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*Research Article*

**An Investigation of Factors Affecting Job Satisfaction  
among R&D Center Employees in Saudi Arabia**

**Author**

**Khalid I. Alshitri**

King Abdulaziz City for Science and Technology (KACST), Riyadh, Saudi Arabia

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## **Abstract**

This study explores the factors that affect overall job satisfaction and intentions to stay among 432 employees in public research and development (R&D) center in Saudi Arabia. Five organizational characteristics variables: pay, promotion, supervision, coworkers, and nature of work, were considered as antecedents to overall job satisfaction and intentions to stay. Results show that pay has direct effect on overall job satisfaction and indirect effect on intentions to stay through overall job satisfaction; promotion has direct effect on overall job satisfaction; and supervision, co-workers, and nature of work have direct effects on both overall job satisfaction and intentions to stay among R&D center employees. Implications for R&D center management and future research are discussed.

**Keywords:** Job satisfaction, intentions to stay, R&D, Saudi Arabia.

## **Introduction**

Increased attention has been paid to employees' attitudes in the management literature. Employees' attitudes such as job satisfaction and organizational commitment are associated with many important behaviors and outcomes for employees that have implication for organizational and personal well-being (Spector 1985; Meyer et al. 2002). Several studies indicate that satisfied and committed employees represent value to an organization and that they are the most important drivers of continuous improvement in most total quality management (TQM) literature (Deming 1986; Flynn et al. 1994). Satisfied and committed employees are more likely to deliver better products and services, which results in better outcomes and higher

customer satisfaction and loyalty (Eskildsen and Dahlggaard 2000).

The need for increased research on human resource management issues with respect to high skilled employees (e.g. IT professionals, engineers, scientists) has been emphasized in a number of previous studies (e.g. (Baroudi 1985; Iqbaria and Siegel 1992; Iqbaria and Guimaraes 1993; AlAbdul-Gader 1999; Kochanski and Ledford 2001; Lazar 2001; Alshitri 2008; Chang et al. 2008; Alshitri 2013; Alshitri and Abanumy 2013)). The importance of obtaining a better understanding of the factors related to recruitment, development, and retention of this group of employees is further underscored by the high demand, short supply, rising personnel costs, and high rates of turnover among this group of employees. The high turnover rate of high skilled

employees is equally prevalent in Saudi Arabia (Alshitri 2013). In their study of 250 organizations in Saudi Arabia covering over 219,000 jobs, (HayGroup 2010) reports that the average employees' turnover rate for 2010 was 10%. Furthermore, the skills shortage, particularly for engineering and technical jobs will be worse due to some government regulations (e.g. tightened emigration policies and higher Saudisation quotas enforced on organizations). Therefore, the need to retain skilled employees in Saudi Arabia is of perhaps even greater importance than elsewhere.

The increased demand for highly skilled professionals and the rapid changes being made in science, technology, and innovation imply that the skills shortage is unlikely to improve. Indeed, (HayGroup 2010) argued that there is a need for 200,000 new

jobs every year in Saudi Arabia, making the ability to attract and retain skilled professionals even more important over the next years. The shortage will be exacerbated as a result of the high price of oil, investment in several big projects, development of economic zones, and growing economic liberalization. It is becoming increasingly important, therefore, for general management and human resources professionals in Saudi Arabia to understand the reasons behind the turnover. To the extent that specific aspects of jobs held by these skilled professionals contribute to high levels of turnover, and are within the control of the general management and human resources professionals, retention levels (e.g. job satisfaction and organizational commitment) could be increased through appropriate actions by management designed to minimize these problems.

The effects of organizational characteristics variables (pay, promotion, supervision, co-workers, and nature of work) on both job satisfaction and intentions to stay have been addressed by several studies in various countries as well as industries (Herzberg et al. 1959; Spector 1985; Igarria and Guimaraes 1993; Igarria et al. 1994; Tutuncu and Kozak 2007). One would hope that much of the findings will be applicable to R&D centers personnel. However, there is considerable evidence that R&D centers personnel differ from other employees on a number of values, attitudes, and motivational factors. It has been noted that R&D professionals have a value system which emphasizes independence, freedom, and autonomy to make decisions concerning their work (Clarke 2002). In addition, it has been reported that, R&D professionals have low levels of attachment to their employing organization (Chang et al. 2008). There is also

evidence that R&D professionals generally respond more positively to intrinsic forms of reward and recognition such as praise and feedback from their peers (Clarke 2002). These findings have major implications for the management of R&D centers and further highlight the need to examine the impact of organizational characteristics on job satisfaction and intentions to stay among R&D center employees. However, despite the great importance of the topic, a survey of the literature indicates that management research, for the most part, deals with the manufacturing and service sectors and lacks R&D focus.

The study examines whether the kinds of antecedents and consequences of job satisfaction reported in the literature are also true for individuals in the R&D centers area in Saudi Arabia. Specifically, three related research questions are addressed: (1)

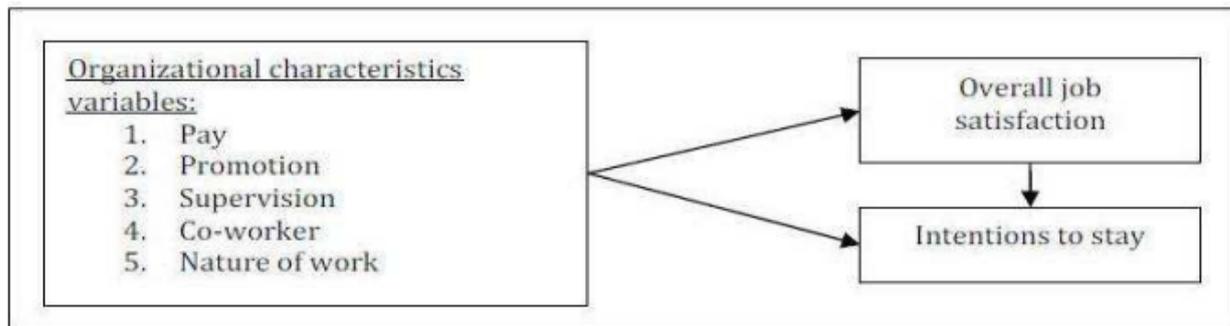
what is the impact of the five organizational characteristics variables (pay, promotion, supervision, co-workers, and nature of work) on overall job satisfaction?; (2) Do organizational characteristics variables (pay, promotion, supervision, co-workers, and nature of work) besides the overall job satisfaction effects R&D centers employees' intentions to stay with the organization? To the authors' knowledge, the present study is the first study that had attempted to examine the effects of organizational characteristics on job satisfaction and intentions to stay among public R&D centers in Saudi Arabia.

## **The Conceptual Framework and Research Hypotheses**

The effects of organizational characteristics variables (pay, promotion, supervision, co-workers, and nature of work) on both

job satisfaction and intentions to stay have been studied widely (Herzberg et al. 1959; Spector 1985; Igbaria and Guimaraes 1993; Igbaria et al. 1994; Tutuncu and Kozak 2007). The well-established relationship of organizational characteristics with job satisfaction clearly shows the need to understand the antecedents of job satisfaction. However, the multivariate linkages among these variables among R&D center employees have not received any attention in the management literature. Therefore, the present study sought to extend the previous findings by undertaking a more detailed analysis of the relationships between organizational characteristics variables and both job satisfaction and intentions to stay among R&D personnel.

Figure 1 presents the model of organizational characteristics variables and both job satisfaction and intentions to stay examined in this study. The model is comprised of three sets of variables: 1) five organizational characteristics variables (pay, promotion, supervision, co-workers, and nature of work); 2) job satisfaction; and 3) intentions to stay. The model in Figure 1 posits 1) that organizational characteristics variables will be directly related to job satisfaction and intentions to stay; 2) that the relationship of organizational characteristics variables to intention to stay will be mediated by job satisfaction; and 3) that the job satisfaction will affect and intention to stay among R&D center employees.



**Figure 1: The Research Framework**

Job satisfaction refers to “the pleasurable emotional state resulting from the appraisal of one’s job as achieving or facilitating the achievement of one’s job values” (Locke 1969). Job satisfaction thus, has to do with an individual’s perception and evaluation of his job, and this perception is influenced by the person’s unique circumstances like needs, values and

expectations. People will therefore evaluate their jobs on the basis of factors, which they regard as being important to them such as pay, promotion, supervision, co-workers, and nature of work.

Leading theorists such as Maslow (Maslow 1943) and Herzberg et al. (Herzberg et al. 1959) have emphasized the importance of the fulfillment of various needs of employees, which will determine their behavior in organizations. Maslow (Maslow 1943) introduced the hierarchy of needs which can be classified into one of five categories: physiological needs (e.g., food, water, air, shelter), safety and security needs (e.g. protection, stability), social needs (e.g. friendship and belonging), esteem needs (e.g. achievement), and self-actualization (e.g. self-fulfillment). He saw that physiological needs are the strongest, followed by safety and

security needs, social needs, esteem needs, and then self-actualization. According to Maslow, to make workers more motivated, these needs should be considered, and the more workers fulfill their needs the greater will be their satisfaction. Herzberg et al. (Herzberg et al. 1959) proposed the two-factor theory of job satisfaction. According to his theory, people are influenced by two sets of factors: motivator factors (intrinsic) and hygiene factors (extrinsic). Intrinsic factors involve mainly aspects of the job itself (e.g. achievement, recognition, work itself, responsibility, advancement, and growth). The presence of intrinsic factors produce job satisfaction, but their absence, does not lead to job dissatisfaction. On the other hand, extrinsic factors involve primarily the context in which the job was performed (e.g. company policy, supervision, relationship with boss, work conditions, salary, relationship with peers, and security). The

presence of these factors does not produce feelings of satisfaction, but their absence leads to job dissatisfaction.

The five organizational characteristics variables were reported to be positively associated with both job satisfaction and intentions to stay among employees in various countries as well as industries (Herzberg et al. 1959; Spector 1985; Igbaria and Guimaraes 1993; Igbaria et al. 1994; Tutuncu and Kozak 2007). Pay has been investigated by several researchers who have tried to explore its effects on job satisfaction (Weiss et al. 1967; Smith et al. 1969; Spector 1985). This attention was due to the old belief that to satisfy workers, one should pay them more (Judge et al. 2010). Herzberg et al. (Herzberg et al. 1959) considered the pay factor to be a 'hygiene factor' that prevents the employee from being satisfied. Previous studies show that pay is positively

related to overall job satisfaction and intentions to stay (Spector 1985; Igarria et al. 1994; Meyer et al. 2002; Tutuncu and Kozak 2007).

Promotions provide opportunities for personal growth, more responsibilities, and increased social status. Job satisfaction is likely to be experienced by individuals who perceive promotional opportunities to be fair (Weiss et al. 1967; Smith et al. 1969; Spector 1985). Previous studies show that perceived promotion opportunities is positively related to overall job satisfaction and intentions to stay (Igarria and Greenhaus 1992). An immediate supervisor's behavior is also a determinant of job satisfaction (Weiss et al. 1967; Smith et al. 1969; Spector 1985). Employee job satisfaction increases when the immediate supervisor is understanding, friendly, offers praise for good performance,

listens to employees' opinions and shows personal interest in them.

The factor of relationship with co-workers reflects the extent to which members of an individual's workgroup are perceived to be socially supportive and competent in their own tasks (Weiss et al. 1967; Smith et al. 1969; Spector 1985). According to (Ghazzawi 2008), an employee's coworkers, the groups they belong to, and the culture to which an individual is exposed all have the potential to influence job satisfaction. The nature of the job performed by employees has a significant impact on the level of job satisfaction (Weiss et al. 1967; Smith et al. 1969; Spector 1985). It was suggested that if the organization provides technical professionals the opportunity to engage in challenging and exciting jobs, they will be more involved and satisfied in their

organizations, more committed to their organizations, and finally, less likely to leave (Igarria 1991; Igarria and Guimaraes 1993; Igarria et al. 1994; Tutuncu and Kozak 2007).

## **Methodology and Results**

### ***Sample and Procedure***

The data for this study was primarily collected through a structured questionnaire hosted on the web where respondents answered research questions online. Online questionnaires have their valuable advantages which include: the possibility of a large and geographically dispersed sample size and the low likelihood of contamination or distortion of respondent's answer. In addition, using this approach provides the opportunity to

conduct surveys more efficiently and effectively than the traditional means. The primary reason for the utilization of the internet was due to cost as well as time saving. The questionnaire was distributed online using gmail.com web tools, which send personalized email invitations to 137 employees. Respondents were given 7 days to complete the questionnaire. The completion of the electronic questionnaires was personally administered and anonymously handled. After all the responses had been collected, they were carefully reviewed and verified. The survey was conducted in January 2013. All instructions and questions were translated from English into Arabic in order to help all participants understand easily these surveys. The survey instrument was pilot tested among 5 employees. The pilot results were used to improve the clarity and readability of questions.

## ***Measures***

Organizational characteristics – In this study, one item from each of the pay, promotion, supervision, coworkers, and nature of work subscales of the job satisfaction survey (JSS) developed by (Spector 1985) was chosen. The JSS was used because of their high degree of validity and reliability, and their applicability in both public and private sectors (Spector 1985). The items were chosen to fit best the characteristics of public R&D center employees in Saudi Arabia based on the literature review, a similar approach to that used in a previous studies (Deconinck and Bachmann 2007; Hsu 2009). For each item, respondents were asked to indicate the extents of their personal agreement using a 6-point Likert-type scale ranging from (1) strongly

disagree to (6) strongly agree. The items selected are shown in Table 1.

***Job Satisfaction*** - Respondents' overall job satisfaction was assessed by a single item: overall, I am satisfied with my job. Respondents were asked to indicate the extents of their personal agreement using a 5-point Likert-type scale ranging from (1) strongly disagree to (6) strongly agree. The item was scored such that high scores reflect stronger overall job satisfaction.

***Intention to Stay*** - Respondents' intentions to stay with the organization was assessed by a single item: I would be very happy to spend the rest of my career with this organization. Respondents were asked to indicate the extents of their personal agreement using a 5-point Likert-type scale ranging

from (1) strongly disagree to (5) strongly agree. The item was scored such that high scores reflect stronger intentions to stay with the organization.

**Table 1: Variables and Items Used in This Study**

<b>Variables</b>	<b>Item</b>
<i>Organizational characteristics:</i>	
1. Pay	I feel I am being paid a fair amount for the work I do
2. Promotion	I am satisfied with my chances for promotion
3. Supervision	My supervisor is quite competent in doing his/her job
4. Coworkers	I enjoy my coworkers
5. Nature of Work	I like doing the things I do at work
Overall job satisfaction	Overall, I am satisfied with my job
Intentions to stay	I would be very happy to spend the rest of my career with this organization

## ***Data Analysis***

The data obtained were analyzed using SPSS for Windows 20.0 program. Descriptive and inferential statistics were used to analyze the data. Pearson-product moment correlations, multiple regression, and hierarchical multiple regression analysis were performed to test the research hypothesis. The correlation was used to measure the strength of the relationship between the study variables. A cut-off point of  $p < 0.05$  was considered to indicate whether the relationship between the two factors is 'statistically significant'. A practical effect size of  $r$  as ( $< +/- 0.20$  weak,  $< +/- 0.35$  moderate,  $< +/- 0.6$  strong, and  $\geq +/- 0.8$  very strong) was also considered for the correlation analysis to interpret the practical significance of the findings (Hair et al. 2006).

Multiple regression (Cohen et al. 2000) was performed to assess the incremental contribution of each of the predictors to the prediction of job satisfaction and intentions to stay. The usefulness of a predictor variable in explaining variance in the dependent variable is determined by the increment in the squared multiple correlation coefficient ( $R^2$ ) that occurs when a given variable is added to the regression equation. The F-test was used to test whether there was a significant regression ( $p \leq 0.05$ ) between the independent and dependent variables. Finally, Hierarchical multiple regression (Cohen and Cohen 1983) was also used to see if there is support for the proposed model. This method involves running multiple regressions to assess the direct and indirect effects of the independent variables on each dependent variable. First, job satisfaction was initially regressed on organizational characteristics variables: pay, promotion,

supervision, co-workers, and nature of work. In a similar manner, an intention to stay was regressed on organizational characteristics variables: pay, promotion, supervision, co-workers, and nature of work (step 1), then job satisfaction was added (step 2). Changes in the beta weights as variables examined to allow for the reporting of total, direct, and indirect effects. The initial beta weight when variable first enters a regression analysis represents the total effect of the independent variable on the dependent variable. The beta weight after all of the independent variables have entered the analysis, represents the direct effect of the variable. The difference between the total effect and the direct effect reflects the indirect effect of the variable on the dependent variable.

## Results

Table 2 presents the means, standard deviations, and correlations among the variables examined in this study. The correlation matrix reveals that there are statistically significant moderate positive relationships between the organizational characteristics variables: pay, promotion, supervision, coworkers, and nature of work and the job satisfaction. Similarly, there is a statistically significant weak to moderate positive relationship between organizational characteristics variables and the intentions to stay. Finally, there is a statistically significant moderate positive relationship between job satisfaction and intentions to stay.

**Table 2: Correlations among the Study Variables (N = 432)**

Variable	Mean	S.D.	1	2	3	4	5	6	7
1. Pay	3.56	1.58	1						
2. Promotion	3.45	1.60	.439**	1					
3. Supervision	4.30	1.61	.211**	.271**	1				
4. Co-workers	4.60	1.34	.170**	.321**	.456**	1			
5. Nature of work	4.38	1.50	.037	.244**	.368**	.567**	1		
6. Overall job satisfaction	3.71	1.36	.417**	.454**	.509**	.568**	.504**	1	
7. Intentions to stay	3.36	1.35	.214**	.263**	.440**	.473**	.451**	.524**	1

\*.  $p \leq .05$ ; \*\*.  $p \leq .01$

Table 3 presents the results of the hierarchical multiple regression analysis testing the proposed model. The data shows that the organizational characteristics variables explained 54.3% ( $p \leq .001$ ) of the variance in the overall job satisfaction. It also shows that all organizational characteristics variables had significant effects on overall job satisfaction. The

strongest direct effects are noted for pay ( $\beta = .257, p \leq .001$ ) and nature of work ( $\beta = .243, p \leq .001$ ). A smaller but a significant direct effect is observed for co-workers ( $\beta = .242, p \leq .001$ ), supervision ( $\beta = .215, p \leq .001$ ), and promotion ( $\beta = .146, p \leq .001$ ).

**Table 3: Predictors of Overall Job Satisfaction and Intentions to Stay (N = 432)**

Predictors	Overall job satisfaction		Intentions to stay			
	Direct	$\Delta R^2$	Direct	Indirect	Total	$\Delta R^2$
<i>Organizational characteristics:</i>	-	.543***	-	-	-	.337***
Pay	.257***	-	.048	.062	.110*	-
Promotion	.146***	-	-.008	.036	.028	-
Supervision	.215***	-	.174***	.052	.226***	-
Co-workers	.242***	-	.147**	.059	.206***	-
Nature of work	.243***	-	.181***	.059	.240***	-
Overall job satisfaction	-	-	.244***	0	.244***	.027***
Total R <sup>2</sup>	-	.543***	-	-	-	.364***

\*.  $p \leq .05$ ; \*\*.  $p \leq .01$ ; \*\*\*.  $p \leq .001$

Table 3 also shows that organizational characteristics variables and the overall job satisfaction explained 36.4 percent of the variance of the intention to stay. Four variables: overall job satisfaction ( $\beta = .244, p \leq .001$ ), nature of work ( $\beta = .181, p \leq .001$ ), supervision ( $\beta = .174, p \leq .001$ ), co-workers ( $\beta = .147, p \leq .01$ ) had significant direct effects on intention to stay. Note that pay ( $\beta = .110, p \leq .05$ ) had a sizable indirect effect on intentions to stay through their effects on overall satisfaction, as shown in Table 3.

## **Discussion and Implications**

The results from this study indicate that job satisfaction among R&D center employees is the product of complex linkages among organizational variables (pay, promotion, supervision,

coworkers, and nature of the work). These variables are considered to be the antecedent variables for predicting job satisfaction and, in turn, intentions to stay with the organization (the outcomes variables) among R&D center employees.

The results of this study confirm Spector's (Spector 1985) findings concerning the efficacy of overall job satisfaction in predicting intentions to stay with the organization. The observed impact of job satisfaction on intentions to stay carries a rather straightforward important implication. Given the strong effect of job satisfaction on intentions to stay, R&D managers should carefully consider doing whatever is possible to measure, monitor, and control employee job satisfaction and its determinants.

Pay and promotion have direct effects on overall job satisfaction among R&D center employees. Pay also has indirect effect on intentions to stay with the organization through overall job satisfaction; while promotion doesn't. This may suggest that employees may be concerned about tangible benefit such as salary than intangible rewards and promotion. This result is inconsistent with (Clarke 2002) finding, in that he suggest R&D center employees generally respond more positively to intrinsic forms of reward and recognition such as praise and feedback from their peers.

The data also indicate that, supervision, is one of the main motivators for overall job satisfaction and intentions to stay among R&D center employees. The results of this study support the notion that if the immediate supervisor is competent and

knowledgeable, the R&D center employees will be more satisfied with their jobs, more emotionally attachment to the organization, and more likely to stay. Co-worker is also one of the main motivators for overall job satisfaction and intentions to stay among R&D center employees. The results of this study support the notion that if the coworkers are friendly and supportive, the R&D center employees will be also more satisfied with their jobs and more committed to the organization. Nature of work is also one of the main motivators for overall job satisfaction and intentions to stay among R&D center employees.

The results of this study support the notion that if the job provides autonomy and challenge, the R&D center employees will be more satisfied with their jobs, more emotionally attachment to the organization, and more likely to stay. These findings call R&D

managers' attention to four imperatives: (1) improve knowledge, skills, and capabilities of all employees; (2) reward and recognize in a way that motivates people; (3) create a culture of employees' alignment, involvement, teamwork, and empowerment; and (4) provide ongoing support and direction for the employees of the organization.

## **Conclusion**

The study reports an exploratory investigation of the relationship between five organizational characteristics variables (pay, promotion, supervision, co-workers, and nature of work) and both overall job satisfaction and intentions to stay within public R&D center in Saudi Arabia. All organizational characteristics variables have direct effects on overall job satisfaction, but only

three variables have direct effects on the intentions to stay with the organization.

Last, some words of caution and an invitation for further research. This study, nevertheless, has its limitations which suggest some directions for possible extensions in the future. First, the study is based solely on data from one public R&D center in Saudi Arabia. Additional research, using a wider and a larger sample of R&D centers' employees than those represented in the present convenience sample, is necessary in order to confirm the generalizability of the findings to a larger population of R&D employees. Future research should also focus on other employees in order to determine the extent to which specific antecedents and consequences of job satisfaction are unique to R&D populations. Second, the statistical significance of study

results, however, needs to be interpreted carefully because variables have been operationalized based on employee perceptions. In any case, the results need to be examined and replicated with externally based measures of organizational characteristics, in light of the increasing interest on the nature and strength of these relationships. Finally, future models should also include role stress variables and job characteristics. Nevertheless, the present model provides important insights into the role of five organizational characteristics variables (pay, promotion, supervision, co-workers, and nature of work) in influencing job satisfaction and intention to stay among R&D center employees.

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