

The Impact of Organization Culture on Satisfaction of Engineers in Technology

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Abstract

In today's technological workplace with the shortage of qualified knowledge workers, the factors that lead to job satisfaction have increasing importance. Several past studies have indicated that knowledge worker job satisfaction increases when Herzberg motivators are present. Other research has indicated that job satisfaction improves as the degree of organic organizational culture increases. After examining the factors that led to knowledge worker job satisfaction, the current study was undertaken.

Knowledge workers in varying organizational cultures were surveyed in an effort to determine if there is a relationship between the degree of knowledge worker job satisfaction and the measure of organic organization culture. Two survey instruments, the Organizational Cultural Assessment (OCA) developed by Riegle (Riegle, 1999), and the Minnesota Satisfaction Questionnaire (MSQ) (Weiss, 1977), were utilized. The OCA delineates degree of organic culture present whereas the MSQ measures job satisfaction. Results of both surveys were statistically analyzed to determine if knowledge workers experience higher satisfaction levels in organic organizational cultures.

Once data was analyzed and the hypothesis proven, this could lead companies to move toward an organic culture with emphasis on motivators in an effort to make their organizational culture more conducive to higher employee retention. Through understanding the factors that lead to increased job satisfaction, corporate resources could more efficiently be utilized.

A total of eight high technology workplaces were surveyed. Five of the eight workplaces yielded statistically significant positive correlation between a positive organizational culture and increased job satisfaction. These initial results indicate the connection between culture and job satisfaction. The relationship will be further analyzed through future surveys of numerous high technology workplaces.

Introduction

In today's technological workplace, the factors that lead to job satisfaction have increasing importance. With the shortage of qualified knowledge workers in the current marketplace, keeping workers satisfied takes on increasing importance. In considering what job factors lead to satisfaction, Frederick Herzberg is one of the most prominent researchers. Other researchers whose studies agree with Herzberg are Schwartz, Rothe, and Wernimont (Schwartz, 1963), (Rothe, 1968), (Wernimont, 1966). Most studies conducted with a free choice instrument involving job satisfaction show similar results as Herzberg.

According to Herzberg, workers achieve job satisfaction when "motivators" are present and effective while "hygienes" are minimized. Herzberg considers achievement, recognition, the work itself, responsibility, and opportunity for advancement as "motivators." If these are present and effective, the employee will experience a higher level of job satisfaction than if these elements are missing. A culture focused on Herzberg motivators is termed organic and is likely to lead to higher levels of job satisfaction. On the other hand, company policy, relationship with supervisor, relationship with peers, salary, and working conditions are all considered "hygienes." If these hygiene elements are present and effective, they do not necessarily lead to job satisfaction but if they are absent from the workplace or viewed as negative, they can lead to job dissatisfaction (Herzberg, 1959). A culture focused on hygienes is termed mechanistic and is likely to lead to lower levels of job satisfaction. Burns and Stalker defined organic properties of organizations to be critical to the success of organizations in a changing environment. Organizations in a stable environment frequently use mechanistic structures. "Organic" and "mechanistic" correlate with Herzberg's "motivators" and "hygienes." An organic organization is one characterized by few rules and regulations, an abundance of horizontal communication, and a non-rigid chain of command (Burns, Stalker, 1961). In this culture, motivators such as recognition, achievement, the job itself, and advancement are likely to be found and positively reinforced. A mechanistic organization is characterized as one made up of a rigid chain of command, a strict hierarchy of control, primarily vertical communication, and primarily vertical communication (Burns, Stalker, 1961). This culture focuses on hygienes such as company policy and administration, relations with supervisor and peers, and pay. All are management driven versus worker driven. Organic and mechanistic not only describe an organization's structure, they also relate to an

organization's culture. It may then be deduced that in knowledge worker dominated organizations, motivators that cause satisfaction, are characteristic of an organic culture.

While unemployment remains a steady 4%, indicating that employees can easily skip from job to job, one of the primary corporate goals has become employee retention (Hadelman, 2000). All factors involved in knowledge worker retention can be considered for analysis. One key factor in deciding whether to leave an organization or remain an employee is job satisfaction. If knowledge workers are satisfied with their current employment situation, they are less likely to seek employment elsewhere. In examining factors that lead to high job satisfaction, organizational culture must be considered a likely component to the job satisfaction equation.

Corporate culture and its impact on the organization has recently come under increased study. In an effort to understand corporate culture, it must be assessed. The penalty for not assessing and understanding corporate culture may affect a high technology business' bottom line. High technology culture can no longer be considered a "soft matter" (Bliss, 1999). A rapidly changing technological environment, a shortage of available trained knowledge workers, and an increasing workload are all demands in today's high technology workplace. In this environment, a company culture can either lead to satisfaction or lead a high technology worker to look for other employment opportunities. It becomes increasingly important to have a consistently strong, positive corporate culture. Through a strong positive culture, trust and communication with employees can be fostered. Through a strong positive corporate culture, clarity and a clear company vision can be transmitted to technology employees (Mallak, Kurstedt, 1996). By understanding what factors, such as organizational culture, lead to a knowledge worker's job satisfaction, retention rates in high technology corporations could be improved.

If knowledge workers truly respond in a positive way to an organizational culture that possesses the components of Herzberg's motivators, that organization could be assumed to be an organic organization. It follows that they would then be less satisfied in a hygiene dominated, mechanistic organization. Through the Organizational Cultural Assessment (OCA) instrument, a technology driven organization's culture can be assessed. This instrument rates the degree of organic qualities and the degree of mechanistic qualities present in an organization. The Minnesota Satisfaction Questionnaire (MSQ) was used to assess job satisfaction in technology driven organizations. Through an accurate assessment of a knowledge worker's current workplace organizational culture and through assessment of that worker's job satisfaction, a correlation can be made of what type of corporate culture leads to high knowledge worker satisfaction. This research will significantly contribute to the area of engineering management in technology driven organizations. It will assist in understanding the components of corporate culture that lead to job satisfaction, as well as, point out that primarily mechanistic, rule-based, corporate culture may ultimately be much less satisfying to engineers.

Literature

In order to assess an organization's culture, the OCA instrument will be utilized to determine the degree of organic measure or mechanistic measure of a particular culture. Descriptions of basic qualities of organic cultures can be found in Appendix A and mechanistic culture characteristics can be found in Appendix B. The MSQ will be utilized to assess overall job satisfaction. The following literature indicates that organic and mechanistic components can have a significant effect on job satisfaction.

Computerworld's Annual 1998 survey of computer-based workplaces indicates that information systems professionals feel that teamwork and organizational flexibility were key components to an employee's job satisfaction (Earls, 1998). The subsequent year's annual survey also indicates these to be key components to satisfaction as well. A worldwide survey of 1500 high technology professionals indicates that a particular area of workplace dissatisfaction is communication. The survey illustrates that downward communication is not a problem but lack of horizontal communication leads to dissatisfaction. A high technology employee's involvement in structuring work is also a prime requirement for job satisfaction (Reinemer, 1995). A 1998 study conducted through the University of Michigan's Business School including 1000 different technology oriented companies indicates that teaming and control of their job environment leads to worker satisfaction. It goes further to state that not only is employee satisfaction important on a personal basis but that satisfaction level is one of six identified key components of a company's overall performance (Juechter, 1998). Another information technology workplace survey of over 800 employees determined that empowered workers feel more satisfied in the workplace (Seglin, 1998). Nation's Business magazine conducted a study that found a rigid, authoritarian corporate

culture might initially translate to positive work output in the short-term but leads to long-term workplace dissatisfaction. It also indicates that allowing high technology employees to have increased responsibility and decision-making power leads to high job satisfaction levels (Barrier, 1997). Human Relations Journal conducted a study of 402 employees from 10 science-based firms and found that personal empowerment, flexible organizational structure, and organic structure along with trust are key components that lead to higher job satisfaction levels (Jones, 1996). Several other studies indicate that workers in larger organizations (greater than 500 people) are less satisfied than those in smaller organizations. Knowledge workers in all organizations said that flexibility in job structure leads to higher satisfaction levels (Oliver, 1998). All these studies indicate that the components that lead to a technology driven organizational employee's increased job satisfaction fall within the realm of Herzberg motivators which have been positively linked with Burns and Stalker's definition of the organic organization.

Methodology

Several high technology organizations were surveyed with both an OCA and MSQ instrument to determine what relationship exists between organization culture and job satisfaction. The surveys were distributed and collected by an organizational contact and then submitted for analysis and inclusion in this paper.

The OCA was chosen as the tool to measure organizational culture since this survey instrument was developed through incorporation of numerous cultural definitions and represents organizational culture on a continuum from mechanistic to organic. The OCA is broken down into five separate component areas to provide the overall OCA organizational culture score. Element 1(Language), Element 2(Artifacts/Symbols), Element 3(Patterns of Behavior), Element 4(Espoused Values), and Element 5(Beliefs/Underlying Assumptions) all combine to give the overall OCA score. The following OCA Scores delineate the type culture of the organization.

OCA 1-4.75 = Mechanistic Culture

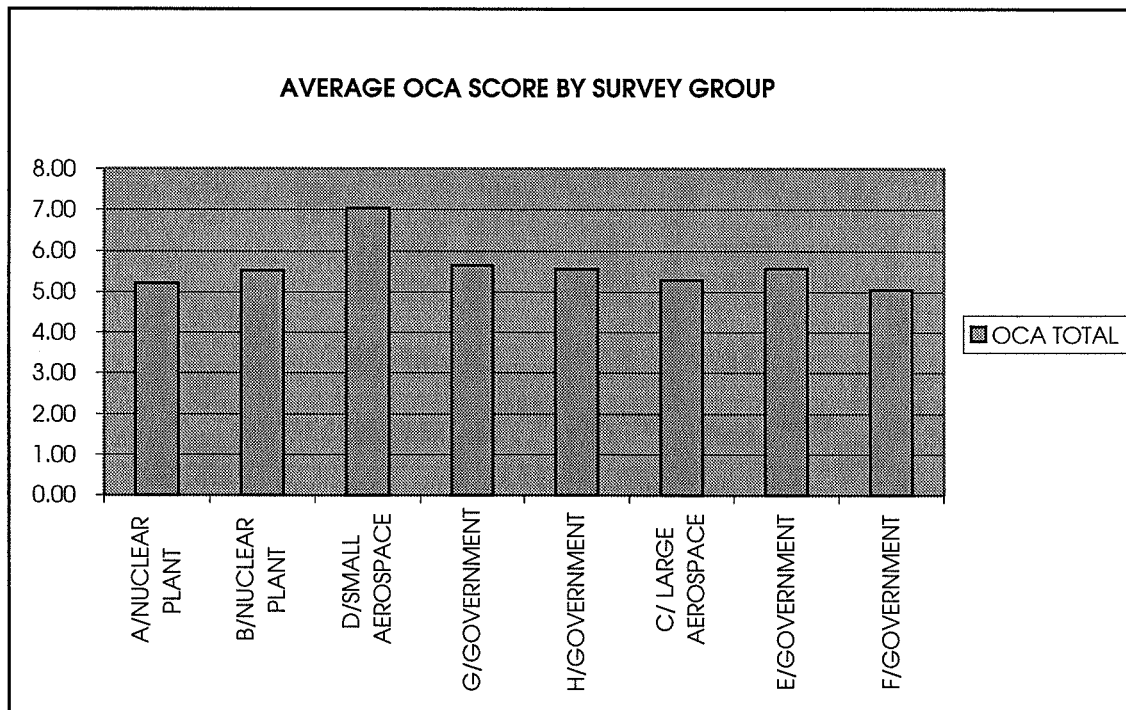
OCA 4.75-5.25 = Mechanistic-Organic Culture

OCA 5.25-5.75 = Organic-Mechanistic Culture

OCA 5.75-8 = Organic Culture

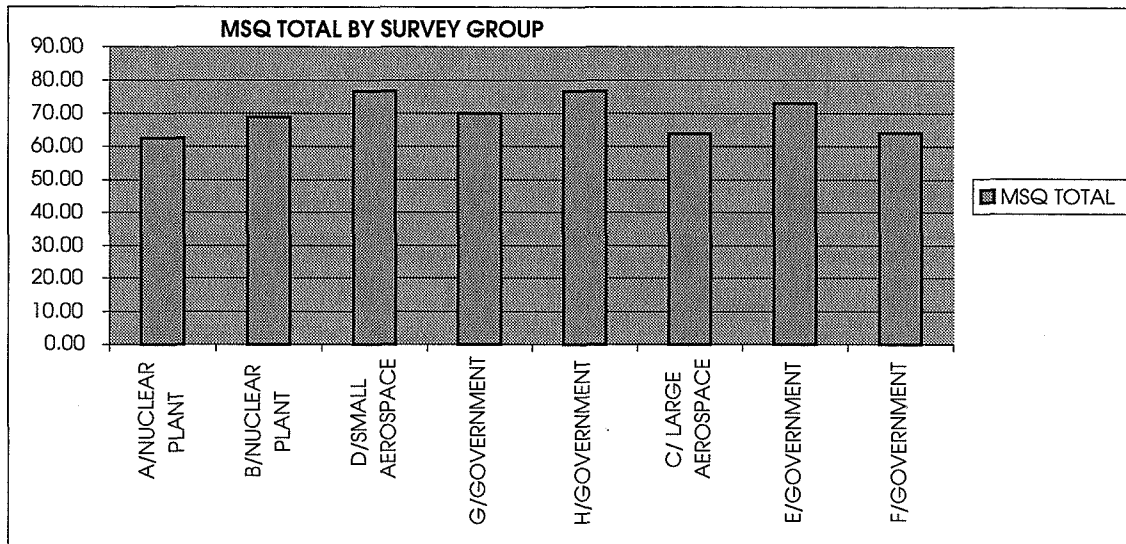
Exhibit 1 below illustrates the average OCA scores for each survey group.

Exhibit 1. Average OCA Score For Each Survey Group



The Minnesota Satisfaction Questionnaire (MSQ), developed by Weiss, was utilized to determine satisfaction levels of demographic groups within that organization. Seventy five percent of technology workers score an 85 on the MSQ.

Exhibit 2. Average MSQ Score For Each Survey Group



Hypothesis

Null Hypothesis

There is no relationship between the degree of knowledge worker job satisfaction and the measure of organic organization culture

Hypothesis 1

There is a positive correlation between the degree of knowledge worker job satisfaction and the measure of organic organization culture

Analysis

Regression analysis was utilized to examine the relationship between overall job satisfaction and a positive organizational culture. The overall job satisfaction was determined through summing both the intrinsic job satisfaction and extrinsic job satisfaction. This is known as the overall job satisfaction score, as determined by the MSQ. The total OCA score is used to determine the measure of an organization's culture. The total OCA score is comprised of five sections corresponding to the five elements of culture. Each survey respondent completed both an OCA and an MSQ. Each dataset was analyzed for significance of correlation between the OCA and the MSQ. Several companies were surveyed.

Two nuclear plants, one small aerospace firm, and two large government agencies were studied for determination of the way organizational culture affects job satisfaction. A total of eight high technology organizations were surveyed. Several of these organizations were unable to complete enough surveys to make the data statistically valid. All of the statistically insignificant organizations had sample sizes no greater than sixteen. For this reason, only those organizations surveyed with larger sample sizes were considered in this analysis.

The independent variable of organization culture was examined with respect to the overall MSQ, the dependent variable of overall job satisfaction. In the majority of the organizations surveyed, a statistically significant positive correlation exists between the overall job satisfaction score and organizational culture. Three of the organizations surveyed yielded insignificant results. Upon examination, it was determined that the three organizations yielding insignificant results had very small data sets. For the purposes of this paper, those organizations with very small data sets were excluded from further analysis. The results are as follows.

Nuclear Agency (A)

Twenty technical employees were surveyed. Results indicated that overall organizational culture had a significant effect in increasing overall job satisfaction with 95% confidence.

Predictor	Coef	StDev	T	P	
Constant	26.66		17.05	1.56	0.135
AOCATotal	6.959		3.285	2.12	0.048
OCA Total=5.21 MSQ Total=62.5					

Nuclear Agency (B)

Thirty technical employees were surveyed. Results indicated that overall organizational culture had a significant effect in increasing overall job satisfaction with 99% confidence.

Predictor	Coef	StDev	T	P	
Constant	25.437		8.596	2.96	0.006
BOCATotal	7.933		1.542	5.14	0
OCA Total=5.51 MSQ Total=68.93					

Small Aerospace (D)

Twenty employees were surveyed. Results indicated that overall organizational culture had a significant effect in increasing overall job satisfaction with 99% confidence.

Predictor	Coef	StDev	T	P	
Constant	-18.79		20.82	-0.9	0.379
DOCATotal	13.042		2.99	4.36	0
OCA Total=7.03 MSQ Total=76.85					

Government (G)

Nineteen employees were surveyed. Results indicated that overall organizational culture had a significant effect in increasing overall job satisfaction with 99% confidence.

Predictor	Coef	StDev	T	P	
Constant	23.95		16.65	1.44	0.169
GOCATotal	8.215		2.922	2.81	0.012
OCA Total=5.65 MSQ Total=70.21					

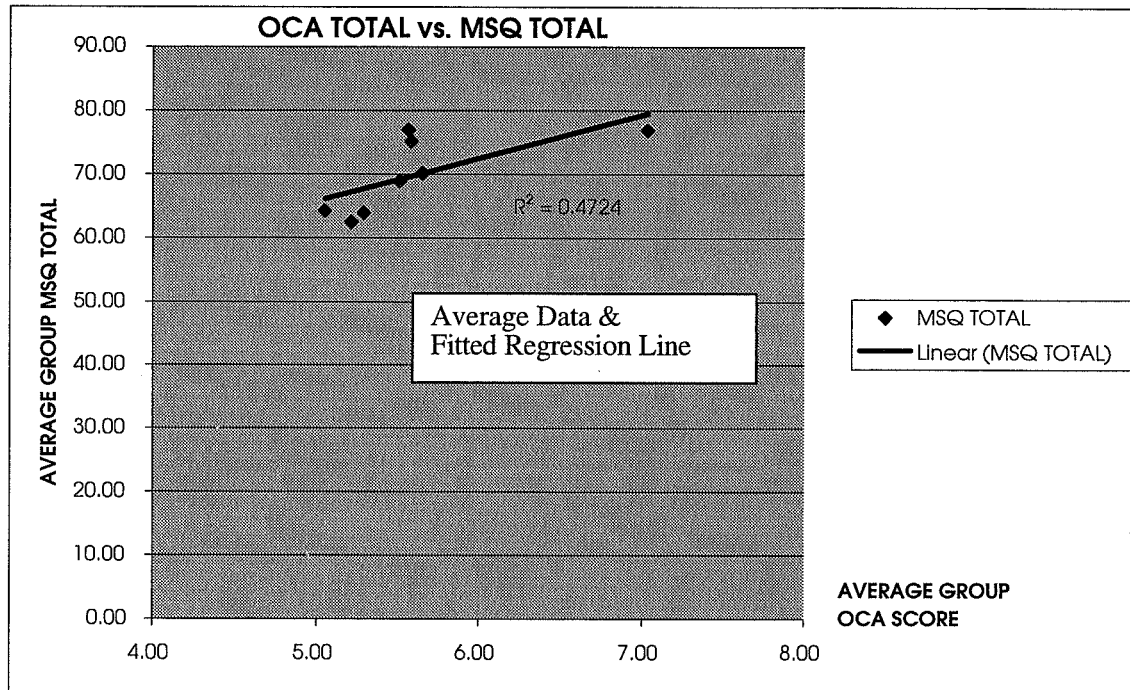
Group (H)

Twenty-nine employees were surveyed. Results indicated that overall organizational culture had a significant effect in increasing overall job satisfaction with 99% confidence.

Predictor	Coef	StDev	T	P	
Constant	33.902		9.961	3.4	0.002
HOCATotal	7.751		1.766	4.39	0
OCA Total=5.56 MSQ Total=76.93					

Exhibit 3 below illustrates that as overall OCA score increases, the corresponding overall MSQ score also increases. A high overall OCA score indicates a more organic culture and a high MSQ score indicates a high level of job satisfaction.

Exhibit 3.



The null hypothesis of no relationship between a more organic organizational culture and increased job satisfaction is rejected. Since a more organic organizational culture leads to increased job satisfaction, it is very important for companies to accurately assess their current organizational structure and determine what weak areas exist. Once the current culture is determined, management can determine what areas of focus will yield a more positive culture. Once a more positive culture is adopted, job satisfaction should increase. In conclusion, this study indicates that a positive, more organic organizational structure has a significant effect on positive job satisfaction scores as determined by the MSQ. (Appendix C) Other implications of these findings concern the routine inattention given to organizational culture. This is one positive, useful way organizational management can increase overall job retention and morale.

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