, family status) and organizational factors (e.g. internal labour market, mentorship relations). Studies of the influence of gender issues on career success tend to reflect two main approaches. One stream has examined the relation between gender and career success outcomes. In her extensive study of the career achievements of scientists and engineers in the American labour market, Tang (1997) found that females were less likely to occupy managerial positions and

to obtain promotions than their male peers. Concerning subjective career success, Baroudi and Igbaria (1994), in their study of a sample of information system employees, found support for the hypothesis that women received lower salaries than men but, at the same time, were more satisfied with their jobs and perceived their careers as successful. Kirchmeyer (1998) found the same results in her research on MBA graduates. These findings are consistent with the relative deprivation theory, which states that women are “more satisfied with the same” when compared with men with similar characteristics and background. The second research stream has sought to develop a gender-specific model of career success. Melamed’s research (1995 and 1996) showed that when the profile of factors that explain men’s career success (namely job specific attributes such as extraversion and self-confidence) was applied to women, there was a decrease of about 75% in the explained variance of women’s career success. Similar figures were found when a female-specific model of career success (based on tenure and organizational opportunities) was applied to men. The model proposed by Tharenou et al. (1994) on a similar set of variables reveals that women were disadvantaged in managerial advancement compared to men because of the lower impact of training. This weakness was reinforced by family status: having children reduced women’s total amount of work experience, which in turn reduced the amount of training women received from employers.

Hypothesis 1: Human capital characteristics, namely work experience and gender, have a significant influence on objective and subjective career success.

Contextual variables

As stated in the introduction, an increasing proportion of the career literature tends to be person centred. Career and success are considered personal attributes, whereas social and economic contexts determine career opportunities and influence career outcomes (Johns, 2006). Accordingly, the contextual variables included in our model are country and industry.

In the career literature, interest in research based on cross-country comparisons and the subsequent development of a country-specific model is emerging. In their study of human resource management practices in Europe, Mayrhofer, Meyer, Iellatchitch and Schiffinger (2004) suggested to “see HR always in context”. While the immediate context (the organization as the internal environment and the various markets relevant for human resources, e.g. labor market) is usually considered, the wider external context is often a blind or at least a weak spot. Societal developments in terms of value changes or the specific institutional arrangements should definitely be included in a comprehensive concept of human resource management. In their research on executive career success in the United States and Europe, Boudreau, Boswell and Judge (2001) found that remuneration and promotion were positively associated with motivation and human capital variables for both US and European managers. However, relevant distinctions surfaced in the determinants of subjective career success: work experience, which was positively associated with life satisfaction for US executives, was associated with job satisfaction for Europeans.

Concerning industry, the relation between career success and sector is expected to be twofold. The first effect is associated with compensation levels and promotion opportunities. Chênevert and Tremblay (2002) found that managers working in the public sector earned higher salaries and occupied higher management levels than managers in the private sector. Carnicer, Sánchez, Pérez and Jiménez (2003), in their study of the Spanish labour market, reported significant differences in job mobility and promotion opportunities between the private and public sectors: workers in the private sector experienced more internal and

external mobility, which was not always associated with promotion opportunities. The second effect is related to subjective career success. Organizations in the public sector are sensitive to specific normative and legal contexts. Equal Employment Opportunity programs and affirmative action laws (which are present in North America and Europe in different forms) become major issues on the public agenda, leading to the expectation that their imprints will be found more often in public organizations than in private firms. Consequently, HRM policies and practices in the public sector are expected to reduce some of the effects of workplace discrimination, which directly influence promotion opportunities and indirectly influence perceived career success.

Hypothesis 2: Contextual factors, namely country and sector, have a significant influence on objective and subjective career success.

Organizational career management policy

The organizational career management policy is the third set of career determinants considered. As many authors assert (Ayree et al., 1994; Melamed, 1995; Nabi, 2003; Orpen, 1994) internal labour market rules and criteria are related to career success.

The internal labour market is defined as “an administrative unit, such as a manufacturing plant, within which the pricing and allocation of labor is governed by a set of administrative rules and procedures” (Doreinger & Piore, 1971). It is characterized as a set of jobs that incorporates a career track or ladder linked to progression and development through the acquisition of personal or professional characteristics (Ayree et al., 1994).

It is worth asking which signals influence HR managers’ employee promotion decisions. The literature on internal labour market suggests that the most widely used predictors of career attainment are demographics, human capital and organizational experience. Concerning demographics, Hurley and Sonnenfeld (1998) found that seniority has a positive effect on promotion opportunity to top management. Tenure is positively associated with career attainment in organizations that are very concerned with promoting from within and obtaining commitment. As for human capital, performance level and competencies are signals of the individual’s contribution to organizational performance. In a meritocratic appraisal system, they are used as promotion and reward criteria. Concerning organizational experience, Hurley and Sonnenfeld (1998) demonstrate that individuals with more corporate experience tend to be promoted because they are more involved in the central networks of the organization and also because decision makers in corporate headquarters are more familiar with employees they have personally observed. This interpretation supports the *knowing-whom* hypothesis (DeFilippi & Arthur, 1996): knowing-whom includes a person’s work relationships spanning the set of supplier, customer, industry and internal company connections that can support his or her unfolding career. Knowing-whom also incorporates personal relationships and broader contacts with family, friends, alumni and professional and social acquaintances. Any of these resources can enhance careers by providing support, transmitting reputation or affording access to information.

Although much of the work on the internal labour market has focused on objective career progression, limited theoretical and empirical studies suggest that career management policies are linked to subjective career success (Nabi, 2003). First, the internal labour market should positively influence subjective career success because it favors the progressive development of skills and knowledge that satisfy workers’ career growth needs. This element is particularly valuable for professionals that seek opportunities to engage in research activities and projects

within their field of expertise, irrespective of promotions (Allen & Katz, 1986; De Vos, Dewettinck & Buyens, 2006). Moreover, clear perception of fairness in the promotion system provides powerful frames of reference for employees that aspire toward a managerial career. Herriot, Gibbons, Pemberton, and Jackson (1994) assert that perceived equity in career management is a greater contributor to career satisfaction than actual or perceived career progress. In addition, the psychological success that results from performance, when promotion is based on performance, should positively affect career satisfaction.

Hypothesis 3: Career management policy, namely emphasis on internal labour market and fairness in the career system, have a significant influence on objective and subjective career success.

Commitment and motivation

The importance of motivation for career attainment is emphasized in the expectancy-valence theory of motivation (Vroom, 1964). According to this theory, people are motivated to expend a greater effort in their work if they expect that this effort will lead to good performance, which, in turn, will result in both intrinsic and extrinsic rewards. Researchers have tested expectancy-valence theory by examining variables such as number of worked hours and commitment, which represent effort.

According to Chênevert and Tremblay (2002), work investment, represented by worked hours per week, is one of the most important variables in explaining objective career success. The authors found that work investment has a positive significant influence on three of the four dimensions of success (i.e. salary, number of promotions and promotion speed). Similarly, Judge and colleagues (1995) found that worked hours per week, worked evenings per month, and desired hours of work were related to compensation. Wayne et al. (1999), on the contrary, found that the worked hours per week was not significantly related to salary progression and career satisfaction.

A second factor related to motivation is commitment. There is a rich body of literature (see the comprehensive review by Lee, Caswell & Allen, 2000) on the relationship between commitment and organizational and individual outcomes (e.g. turnover intention, absenteeism, stress, job performance, Organizational Citizenship Behaviours), yet limited attention has been devoted to the relation between commitment and career success. Some scholars have interpreted commitment itself as a component of subjective career success (Arthur, Khapova & Wilderom, 2005), while others view commitment not as a predictor but as a consequence of career success. For example, concerning objective career success, Kondrakut, Hausdorf, Korabik and Rosin (2004) contend that career mobility increases affective commitment. The most plausible explanation for this is that almost any new job entails an increase in new learning, job challenge, and skill variety, which in turn heightens commitment. A related explanation is that being selected for a new position or accepting a new job improves the worker's perception of his or her own competence, a factor that has been correlated with affective commitment. Concerning subjective career success, Igarria and Wormley (1992) found limited evidence in support of their hypothesis that career satisfaction enhances feelings of commitment to the organization.

The centrality of commitment in the analysis of career success is reinforced by the increasing interest in the boundaryless model. As Mirvis and Hall (1994) noted, in the boundaryless world the psychological contract between employers and employees has shifted from a

relational to a transactional form. Under the relational contract, the organizational commitment is reinforced through promotion-from-within, mentoring and socialization. In a transactional relation, the employer contracts for the application of specific skills to specific tasks over a determined period of time, compensating the skillholder for satisfactory performances. In this context, the worker develops commitment around his or her skills and competencies, since that is the currency he or she has to exchange.

In this study, using the three-component model of organizational commitment (Allen & Meyer, 1990; Meyer & Allen, 1991), we consider affective commitment to the profession and to the organization as predictors of career success. Our model deliberately focuses on affective commitment because the limited empirical evidence of the relation between (organizational and occupational) commitment and career outcomes mainly pertain to affective commitment. Affective commitment is defined as a psychological link between a person and his or her profession/organization that is based on an affective reaction to that profession/organization. A person with a strong commitment will more strongly identify with, and experience more positive feelings about, the profession/organization than would a person with weak professional/organizational commitment.

According to the extensive meta-analysis conducted by Lee, Caswell and Allen (2000), professional affective commitment is positively related to career and job satisfaction. Furthermore, professional and organizational affective commitment is mutually related: their relation is stronger for professionals working in “corresponding organizations”, who are more likely to share their particular professional values and goals (e.g., nurses in hospitals). This positive correlation is confirmed by Kerr, Von Glinow and Schriesheim (1977) on a sample of engineers. The authors observed that engineers with high organizational and professional commitment are more likely to stay current in their profession and are therefore better able to make job contributions. This suggests that firms should have a process for planning engineers’ professional development, while encouraging organizational integration. These findings are consistent with Erdogan, Kraimer and Liden (2004), who found that work value congruence (the match between organizations’ values and individuals’ values) is positively related to intrinsic career success (in terms of job and career satisfaction).

Hypothesis 4: Motivation and commitment, namely work effort and organizational and professional commitment, have a significant influence on objective and subjective career success.

Career values

The final set of career determinants considered consists of career values, namely career orientations and career anchors. This set of variables is particularly important in our model because the analysis of career orientations and career anchors is one of the most widely used approaches for understanding professionals’ career attainments and success (Ayree, 1992; Allen & Katz, 1986; Baylin, 1991; Igarria, Kassiech & Silver, 1999).

Following DeLong (1982), career orientation is defined as “the capacity to select certain features of an occupation for investment according to one’s motives, interests and competencies”. According to this definition, professionals are strategically aware of their career routes and are able to manage them. The literature identifies five career orientations: managerial, technical, hybrid, project-based and entrepreneurial (Baylin, 1991; Tremblay, Wils & Proulx, 2002). The *managerial path* is a traditional option, whereby a successful professional is granted recognition by being assigned to jobs with increasing amounts of responsibility. In this case, the professional gradually discards technical concerns in favor of

control, organizational and supervisory activities. Professionals are considered to pursue a *technical path* when technical activities remain at the centre of their development. Organizations that recognize technical career paths allow professionals to climb a technical ladder. In a *project-based path*, professionals participate in a series of technical projects that broaden their technical skills, rather than specializing in a particular sector. For project-oriented professionals, the perception of career success involves the opportunity to do meaningful work (Kim & Cha, 2000). Although this path provides no real progression and is not defined by formal guidelines, it seems to attract a large proportion of engineers (Petroni, 2003). Furthermore, some professionals may experiment with a range of paths (including technical, management or project-based) without opting for a definitive career path or an irreversible career direction. This means that they follow a fourth career path, namely a *hybrid path* (Bailyn, 1991). The *entrepreneurial path* is taken by professionals who start their own companies. With decreasing job security and the large-scale restructuring of many large corporations, the entrepreneurial path has gained in popularity.

Following Gouldner's (1957) local-cosmopolitan dichotomy, most studies on career orientations have identified two orientations: managerial and professional (or technical). Professionals with a managerial orientation are more likely to be concerned with promotion to managerial positions, while those with a technical orientation are mainly concerned with earning recognition from their peers based on their technical ability and performance. As a consequence, the career paths of professionals have been traditionally conceived as a "dual ladder" (Allen & Katz, 1986) comprising managerial and technical routes to accommodate the two career orientations. The system was developed as a solution to the problem of retaining professionals within the organizations and, at the same time, to facilitate their problematic transition into management. In terms of career outcomes, however, the two ladders do not seem equal. Indeed, in terms of objective success, managerial advancement is socially perceived as more prestigious than a promotion in a technical ladder. Even if technical positions have the same salary, status and organizational prestige as managerial positions, they lack hierarchical power. In practice, technical promotions are sometimes regarded as a loyalty prize for satisfying subjective rather than true career advancements.

The theory of career anchors proposed by Schein (1978, 1985) suggests that all individuals have career anchors that correspond to the main goals pursued through their work. Career anchor is defined as an occupational self-concept or self-knowledge that "serves to guide, constrain, stabilize and integrate the person's career" (Schein, 1978: 127). Studies have shown that the career anchor is a useful concept for assessing the professional aspirations of individuals and their work orientations, and thus a highly relevant factor for predicting desired career paths. Igbaria et al. (1999) found a rich variety of career anchors held by R&D professionals. However, apart from the lifestyle anchor there no significant relation was observed with (subjective) career success. Six of the eight career anchors defined by Schein have been included in our research (the "pure challenge" and "entrepreneurial creativity" anchors have not yet been validated in the French context and thus were not considered (Mignonac & Herrback, 2003; Tremblay et al., 2002) :

- technical or functional competence – technically oriented individuals organize their careers around a technical specialization or competency domain. Individuals with this anchor are interested in a job/task that enables them to enhance their capabilities.
- management – managerially anchored individuals aspire to move upward into administrative and general management positions.

- service - service-oriented individuals are dedicated to helping other people and contributing to causes. This anchor is most apparent when individuals enter careers that uphold values that are important to them.
- lifestyle - lifestyle-oriented employees wish to balance their professional and personal lives. They are looking for ways to integrate individual, family and career needs.
- autonomy - autonomy-oriented employees seek situations in which they will be free of organizational constraints and control. Promotions or other rewards may even be sacrificed for autonomy, which is of primary importance.
- security - a security-oriented individual develops his or her career in an organization that could ensure long-term employment security, stable income, high-quality benefits packages and, more generally, a high degree of professional stability.

As for career orientations, some studies have tried to analyze the relation between career anchors and career outcomes. Mignonac and Herrback's research (2003) on a sample of French engineers found that managerially anchored people are more willing to accept promotion to management positions, service-anchored professionals are satisfied with international mobility and technically anchored people opt for career mobility across different areas of specialization.

Hypothesis 5: Career values have a significant influence on objective and subjective career success.

3. Methods

Sample and procedures

The empirical research is based on a questionnaire (in French) which was distributed to engineers in Québec (Canada) and in France. The data collection in Québec was carried out in two phases. First, questionnaires were distributed to engineers in three organizations: a transportation equipment manufacturer, an aeronautics firm and a large municipality. 374 usable questionnaires were received out of 720 distributed (response rate of 54.2%). The questionnaire was subsequently sent to 808 randomly selected male members of the engineers' professional institute. A total of 147 completed questionnaires were returned. In order to balance the number of male and female engineers in the data sample, the questionnaire was sent to all of the female members of the engineers' professional institute of Québec. 379 usable questionnaires were received of the 1295 distributed. In France the survey was distributed to 2520 engineers in 12 representative French schools of engineers. More than 598 usable questionnaires were received for a response rate of 26%. The overall response rate for these two samples was 32%, while the total sample size is 1497 (900 + 598).

Males comprise 66.6% of the sample. The average age is 37.9 (st.dev. = 9.74). Regarding education level, 70.9% of the engineers have an undergraduate degree, 27.6% a master's and 1.5% a Ph.D. The average length of work experience is 13.4 years (st.dev. = 9.46). 66.1% of the sample work in private companies and 33.9% work in the public administration.

Measures

Career success. Subjective career success was measured with a set of 5-point scales (1: strongly disagree, 5: strongly agree) adapted from the five subscales identified by Gattiker and Larwood (1986) as measures of facets of subjective career success. The items included: job success (6 items, $\alpha = .77$), hierarchical success (4 items, $\alpha = .71$), financial success (3

items, $\alpha = .74$), interpersonal success (4 items, $\alpha = .68$), and life success (3 items, $\alpha = .78$). Objective career success was measured by the number of promotions received by the respondents throughout their careers. To capture the boundaryless nature of the participants' careers, the number of promotions was evaluated not only at their current employer but also throughout their career. Furthermore, as suggested by Ng et al. (2005), who noticed that few studies measured promotion rate (number of promotions divided by organizational tenure), we calculated a second dependent variable--"speed of promotion"--obtained by dividing the number of overall promotions by the years of work experience.

Socio-demographic characteristics. The socio-demographic variables considered were gender (woman = 1, man = 0) and years of work experience. Level of education was not used in the analysis: the incompatibility between Canadian and French degrees resulted in considerable (474) missing data.

Contextual variables. The contextual variables included sector (private sector = 1, public sector = 0) and nationality of the respondent (Canada = 1, France = 0).

Commitment and motivation. Individual motivation was measured by the number of worked hours per week. Organizational and professional affective commitment was measured using an abbreviated version of the Organizational Commitment Questionnaire (OCQ) developed by Porter, Steers, Mowday and Boulian (1974). Responses were measured on a 5-point scale (1: strongly disagree, 5: strongly agree). The responses were coded in such a way that high scores reflected greater affective commitment to the profession (7 items, $\alpha = .80$) and to the organization (4 items, $\alpha = .81$).

Organizational career management policy. The perception of fairness in the promotion system was measured using a 5-point scale (1: strongly disagree, 5: strongly agree) to assess three statements developed for the purpose of this research ($\alpha = .65$), "Career paths in this company seemed clearly defined", "Decisions on promotions seemed fair" and "I think the opportunities for advancement in this company are equal for all".

Internal labour market promotion criteria were assessed by asking respondents to specify on a 5-point scale (1: unimportant, 5: extremely important) the relative importance of nine factors. Principal components factor analysis resulted in two interpretable factors: human capital (6 items, $\alpha = .81$), the extent to which career decisions are based on performance and the evaluation of professional competencies; and interpersonal skills (2 items, $\alpha = .65$), the importance of relations with supervisor and with general management in obtaining promotions.

Career values. Career anchors were measured using an instrument derived from Schein (1978) and DeLong (1982) and developed by Martineau, Wils and Tremblay (2005), which assesses six career anchors on a 5-point scale (1: unimportant, 5: extremely important). The management anchor was measured using three items ($\alpha = .80$) e.g.: "To have a job that allows me to be frequently promoted". The technical anchor was measured using five items ($\alpha = .76$) e.g.: "To use my skills and abilities for the development of new products". The autonomy anchor was measured using three items ($\alpha = .74$) e.g.: "To have a job that allows me not to be constrained by the rules of an organization". The lifestyle anchor was evaluated using three items ($\alpha = .74$) such as: "To have a job that permits me to reconcile work and leisure". The security anchor was measured using two items ($\alpha = .81$) such as: "To be in an organization that will provide job security". Finally, the service anchor was measured by two items ($\alpha = .78$) such as: "To have a career that allows me to help others".

Individual career orientation was measured by asking the respondents to specify their current career orientation from among five types (managerial, technical, project-based, hybrid and

entrepreneurial). The answers were coded as a dummy variable (managerial orientation = 1, other orientations = 0) to capture a dual ladder career.

Data analysis. Separate hierarchical regression was carried out to examine the relationship between the predictors and (objective/subjective) career success facets. The correlation analysis (Table 1) revealed the presence of collinearity between age and years of work experience (0.96***). Consequently, we eliminated age and retained work experience in the regression analyses, since years of work experience was more consistent with the research objectives. Each group of variables was entered in the regression equations separately, beginning with socio-demographic variables, in hierarchical fashion so that the relative contribution of each group in predicting success could be assessed.

Results

The means, standard deviations and values of Pearson's correlation between variables are presented in Table 1. Because objective and subjective career success was only weakly correlated, we considered these measures distinct. All of the correlations were 0.57 or below, suggesting a lack of multicollinearity.

Insert Table 1 about here

Objective career success. The hierarchical regression analysis of objective career success (Table 2) indicated that our model was quite well-suited to explaining the number of promotions (Adjusted $R^2= 0.309$; $F=33.108^{***}$), but was weak in predicting speed of promotion (Adjusted $R^2= 0.063$; $F=6.086^{***}$). The socio-demographic variables (namely work experience) explained a large part of the variance in number of promotions. Regarding contextual variables, no significant relationships were found between country, sector and objective career success criteria. For the hypothesis related to career policy, a positive relationship was found between a stronger emphasis on human capital in internal mobility decisions and number of promotions among engineers. In addition, the career success objective appears strongly related to individual effort or to the number hours of work ($\beta= -0.25^{**}$). Very interestingly, objective career success was positively related to the managerial career anchor ($\beta=0.071^{**}$ for speed of promotion and $\beta=0.056^*$ for number of promotions) and negatively related to the autonomy anchor ($\beta= -0.049^*$ for number of promotions). Consistent with previous research, managerially anchored engineers climbed hierarchical levels rapidly, moving within and across firms' boundaries. In contrast, engineers that valued autonomy were interested in situations that are professionally stimulating but that are not necessarily linked to promotions.

Insert Table 2 about here

Subjective career success. The hierarchical regression analysis of the components of subjective career success (Table 3) indicated that our model explained much of the variance for job success (Adjusted $R^2= 0.571$; $F=98.776^{***}$) but it did not satisfactorily explain interpersonal success (Adjusted $R^2= 0.255$; $F=26.098^{***}$), financial success (Adjusted $R^2= 0.190$; $F=18.25^{***}$), hierarchical success (Adjusted $R^2= 0.222$; $F=22.016^{***}$) and life success (Adjusted $R^2= 0.110$; $F=10.096^{***}$).

Regarding socio-demographic characteristics, women and men differed in terms of subjective career success. Women engineers were significantly more satisfied with their job

($\beta=0.133^{***}$), interpersonal ($\beta=0.074^{**}$), hierarchical ($\beta=0.08^{**}$) and life success ($\beta=0.113^{***}$). For work experience, a significant relationship was found only with financial success ($\beta=0.068^*$). For the contextual variables, results reveal that engineers in the public sector perceive more job ($\beta= - 0.066^{**}$), financial ($\beta=- 0.091^{**}$) and hierarchical success ($\beta=-0.071^{**}$) than engineers from the private sector. Regarding influence of career management policy, findings show that fairness is positively related to all the facets of subjective career success. Engineers who perceived that the organization offers a structured career progression ladder and clear rules in promotion criteria felt more successful in their careers. In addition, the results reveal that a perception of a stronger emphasis on human capital factors (e.g. performance and competencies) in internal mobility decisions is positively related to job ($\beta= 0.116^{***}$) and hierarchical success ($\beta= 0.06^*$).

Commitment and motivation variables were significantly related to all the dimensions of subjective career success. Hence, engineers who reported a higher level of affective commitment toward their organization and profession felt more successful in all facets of their career. Furthermore, engineers that “work harder” felt more successful in terms of job success ($\beta=0.077^{**}$) and financial success ($\beta=0.204^{***}$), but they were aware that work was threatening their work-life balance ($\beta=-0.208^{***}$ for life success).

As for career values, the managerial career anchor was the predictor with the most evident effect on subjective career success. Quite surprisingly, it had a negative influence on job ($\beta=-0.047^*$) and financial success ($\beta= - 0.111^{***}$) and a positive influence on hierarchical success ($\beta=0.088^{***}$). Engineers that were seeking to develop their career towards managerial positions are more likely to have less positive feelings toward their job content and compensation than engineers with other career anchors.

Insert Table 3 about here

4. Discussion and managerial implications

The overall goal of this research was to investigate the determinants of career success in a sample of Canadian and French engineers. The proposed model and most of our hypotheses received general support. As for socio-demographic characteristics, an interesting and “unusual” result is that gender has no effect on objective success: men and women do not differ in terms of number and speed of promotions in their career. This counterintuitive finding is probably explained by the dependent variable chosen. In contrast with other studies on career gender gap (Baroudi & Igbaria, 1994; Melamed, 1995) we used “number of promotions” instead of “level of compensation” or “hierarchical level”. Our findings are consistent with Ranson (2003), who, in her exploratory research on a sample of Canadian engineers, found that when career advancement was the reason for job choices, it was pursued as single-mindedly by women as by men. Nonetheless, in addition to individual intentions, the possibility for women and men to receive the same number of promotions may be favoured by non-discriminatory policies (at the organizational and institutional level) and by the nature of the profession itself, which is based on “gender-neutral” technical skills and competencies. However, the hierarchical regressions on subjective success showed that gender was a strong predictor of career success. This supports the relative deprivation theory which states that women are “more satisfied with the same” when compared with men with similar characteristics.

Contextual and organizational variables are important predictors of subjective career success but make only a limited contribution to explaining objective career success. For the nationality variable, the hypothesis was not supported. Findings reveal that this variable was

significantly related only to perception of job success. No other subjective or objective career success criteria were significantly related to nationality. These results suggest that career success is not significantly different for Canadian and French engineers.

Our study has shown that factors related to career management policy have a significant influence on objective and subjective career success criteria. The more engineers perceive that internal mobility decisions are related to their human capital (performance and competence) and that the process leading to such decisions is fair, the more they perceive their career as successful. These results are consistent with those of Herriot et al (1994).

Our findings confirm the importance of (professional and organizational) commitment as an important predictor of career success: engineers that are more committed to their organization and to their profession feel more satisfied with the different facets of their career. An interesting (and ambiguous) point which emerged from the empirical results is that for some facets of subjective success, organizational commitment is a stronger predictor of professional career success than professional commitment. What are the possible explanations for this apparent paradox? The sample involved in the study was composed of engineers that did not work as freelancers but were permanent employees of firms. Probably because of their employment relation, most of them felt more committed to the organization than to the profession, which led them to sacrifice their professional identity. Consequently, they increased their efforts (in terms of number of worked hours per week) within the firm, which led to a greater number of promotions. This finding is particularly noteworthy in terms of managerial implications: “professionals” should not be considered as a homogeneous category, but rather as complex groups with diverse organizational needs and work motivations.

Contrary to commitment and motivation variables, career values appear to play a very marginal role in career success. However, we found that a strong managerial anchor has a significant positive influence on speed of promotion and subjective hierarchical success and a negative influence on job and financial success. Regarding other career anchors, autonomy and lifestyle are significantly related to subjective success. Engineers that considered autonomy an important element in their professional development manifest more positive attitudes toward their job content and their relationships at work. Our results are consistent with past research that highlighted the determinant role of autonomy value in career decisions and career attitudes (Tremblay et al., 2002).

In addition, interesting results were found for the lifestyle anchor. Engineers that value their lifestyle considerably have a higher level of interpersonal and life success. Complementary analysis shows that women engineers with a strong lifestyle career anchor perceive greater career success than men. This finding is consistent with Igbaria et al. (1999), who reported gender differences in career orientations, with women being more lifestyle-oriented than men and men being more technically and managerially oriented than women. Hence, organizations, regardless of culture or country, that wish to attract and retain qualified female professionals should consider corporate policies that match women’s lifestyle orientation, such as family leave, child-care options and flexible work arrangements.

5. Limitations and suggestions for future research

The research has several limitations. First, although the regression analysis largely yielded interesting results, other variables not taken into consideration in the research may influence career success. These include socio-demographic (e.g. marital status, number of children, international experience) and contextual characteristics (e.g. supervisory and mentoring support, training and skill development opportunities) variables. Second, our analysis does not include any variable, other than a dummy, to control the institutional effects of being a French or a Canadian engineer. Third, the samples in both countries are not representative of the entire population. For instance, in the Canadian sample the generalization of results is limited by the fact that the sample was selected from the population of a single province in which the Anglo-Saxon culture does not predominate. Fourth, the data collection and analysis methods are worthy of attention. Owing to the cross-sectional research design, causal relationships can be inferred. A further limitation is that all variables, both independent and dependent, derive from the same questionnaire. This raises concerns about shared variance arising from a common measurement method.

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FIGURE 1 –The proposed model of professional career success

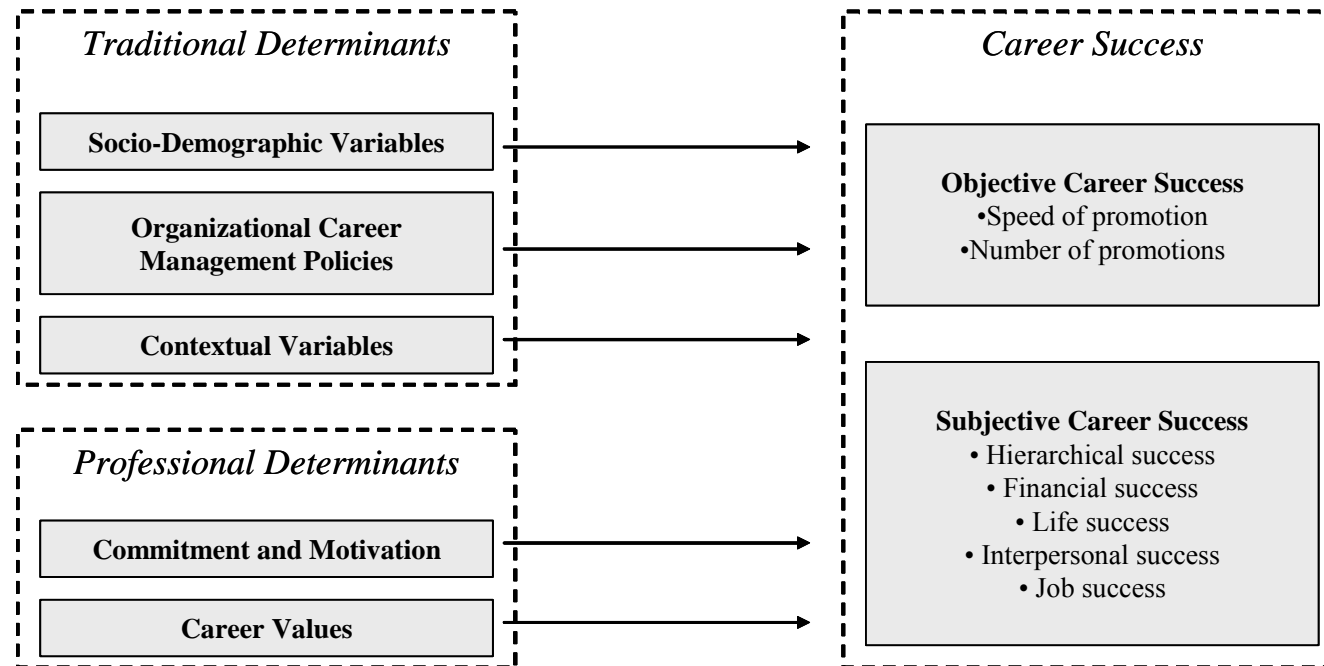


Table 1 – Mean, Standard Deviation and correlations between variables (n=1497)

	Mean	St.Dev.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Nbr of promotions	2.06	2.37	-													
2 Speed of promotion	0.17	0.22	0.61**	-												
3 Job success	3.42	0.70	0.13**	0.11**	-											
4 Interpersonal success	3.98	0.64	0.02	0.06*	0.57**	-										
5 Financial success	3.40	0.86	0.09**	0.04*	0.32**	0.25**	-									
6 Hierarchical success	3.25	0.50	0.21**	0.20**	0.41**	0.33**	0.28**	-								
7 Life success	4.05	0.76	-0.08**	-0.02	0.17**	0.28**	0.14**	0.15**	-							
8 Years of work experience	13.44	9.46	0.45**	-0.11**	-0.04	-0.08**	0.08**	-0.04	-0.02	-						
9 Gender	0.33	0.47	-0.19**	0.02	0.13**	0.13**	0.02	0.07*	0.13**	-0.35**	-					
10 Country	0.60	0.49	-0.26**	-0.07*	-0.10**	0.08**	0.03	-0.02	0.12**	-0.21**	0.30**	-				
11 Sector	0.66	0.47	0.07*	0.16**	0.11**	0.09**	-0.07**	0.07*	-0.07*	-0.22**	-0.04	-0.19**	-			
12 Worked hours per week	3.59	1.28	0.30**	0.22**	0.25**	0.09**	-0.01	0.21**	-0.19**	0.03	-0.15**	-0.51**	0.42**	-		
13 Organizational commitment	3.35	0.86	0.14**	0.13**	0.68**	0.42**	0.31**	0.29**	0.14**	-0.02	0.03	0.05*	0.14**	0.21**	-	
14 Professional commitment	4.02	0.63	0.08**	0.03	0.37**	0.36**	0.20**	0.28**	0.19**	0.06*	0.03	0.10**	0.00	0.03	0.47**	-
15 Internal Labour Market (human capital)	3.46	0.74	0.12**	0.12**	0.41**	0.25**	0.17**	0.23**	0.05	-0.05*	0.10**	-0.09**	0.23**	0.19**	0.36**	0.22**
16 Internal Labour Market (interpersonal skills)	3.61	0.97	-0.09**	-0.03	-0.14**	-0.04	-0.09**	-0.09**	0.05*	-0.04	0.07*	0.21**	-0.05	-0.13**	-0.10**	-0.03
17 Internal Labour Market (seniority)	2.74	1.17	-0.07*	-0.03	-0.08**	-0.02	0.02	-0.02	0.02*	-0.02	0.02	0.03	-0.15**	-0.09**	-0.06*	-0.04
18 Fairness in promotion system	2.82	0.85	0.12**	0.11**	0.52**	0.30**	0.33**	0.30**	0.06	-0.03	0.03	0.01	0.11**	0.16**	0.54**	0.22**
19 Career orientation (managerial)	0.34	0.48	0.12**	0.04	0.02	0.05	0.06*	0.12**	-0.07*	0.05*	-0.03	-0.02	0.01	0.13**	0.07*	0.03
20 Technical anchor	3.66	0.79	-0.08**	-0.07*	-0.05	0.02	-0.07*	-0.04	0.09**	0.05	-0.12**	0.13**	-0.06*	-0.17**	-0.03	0.15**
21 Managerial anchor	3.55	0.69	0.11**	0.12**	0.06*	0.11**	-0.07*	0.15**	0.02	0.00	-0.10**	-0.04	0.15**	0.21**	0.15**	0.18**
22 Lifestyle anchor	3.51	0.89	-0.22**	-0.06*	-0.09**	0.00	-0.04	-0.06*	0.08**	-0.24**	0.18**	0.12**	-0.01	-0.21**	-0.13**	-0.14**
23 Autonomy anchor	3.60	0.72	-0.06*	-0.06*	-0.01	0.03	-0.03	-0.02	0.00	0.01	-0.08**	-0.01	0.01	0.01	-0.05*	0.02
24 Service anchor	3.35	0.87	0.07**	0.03	0.07*	0.00	0.03	0.05	-0.01	0.10*	-0.14**	-0.21**	0.02	0.14**	0.05*	0.09**
25 Security anchor	3.47	0.88	-0.05*	-0.07**	-0.02	-0.01	0.05*	-0.03	0.00	0.09**	-0.04	0.16**	-0.14**	-0.21**	0.03	0.05*

* p < 0.05; **p < 0.01

Table 2 – Hierarchical regression analysis of objective career success predictors (n=1497)

	Speed of promotion			Number of promotions		
	Beta	Adj R ²	ΔR ²	Beta	Adj R ²	ΔR ²
Socio-demographic characteristics						
Gender (0 = Man, 1 = Woman)	.033			.009	.201	.203
Years of work experience				.446***		
Contextual variables						
Country (0=France, 1=Canada)	.030	.025	.027	-.035	.248	.048
Sector (0=Public, 1=Private)	.059			.042		
Organizational						

career management policy																
Internal Labour Market (human capital)	.048	.034	.011	.072**	.266	.020										
Internal Labour Market (interpersonal skills)	.006			-.020												
Internal Labour Market (seniority)	.012			-.012												
Fairness in promotion system	.029			.036												
Commitment and motivation																
Worked hours per week	.173***	.058	.027	.205***	.302	.037										
Affective organizational commitment	.033			.010												
Affective professional commitment	-.005			.026												
Career values																
Career orientation (managerial)	-.018	.063	.010	.028	.309	.012										
Technical anchor	-.042			-.040												
Managerial anchor	.071**			.056*												
Lifestyle anchor	-.020			-.032												
Autonomy anchor	-.057			-.049*												
Service anchor	.016			-.006												
Security anchor	-.012			-.020												

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

Table 3 – Hierarchical regression analysis of subjective career success predictors (n=1497)

	Job success			Interpersonal success			Financial success			Hierarchical success			Life success		
	Beta	Adj R ²	ΔR ²	Beta	Adj R ²	ΔR ²	Beta	Adj R ²	ΔR ²	Beta	Adj R ²	ΔR ²	Beta	Adj R ²	ΔR ²
Socio-demographic characteristics															
Years of work experience	-.026	.017	.019	-.028	.016	.017	-.068*	.011	.012	-.041	.008	.009	.037	.021	.023
Gender (0 = Man, 1 = Woman)	.133**			.074**			.028			.083**			.113**		

Contextual variables															
Country (0=France, 1=Canada)	-.144** *	.045	.029	.052	.028	.014	-.001	.013	.004	.030	.012	.006	-.035	.030	.010
Sector (0=Public, 1=Private)	-.066**			.020			-.091**			-.071*			-.007		
Organization al career managemen t policy															
Internal Labour Market (human capital)	.116** *	.355	.311	.050	.126	.100	.028	.139	.128	.060*	.126	.115	-.007	.036	.008
Internal Labour Market (interperson al skills)	.003			-.004			-.016			-.040			.033		
Internal Labour Market (seniority)	-.031			.015			.032			.015			.007		
Fairness in promotion system	.184** *			.093**			.230** *			.194** *			.026		
Commitment and motivation															
Worked hours per week	.077**	.569	.214	.036	.248	.123	-.046	.169	.032	.204** *	.215	.090	-.208** *	.097	.063
Affective organization al commitment	.479** *			.229** *			.156** *			.034			.102**		
Affective professional commitment	.137** *			.248** *			.117** *			.222** *			.179** *		
Career values															
Career orientation (managerial)	-.024	.571	.005	.028	.255	.011	.068**	.190	.025	.043	.222	.012	-.045	.110	.018
Technical anchor	-.032			-.016			-.106** *			-.025			.035		
Managerial anchor	-.047*			.037			-.111** *			.088** *			.045		
Lifestyle anchor	-.006			.060*			-.008			.030			.106** *		
Autonomy anchor	.043*			.059*			.014			.000			-.029		
Service anchor	.006			-.032			.048			-.006			.002		
Security anchor	-.007			-.045			.023			-.014			-.112** *		

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