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# Job satisfaction of construction professionals: case study in eastern Mexico

*Satisfacción laboral de los empleados profesionales de la construcción: caso de estudio en el este de México*

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## Abstract

Work is an intense and demanding activity; in order to perform productive tasks well, it is necessary to have both, disposition and capacity, as well as appropriate working conditions. Job satisfaction surveys are a widely accepted way to know the level of fulfillment of these variables from the employee's perspective; job satisfaction has been developed as a concept related to a positive emotional state resulting from the individual's appraisal of his/her job or job experiences. A wide variety of studies have been conducted to measure job satisfaction in the construction industry, most of which have focused on laborers. The aim of this study was to explore job satisfaction levels of construction professionals working for construction firms in Eastern Mexico. The instrument used to measure job satisfaction was the Minnesota Satisfaction Questionnaire, developed for different types of trades and professions, including engineering. The model on which this instrument is based takes into account job satisfaction comprising twenty variables; the methodology may be applied in different geographic contexts. In this case, the results showed that, in general, the group of professionals under study was dissatisfied; while the sub-groups of executives and supervisors expressed satisfaction. The method for the analysis of results can be functional in other regions in the world. It was concluded therefore that there is much room for improvement in the construction industry to professionalize human resource management, and provide better job environments for the employees.

**Keywords:** Construction, job satisfaction, human resource management, supervision.

## Resumen

Trabajar es una actividad intensa y exigente; para el buen desempeño en las tareas productivas es necesario que una persona tenga tanto disposición y capacidad, como condiciones laborales apropiadas. En la industria de la construcción se han realizado muchos estudios para medir la satisfacción laboral, pero la mayoría de éstos se han enfocado a los obreros. En este trabajo se exploró la satisfacción laboral de empleados profesionales de la construcción que se desempeñaban en seis organizaciones de México. El Instrumento utilizado para medir la satisfacción laboral fue el Cuestionario de Satisfacción Minnesota, desarrollado para diferentes tipos de oficios y profesiones, entre otras la de ingeniero; el modelo en el que se basa este instrumento considera la satisfacción laboral compuesta de veinte variables. Los resultados mostraron que el grupo de profesionales estudiado estuvo, en términos generales, insatisfecho; y que los subgrupos conformados por mandos altos y por supervisores se mostraron satisfechos. Se concluyó que hay un gran campo de mejora en las empresas de la construcción para profesionalizar la gestión del recurso humano, y brindar mejores ambientes laborales a sus empleados.

**Palabras Claves:** Construcción, satisfacción laboral, gestión del recurso humano, supervisión.

## Introduction

A human being will dedicate approximately one third of their adult life to work. According to Weinert "work represents the most intense, time-consuming, physical, cognitive and emotionally demanding individual activity of a person's life" (Weinert, 1985). The professionalization of human resource management began approximately one hundred years ago, and since then, businesses have been searching for ways to motivate their workforce to put their best effort into their productive activities. Initially, most managers had a rather simplistic vision of the phenomenon of work; they believed that workers could be motivated just by increasing their salaries (Schultz, 1991).

Nowadays, it is clear that the phenomenon is much more complicated, and that workforce performance depends mainly on two factors: the first is related to the willingness and capacity of workers to carry out the tasks entrusted to them; and the second involves the external elements imposed on them by management (Cooper, 1979; Friend & Burrows, 1977). Construction work is an important economic activity all over the world. In Mexico, this industry directly employs approximately 5 million workers –mostly laborers– representing about 8% of the working population (STPS, 2014) (fig 1).

Professionals engaged in construction works –generally engineers or architects– play an important role in on-site workforce management, their work is important in order to facilitate an effective communication between the workers and the organization. It is also their responsibility to solve problems and conflicts arising in the workplace, something

which is fundamental to achieve project objectives. In addition, professionals must coordinate with different project participants such as, clients, designers, public officials from regulatory agencies, suppliers, sub-contractors, etc. (Solís, 2004).

**Figure 1.** Construction industry in Mexico. Source: Self-elaboration.



We can affirm therefore, that performance of construction professionals is fundamental to successful execution of projects, and depends on various factors which include: qualifications, management and leadership skills, ethics

and motivation. Researchers of industrial psychology have concluded that a person's motivation is a complex variable that responds to a specific stimulus, driven by more than one desire and / or need, which can often be complimentary on some occasions and contradictory in others (Schultz, 1991).

Job satisfaction can be defined as the degree of conformity of a person regarding his or her work environment; or more formally as, "the positive or pleasant emotional state, resulting from the subjective perception of the person regarding his or her work experiences" (Locke, 1976). Hackman and Oldham developed a theory, which states that job satisfaction is related to the characteristics of the position occupied by the person (Hackman & Oldham, 1976). These researchers defined five characteristics causing psychological states which increase motivation, productivity and job satisfaction: the use of different abilities, participating in the production of an entire unit, transcendence of the work with respect to the welfare of others, independence and autonomy to organize their work, and feedback on the quality of completed work.

In the construction industry, professionals involved in execution of projects, carry out tasks which contain most of the following characteristics: perform a variety of jobs, both technical and administrative; usually participate in the construction of the entire project, from laying out to completion; construction projects have a strong impact on the welfare of people in general; must make autonomous decisions almost every day; and are very much aware of work quality, based on their own perception and through feedback from clients and supervisors (Sidney, 2002).

In contrast, Sang et al. concluded in a paper, about job satisfaction among UK architects working within the construction industry, that the majority of respondents presented some work-life balance difficulties. They consider that the causes of poor well-being are associated with organizational factors rather than factors intrinsic to the work of an architect (Sang, Ison, & Dainty, 2009).

Borcherding and Oglesby, in their studies on job satisfaction in construction in USA, concluded that dissatisfaction is a factor which generally leads to a reduction in productivity, generating project cost overruns and delays (Borcherding & Oglesby, 1975). Studies on job satisfaction in the construction industry have been conducted in different parts of the world (Navarro, 2008b; Nuñez & Garrido, 2005); however, most of them have analyzed only the behavior of laborers.

The aim of this study was to explore job satisfaction in professional employees involved in construction work by studying a sample of 89 individuals from six construction firms in Eastern Mexico, as a case study. The small sample size means that any generalizations should be treated with caution; however, the methodology and analysis of results could be applied in other regions.

## Methodology

This work was based on the study of 89 employees from six construction firms in Eastern Mexico, as a case study seeking to deepen the study of job satisfaction of professional employees (civil engineers and architects). Two main questions were deemed to answer: how satisfied the construction professionals are?, and what are the causes of that psychological state? One of the important characteristics of all participating construction firms was to have at least five years of activities in the construction industry.

In order to make the group under study less heterogeneous,

and avoid the influence of multiple uncontrolled variables, it was determined that all participants would have the following characteristics: the profession of civil engineer or architect (fig 2); bachelor's degree obtained at least three years prior to the study; at least one year working for the firm in which they are now employed; currently working at an operative level within the organization; and has volunteered to participate in the study. The total number of professional employees with these characteristics and who actually participated in the study was 89. During the study, data was collected from the 89 observation units (professional employees) to perform statistical analyses; this data was about perception and opinions related to job satisfaction from the persons under study

Figure 2. The profession of civil engineer or architect. Source: own elaboration



The Minnesota Satisfaction Questionnaire (MQS) was used to measure job satisfaction. This questionnaire was developed by Weiss et al. in 1967 and was revised in 1977 (Weiss et al., 1967); it is based on the results of studies carried out by the Department of Health, Education, and Welfare of the United States (HEW). The model used measures job satisfaction based on 20 variables, which are shown in the left-hand column of Table 1.

This questionnaire consists of 100 items, 5 for each variable. Each item is preceded by the question "How satisfied do you feel regarding this aspect of the work?" The answers are rated with a Likert type scale containing the following five categories: Very Dissatisfied, Dissatisfied, Neither, Satisfied, and Very Satisfied. Each category is assigned a numerical value, from 1 (Very Dissatisfied) to 5 (Very Satisfied). The score for each variable is obtained from the sum of the values assigned to each item, thus each variable is measured in a scale of 5 to 25 points.

Besides these 20 variables, the instrument also allows the measurement of an additional variable denominated General Satisfaction, from the score obtained in 20 items—one for each variable—which was specially defined by the authors of MQS. With the sum of the values assigned to each item, General Satisfaction can be measured on a scale from 20 to 100. Table 1 shows these 20 items.

**Table 1.** Variables and items of the MQS which measure General Satisfaction. Source: Self-elaboration from Weiss, et al. (1967).

Variables	Items
Security	The way my job provides for steady employment.
Company policies and practices	The way company policies are put into practice.
Variety	The chance to do different things from time to time.
Supervision – human relations	The way my boss handles his/her employees.
Compensation	My pay and the amount of work I do.
Moral values	Being able to do things that don't go against my conscience.
Advancement	The opportunities for advancement in this job.
Co-workers	The way my co-workers get along with each other.
Recognition	The praise I get for doing a good job.
Work conditions	The working conditions.
Independence	The chance to work alone on the job.
Activity	Being able to keep busy all the time.
Supervision – technical	The competence of my supervisor in making decisions.
Creativity	The chance to try my own methods of doing the job.
Responsibility	The freedom to use my own judgment.
Social service	The chance to do things for other people.
Achievement	The feeling of accomplishment I get from the job.
Authority	The chance to tell people what to do.
Social status	The chance to be "somebody" in the community.
Ability utilization	The chance to do something that makes use of my abilities.

Following the method developed for the analysis of data obtained from the MQS, each score assigned to the variables was converted into its corresponding percentile, using a table calculated specifically for the engineering profession, by the original creators of the instrument. This percentile means the percentage of people, within a normalized group, who have a score equal to or lower than the person evaluated; in other words, it provides the relative position of an individual within a group of people performing a similar job.

The group of people originally studied which was used to elaborate the percentile tables for the engineering profession consisted of 53 integrants. The method for the application of MQS provides percentile tables for 27 occupations or professions divided into the following groups: Professional, Technical, Managerial (Engineers, among others), Clerical and sales, Service, Bench work, Miscellaneous, and Employed disabled.

The criteria to interpret the satisfaction level of each worker, for any of the 21 variables is as follows: if the percentile is 75 or higher, this is considered a high level of satisfaction; if the percentile is between 74 and 26, it is an average level; and if the percentile is 25 or lower, it is a low level. On the other hand, when a group of workers as a whole is analyzed, the criteria to determine the level of satisfaction is as follows: if the average of the group percentiles is equal to or higher than 50, then the group is considered to be satisfied; and if the average of the group percentiles is lower than 50, the group is considered to be dissatisfied.

An analysis was carried out on each of the six cases studied in order to determine the level of satisfaction of their respective members; the average percentile of General Satisfaction was calculated for each case, and from this, the level of satisfaction was determined.

In this study, results from groups sharing certain characteristics were also analyzed; the sample was divided into four different criteria of discrimination: age (under 35 years of age / 35 years of age or over); profession (Civil Engineer / Architect); length of service in the organization (less than 5 years / five years or more); and position category (mid-level job / executive). In addition, results bringing together all study participants in only one group were analyzed. The average percentile of General Satisfaction was computed for each group, and from this, the level of satisfaction was determined. The gender of participants was not considered as a criterion of discrimination because only 3% of the sample was female. Table 2 presents the percentages of participants corresponding to each criteria of discrimination described above.

**Table 2.** Sample description. Source: Self-elaboration, 2014.

Category	% of participants	Category	% of participants
Age	Under 35: 29%	Length of service in the organization	Less than 5 years: 39%
	35 years or over: 71%		Five years or more: 61%
Profession	Civil Engineer: 83%	Position category	Mid-level job: 71%
	Architect: 17%		Executive: 29%

The internal consistency of the MQS was originally verified by its authors, by means of the Hoyt Reliability Coefficient. The values obtained from this coefficient for the sample of 53 engineers included in the study ranged from 0,67 to 0,96 for the 21 variables (Weiss et al., 1967). With 1 as the maximum degree of confidence, coefficients of 0,70 or higher are generally accepted as sufficient (Nunnally et al., 1967); in this analysis, only the variable Co-workers was lower than this value (0,67).

Despite the above, the authors of this instrument suggest that each time it is used with a new group, the coefficients of confidence should be calculated again, as the variables tend to vary between groups. Because of this, and due to the fact that in this study the group consisted of construction professionals (civil engineers and architects), a validation was carried out with the data obtained using the Cronbach's Alpha Coefficient, which is a more modern development based on Hoyt's works. Finally, new percentiles were calculated based on the sample of construction professionals under study; these values are shown in a table presented in this work.

## RESULTS

Table 3 shows the percentile average of General Satisfaction and the satisfaction level of the construction professionals, fourth and fifth columns respectively, for the six cases studied (firms). Size and predominant activity of each firm, and number of professionals participating in the study are presented in the same table on first, second and third columns respectively. The groups of professionals from each of the six organizations studied are identified with the letters (A, B, C, D, E, and F); no symmetrical distribution of subjects can be observed among the organizations. The criterion of the National Institute of Statistics and Geography of Mexico (INEGI, 2011) was used to classify firms by their size; this criterion combines the number of employees and the volume of annual sales.



**Table 3.** General Satisfaction from the six cases studied. Self-elaboration, 2014.

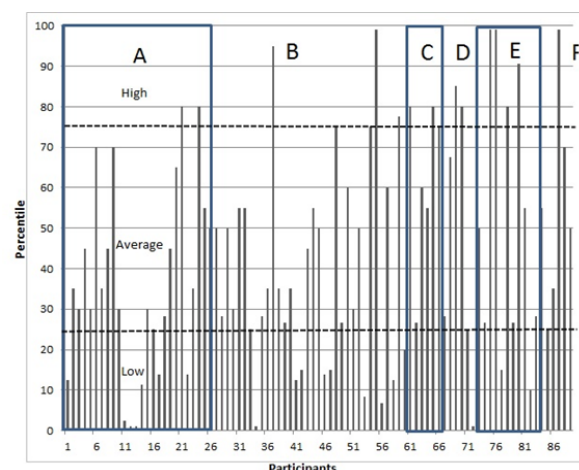
Cases studied (size of firms)	Predominant activity	Participants in the study	Percentile Average of General Satisfaction	Satisfaction level of the group
A (large)	Construction of commercial buildings	26	36	Dissatisfied
B (large)	Housing construction	34	40	Dissatisfied
C (large)	Housing construction	6	63	Satisfied
D (small)	Construction of commercial buildings	6	48	Dissatisfied
E (small)	Housing supervision	11	53	Satisfied
F (small)	Infrastructure supervision	6	56	Satisfied

Table 4 shows the comparisons of General Satisfaction levels in the different groups generated, according to the discrimination criteria defined in the methodology. The percentile averages of each group are presented in the third column of this table, while the fourth column shows the level of satisfaction in accordance with the percentile average. As part of the results, data from the 89 study participants was gathered in one group. Figure 1 shows the percentiles of the General Satisfaction variable for this group.

**Table 4.** General Satisfaction of the groups with different characteristics. Own source, 2014.

Discrimination criteria	Groups	Percentile average General Satisfaction	Satisfaction level of the group
Age	Under 35 years of age	43	Dissatisfied
	35 years of age or over	44	Dissatisfied
Profession	Civil Engineer	44	Dissatisfied
	Architect	43	Dissatisfied
Length of time working in the organization	Less than 5 years	45	Dissatisfied
	5 years or more	43	Dissatisfied
Position category	Mid-level job	41	Dissatisfied
	Executive	51	Satisfied

According to the criteria established to determine the level of satisfaction of each worker, 19% of the participants presented a high level of General Satisfaction (a percentile of 75 or above); 55%, an average level (a percentile between 74 and 26); and 26%, a low level (a percentile of 25 or below). In Figure 1, the thresholds defining the different levels of satisfaction have been indicated with horizontal dotted lines. The average of General Satisfaction percentiles for the entire group of professionals under study was 44; which represents a dissatisfied group (percentile below 50), according to the criteria established.

**Figure 3.** General Satisfaction percentiles of the participants from the six cases studied. Own source, 2014.**Table 5.** Percentile average of the 89 participants for the 20 variables of the model. Own source, 2014.

Variables	Percentile average
Security	19
Company policies and practices	38
Variety	40
Supervision–human relations	41
Compensation	44
Moral Values	45
Advancement	48
Co-workers	49
Recognition	50
Work conditions	52
Independence	53
Activity	53
Supervision–technical	53
Creativity	57
Responsibility	59
Social service	62
Achievement	67
Authority	70
Social status	71
Ability utilization	77

Table 6 presents the results of the confidence analysis performed with the data obtained from the application of the MSQ to the 89 participants in the study. The range of Cronbach's Alpha Coefficient was between 0,60 and 0,97; as with the original validation carried out by the authors of the instrument, only one variable (Independence) was below 0.70.

Table 5 shows the percentile averages of the 89 participants for the 20 variables included in the model used to measure job satisfaction. As can be seen, the group expressed satisfaction in 12 of them (percentile average of 50 or above); the variables in which most participants registered satisfaction were as follows: Ability utilization (percentile 77), Social status (71), Authority (70) and Achievement (67). The 12 variables in which the group showed satisfaction have been shaded in this table; similar shadings have been added to subsequent tables to highlight the satisfied groups. In the same table, we can also observe that the group showed to be dissatisfied in 8 variables (percentile average below 50); these were: Security (percentile

average 19), Company policies and practices (38), Variety (40) and Supervision–human relations (41), Compensation (44), Moral Values (45), Advancement (48) and Co-workers (49).

Since the percentile tables of the MSQ were developed for a variety of professions and occupations—including engineering—but not specifically for those of the construction industry, with the results of this work the percentiles were calculated based on the sample studied. Table 7 shows the percentiles for the construction professionals (civil engineers and architects), which are proposed for use in future studies on job satisfaction in the construction industry.

## DISCUSSION

Herzberg, in his classical theory of motivation, established that the conduct of people in the performance of their work is influenced by two types of factors: those that provide satisfaction and those that provoke mainly dissatisfaction. The former are denominated intrinsic or motivational factors; they are related to what a person can do directly and which can therefore be controlled by him or her. When these occur positively, the result is a sense of well-being for the person (Mausner & Snyderman, 1993). To some extent, these factors could also be compared to the two highest levels of the Maslow Pyramid (Schultz, 1991): self-actualization and self-esteem. Among the variables contemplated in the MSQ model, which can clearly be identified as motivational factors are: Achievement (67), Responsibility (59), Independence (53), Recognition (50) and Advancement (48); the percentile average of the sample under study, i.e. construction professionals, is presented in parentheses after each variable (Table 2).

According to these values, one can observe that the satisfaction level of the participants was high in all the variables, with the exception of Advancement, which registered a low level of satisfaction, but was close to the threshold of satisfaction (50).

The second type of factors of the Herzberg theory, denominated hygiene and extrinsic, relate to the environment and conditions in which the subject performs his or her work, and depends mainly on the conduct of managers within the organization he or she is working for. When these factors are managed negatively, the lack of control that the subject has over them generally leads to a feeling of frustration (Mausner & Snyderman, 1993).

To some extent, these factors could also be compared to the two lowest levels of the Maslow Pyramid (Schultz, 1991): safety or security needs and physiological needs. Among the variables contemplated in the MSQ model, which can clearly be identified as hygiene factors, are: Security (19), Company policies and practices (38), Supervision–human relations (41), Co-workers (49) and Work conditions (52); as with the first factors mentioned, the percentile average of the sample is presented in parentheses (Table 2). We can observe that participants' level of satisfaction was low in all these variables, with the exception of Work conditions, which registered a high level of satisfaction, but was close to the threshold of dissatisfaction.

From the above, and in accordance with Herzberg's theory, it is possible to affirm inductively that construction professionals feel satisfaction with their professional performance, but also feel extremely dissatisfied with their job security and with the policies and practices of the organizations in which they work; they can also be considered moderately dissatisfied with their income and compensations. If one variable could be used to represent the above, it would be General Satisfaction; which had a percentile average of 44 in this study, indicating that, in general, the group is dissatisfied (below 50).

The previous paragraph seems to contradict the traditional interpretation of Maslow's hierarchy, which states that the lower necessities must necessarily be satisfied before the higher levels of the pyramid can be activated. However,

**Table 7.** Percentiles proposed for job satisfaction variables measured in construction professionals. Own source, 2014.

Variables			Percentiles										
			1	10	20	30	40	50	60	70	80	90	100
Security			5	11	15	17	18	19		20		21	25
Company practices	policies	and	5	9	12	15	16	17	18	20	21	22	25
Variety			12	16	18	19		20			21	23	25
Supervision—human relations			6	11	14	16	17	19	20	21	22	23	25
Compensation			5	10	12	14	15	16	17	18	19	20	22
Moral Values			17	19	20			21	22	23		24	25
Advancement			5	10	11	14	16	17	19	20	21	22	25
Co-workers			8	16	18	19	20			21	23	25	25
Recognition			8	13	16	17	18	19	20		21	22	25
Work conditions			10	15	18	20				21	22	23	25
Independence			14	17	18	19		20		21	22	24	25
Activity			15	19	20			21		22	24	25	25
Supervision—technical			7	13	16	18	19	20	21	22	24		25
Creativity			12	17	18	19	20		21	22	23	24	25
Responsibility			14	18	20			21		22	23	25	25
Social service			9	17	18	19	20		21		22	23	25
Achievement			15	19	20		21		22	23	24		25
Authority			14	17	19	20			21	22	23	24	25
Social status			9	17	19		20			21	22	23	25
Ability utilization			7	19	20		21		22	23	24		25
General Satisfaction			47	67	70	74	76	77	79	82	84	87	95

Abraham Maslow himself clarified that in some particularly creative activities, the necessities can appear in different order (Maslow, 1987). The best example of this could be artists who experience a feeling of self-realization without having sufficient means of subsistence.

**Table 6.** Confidence analysis of the 21 variables, based on the data of the 89 participants. Own source, 2014.

Variables	Average	Variance	Cronbach's Alpha	Typical error
Security	17,49	15,05	0,86	0,41
Company policies and practices	16,04	20,04	0,93	0,48
Variety	19,30	6,21	0,77	0,26
Supervision–human relations	17,80	20,60	0,92	0,48
Compensation	15,63	16,82	0,89	0,44
Moral Values	21,09	5,30	0,73	0,25
Advancement	16,00	23,46	0,97	0,52
Co-workers	19,93	9,79	0,87	0,34
Recognition	17,98	11,26	0,91	0,36
Work conditions	19,63	10,21	0,89	0,34
Independence	19,58	4,78	0,60	0,23
Activity	21,19	5,02	0,86	0,24
Supervision–technical	18,97	18,69	0,92	0,46
Creativity	20,18	6,62	0,75	0,27
Responsibility	20,67	4,50	0,70	0,22
Social service	20,92	6,19	0,85	0,26
Achievement	21,31	4,56	0,75	0,23
Authority	20,42	6,22	0,82	0,27
Social status	19,88	6,68	0,75	0,27
Ability utilization	21,28	7,08	0,86	0,28
General Satisfaction	76,94	8,45	0,88	0,90

In relation to the above, according to Thwala and Monese, the tasks performed by construction workers are satisfying by nature, since they produce tangible structures which endure, thus allowing the professionals participating in their construction to generate a feeling of achievement from the result of their efforts (Thwala & Monese, 2011). We can appreciate (Table 2) that the variables with higher percentile averages are directly in relation to the utilization of their professional abilities to manage projects which serve society and facilitate professional prestige.

Research conducted in Spain support the idea above. For example, Cantonnet et al., in a study to understand the different variables considered as risk originators of psychosocial origin that influence on job satisfaction of the Architects in the construction sector of the Basque Country, concluded that employees that develop a job that matches with their level of education and work experience have a greater job satisfaction (Cantonnet, Iradi, Larrea, & Aldasoro, 2011). They found that 78% of respondents were satisfied with their jobs. Navarro et al. in their research to empirically study the satisfaction of qualified construction professionals in the Valencian Community at work, found that the professionals interviewed were satisfied with their jobs, they enjoy it and describe their overall work experience in positive terms (Navarro, 2008a). Therefore, it appears that the most important aspects of satisfaction are those related to the nature and content of the

job, i.e. identity, creative activities, variety and significance of the tasks performed and the recognition achieved.

Furthermore, Bowen in his survey of the opinions of registered South African quantity surveyors reported that most respondents claimed that they would choose the same career again (Bowen, et al., 2008). With respect to the practices and policies of the organization, construction companies are faced with the challenge of improving the job climate or environment; this concept is defined by Brunet as “the combination of relatively permanent qualities, attributes or properties of a work environment which are perceived, felt or experienced by the people who constitute the business organization and have an influence on its conduct” (Brunet, 2004).

There are many psychological studies which have presented evidence of the influence of job climate on the productivity of an organization and on worker satisfaction (Ortiz Serrano & Cruz García, 2008; Salgado, et al., 1996; Wright & Davis, 2003); given that these parameters are fundamental for the success of an organization.

Regarding the salaries of construction professionals, these are controlled by the law of supply and demand, making them competitive in the regional market, but perhaps insufficient or unsatisfactory in the opinion of the employees. Hee and Ling emphasize the importance of non-monetary benefits in an organization, for which the construction companies could design flexible benefit systems that would allow the employees to choose the ones they prefer, with the aim of increasing their level of satisfaction (Hee & Ling, 2011). Examples of these benefits could include: pension plans, permissions and time off for the family, good relationships with colleagues and bosses, employee recognition, etc. (EKOS, 2011; Vila, 2000).

The variable which was found to be most critical in this study was Security, with a score well below the others (percentile average of 19). This variable, defined as: “The way a job provides steady employment” (Weiss et al., 1967), is closely associated with regional, national and international economy, since unfavorable macroeconomic indicators generally provoke the suspension of investment; either because people and both private and government organisms lack the resources to undertake construction projects or because the decision is made to avoid taking risks in an atmosphere of high uncertainty. It is due to these economic variations that construction organizations experience fluctuations in their personnel, increasing workers’ uncertainty. In light of this situation, which is beyond control of the organizations, it is important that they implement strategies to retain the best of human resources, which will allow them to conserve their intellectual capital, a factor of great importance for competitiveness. However, most of the construction professionals will continue to be affected by economic variations, and it will be difficult to change their level of dissatisfaction.

On an individual level, each professional would have to deal with this challenge of competing with his or her colleagues in order to be considered a valuable asset in the organization and keep their jobs over a prolonged period of time. Of the eight groups analyzed, according to the four different criteria with which participants were discriminated in the study (Table 3), the group of executives was found to be the only one satisfied, in accordance with the criteria established in the methodology (percentile average of General Satisfaction 0.50 or above).

This can be interpreted in the sense that, since these subjects control the variables relating to the environment and the conditions in which the others carry out their work, they are not affected negatively by hygiene or extrinsic factors because

they define organization policies themselves, supervise others' work, and are the last to lose their jobs in times of crisis, as well as receiving the best salaries. In a study carried out by Navarro (Navarro, 2008a) on construction professionals in Spain, in which production managers and executives of construction companies were evaluated, these employees were found to be satisfied. This result concurs with those of this study; as in both cases, the subjects occupying managerial positions manifested satisfaction with their job performance.

In another study conducted in Mexico, in the same region as the present work, a sample of civil engineers with six years or less working experience, were found to be "dissatisfied and felt that the exercise of their work had not fulfilled their expectations" moreover, 65% stated that "they were dissatisfied with their economic income". However, 64 % said "they were satisfied with the possibility of doing something for the good of society" (Solís Carcaño, et al., 2006). With respect to the first two statements, and taking into account that most of the subjects included in the sample did not occupy executive positions, they can be considered consistent with the results of the present study (dissatisfaction in mid-level job). As for the third statement, this gives support to the idea discussed above in the sense that construction work is by nature an activity that generates job satisfaction.

It is interesting to note that, in the present study, 96% of the subjects in the executive category were over 35 years of age; and of these, 80% had been working in the same company for more than 5 years; however, the groups comprising all the subjects over 35 years of age, and all the subjects with more than 5 years working in the same company registered in the category of dissatisfied.

This would support the idea that it is the fact of occupying an executive post which produces the conditions for feeling satisfied. Interestingly, the above does not concur with the results of a study in which personal characteristics were related to job satisfaction, where it was found that older people and people with more professional experience were more likely to be satisfied with their jobs (Schultz, 1991). In the study reported herein, the four groups comprising: subjects less than 35 years of age, 35 years of age or above, less than 5 years working in the company, and 5 years or more working in the company, all registered equally dissatisfied (Table 3).

On the other hand, three (A, B and D) of the four organizations under study engaged in construction projects presented groups of dissatisfied professionals, whereas the two organizations dedicated to external supervision (E and F) presented satisfied groups. The above appears to suggest that, for construction professionals, supervising work is more satisfying than managing the execution of a construction project. In both cases the satisfaction of achieving the materialization of tangible project which will endure and fulfill a need is shared, and their salaries are generally on the same level.

In contrast, the group of professionals responsible for the execution of the work (employees of the construction companies) not only have greater responsibilities, but also have to carry out multiple tasks simultaneously, have a longer more strenuous work day, are exposed to greater risks in the performance of their job, have less job stability, and are generally subjected to greater levels of professional stress. All of the above could explain the difference in the satisfaction levels of both types of jobs.

Finally, it can be said that it is not common for organizations engaged in construction to appear in the lists of the most important business in which everyone wants to work. In this

aspect, Mexico is no exception; in a report titled *The Super Companies 2014*, in which the ranking of companies with the best human resource management practices in Mexico was published, not one company from the construction sector was included in the list of 146 (CNN, 2014). Despite the peculiarities which distinguish it from other industries, there can be no doubt that the construction industry could take advantage of the successes achieved in other industrial areas to enrich its human resource management.

## Conclusions

The construction of projects is an activity which provides satisfaction, given the creative nature of the work. From the cases studied, we can affirm that construction organizations do not provide job environments that have a positive influence on the performance of the professionals. The salary levels of construction professionals are unsatisfactory. The groups of professionals who expressed satisfaction in their job were comprised of executives and those involved in supervision.

In construction organizations there is much room for improvement in human resource management, making it more professional through the application of management theories and by taking advantage of the experience of other industrial sectors which have been able to advance more in this aspect. This work provides, as a tool for future research, a table of percentiles that was calculated with data upon job satisfaction of engineers and architects. Those professionals were working at the operational level in organizations involved in the execution and supervision of construction projects.

The limitations of this study are: the sample consisted of only six organizations; the organizations were operating in the same region of Mexico (east); the evolution of the perception of the subjects over a period of time was not followed, therefore age comparison correspond to different subjects; there were not sufficient female subjects, hence it is not possible to conclude whether job satisfaction of professional women in the construction sector is different from that of men. However, findings could help to enhance human resources management in the construction sector, and provide better job environments for employees performing similar work.



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