Journal of Engineering and Technology Management 47 (2018) 22–36

Contents lists available at ScienceDirect

Journal of Engineering and Technology Management

journal homepage: www.elsevier.com/locate/jengtecman

Work, personal and cultural factors in engineers' management of their career satisfaction

Inocencia María Martínez-León[a], Isabel Olmedo-Cifuentes[a,*], Mª Camino Ramón-Llorens[b]

[a] Universidad Politécnica de Cartagena, Facultad CC. Empresa/Departamento de Economía de la Empresa, C/Real, 3, 30201, Cartagena (Murcia), Spain

[b] Universidad Politécnica de Cartagena, Facultad CC. Empresa / Departamento de Economía Financiera y Contabilidad, C/ Real, 3,30201, Cartagena, Murcia, Spain

ARTICLE INFO

Keywords:
Career satisfaction
Level of income
Suitability for the job
Organizational commitment
Work-life balance supporting culture

ABSTRACT

Managing engineering professionals is critical if organizations wish to retain talented employees. Enhancing engineers' career satisfaction through work, personal and cultural conditions is a fundamental tool to address their aspirations and increasing performance. This empirical research examines all this with data from 846 Spanish engineers. With a hierarchical regression analysis, the results show that organizational commitment, level of income, suitability for the job, and work-life balance supporting culture improve engineers' career satisfaction. Organizational commitment is the most important issue. Level of income and suitability for the job are the second most important factors for determining men's and women's career satisfaction.

1. Introduction

In today's competitive, complex and global environment, engineers play a key role in all phases of new knowledge creation and innovation processes. The importance of Engineering is increasing in the global world,[1] particularly in high-tech corporations. Therefore, managing engineering professionals is critical.

Simultaneously, organizations require a flexible workforce with competent and talented employees to adjust to a changing environment. Managing engineers' professional and personal capabilities is quite important, as well as their entrepreneurial roles and managerial competences, to improve organizational performance. Engineers are, therefore, considered a strategic asset for their employers, and a carefully monitored workforce (Mignonac and Herrbach, 2003). As good, talented competent professionals are scarce and of strategic importance, organizations (and their managers) may consider it critical to keep them in the organization by considering some professional, personal and cultural conditions.

Furthermore, engineers currently face a very high diversity of career prospects (Igbaria et al., 1999), such as technical, manager, project, technical transfer and entrepreneurial orientations (Kim and Cha, 2000). Since companies require the right mix of people and

* Corresponding author.
E-mail addresses: ino.martinez@upct.es (I.M. Martínez-León), isabel.olmedo@upct.es (I. Olmedo-Cifuentes), camino.ramon@upct.es (M.C. Ramón-Llorens).

[1] Because engineers not only understand science and mathematics, working with machines, designs or circuit boards, but they may also be involved in the negotiations, management and supervision of engineering teams, financial decisions, ethical judgments, innovations, creativity, assurance of safe work or preventing environmental damage (Lawlor, 2013). Among the key identified attributes were a highly defined sense of social responsibility and ethics, entrepreneurism, and the ability to deal with complexity and systems thinking. Engineers need to work in multidisciplinary teams and with non engineering specialists, such as policy makers and economists. To carry out their work effectively, engineers must also learn other disciplines, such as business, marketing, the environment and public policy (Chan et al., 2009). Therefore, engineering is becoming increasingly important in society.

https://doi.org/10.1016/j.jengtecman.2017.12.002
Received 9 February 2016; Received in revised form 5 December 2017; Accepted 12 December 2017

skills at appropriate levels, organizations must provide career paths that retain and motivate workers by finding matches between organizational and individuals' needs (Igbaria et al., 1999). The increase in both flattening corporate hierarchies and the number of engineering professionals diminishes engineers' opportunities to reach higher management positions. Internal mobility is thus an important tool for retaining experienced and skilled expert employees to avoid corporate uncertainty and to cut adaptation costs (Mignonac and Herrbach, 2003). Engineers' traditional career development has, therefore, changed drastically, and the transition to management as the only means toward a successful career has significantly reduced.

In these circumstances, corporations manage a large group of engineers without being able to guarantee them traditional career paths. When considering the new specific socio-demographic and psychological trends (Dries, 2013), career satisfaction is an important tool for dealing with this situation. Career satisfaction is a perception that is affected by work, personal and cultural factors if we consider that the time and energy spent on family/personal roles limits availability for work roles, and *vice versa*. It is, therefore, essential that these organizations identify the current aspects that influence engineers' career satisfaction.

For *professional* or *work factors*, many studies describe objective and subjective career success outcomes (Ng et al., 2005), such as income, status and promotions (DeMello and Deshpande, 2011; Judge et al., 1995; Lepnurm et al., 2006; Martins et al., 2002; Wayne et al., 1999). Full-/part-time work, job position, pay and suitability for the job determine career satisfaction (Erdogan et al., 2011; Peiró et al., 2012; Saravanabawan and Uthayatharshika, 2014). The above first three factors are considered *objective work conditions* because they are based on facts rather than on feelings or opinions whereas, given its characteristics, suitability for the job is viewed as a *subjective work condition*. Objective and subjective work factors predict career satisfaction (Judge et al., 1995; Martins et al., 2002; Wayne et al., 1999), and are positively related to subjective career success (Judge et al., 1999; Ng et al., 2005; Jang, 2008; Valcour and Ladge, 2008; Albert et al., 2010).

Work-family conflict (Powell and Mainiero, 1992; Martins et al., 2002) and organizational commitment (Aryee and Debrah, 1993; Cable and DeRue, 2002; Erdogan et al., 2004) are considered *personal factors* that influence career satisfaction in this research. Traditional socio-demographic variables, such as age, marital status and level of education were not selected (Tremblay et al., 2002; Traavik and Richardsen, 2010; Ituma et al., 2011) because the chosen variables reflect personal situations in a better and more up-to-date way, which make them more powerful and consistent than others.

An organizational culture that supports the work-life balance is a *cultural factor*, which has a huge impact on employees' lives and performance, as well as organizational outcomes (Cegarra-Leiva et al., 2012)[2] such as career satisfaction. Accordingly, we relate this cultural factor to the work-family conflict to understand its influence.

Based on a population of 846 Spanish engineers, this paper reports an analysis of how certain *work conditions* (full-/part-time job, job position, level of income and suitability for the job) and *personal and cultural variables* (work family conflict, organizational commitment and the work-life balance supporting culture) impact engineers' career satisfaction by differentiating these effects between men and women. Gender differences in career satisfaction are analyzed (Igbaria et al., 1999; Tremblay et al., 2002; Martin, 2011) by considering the overall underrepresentation of women in engineering, the influence of gender roles and stereotypes, and lack of studies among Spanish engineers.

2. Career satisfaction: conceptual background and importance

One of the most important objectives for engineering organizations is to design a career-management system that adapts a flexible workforce's requirement. This system should satisfy engineers' career values and aspirations, and should allow organizations to obtain high outcomes that derive from their staff's career satisfaction, such as productivity and flexibility, among others. At an individual level, engineers display improved their behavior at work by means of satisfaction, commitment, reduced job stress, and so on. Therefore, quite apart from its evident managerial relevance, career satisfaction influences not only employee performance, especially in professional jobs, but also organizational performance (Mignonac and Herbach, 2003).

In this paper, career satisfaction has been defined as individuals' perceptions of their career accomplishments to date and their prospects for future advancement (Gattiker and Larwood, 1988; Judge et al., 1995). It reflects an equilibrium between what individuals expect from their career development and advancement across many jobs, and the achievement of their overall career goals (Greenhaus et al., 1990). This refers to their personal satisfaction with various aspects of their career progress and success (Parasuraman et al., 1996), which differs from job satisfaction. As such, career satisfaction refers to "the satisfaction individuals derive from intrinsic and extrinsic aspects of their careers, including pay, advancement, and developmental opportunities" (Judge et al., 1995, p. 487).

If companies are able to fulfill these needs and expectations, they will attract and engage the best professionals which, in turn, increases productivity and performance (Greenhaus et al., 1990; Igbaria, 1991), reduces turnover (Laschinger, 2012) (and saves the opportunity costs of replacing new employees), and improves the service provided. Thus employees become sources of competitive advantage (Aryee and Chay, 1994).

These benefits justify companies' investment in resources to develop career paths for their employees, especially in engineering organizations. Thus companies provide proper training and motivation to generate better performance and to develop lateral and/or upward mobility (Mignonac and Herrbach, 2003) by enhancing engineers' capacity to change, update and improve. However, this can be complemented by taking into account other work, personal and cultural variables which can also influence career satisfaction (Aryee and Luk, 1996).

[2] The existence of a WLB supporting culture rather than the availability of WLB practices offered by the company is the main determinant of job satisfaction.