



# Expectations of employees toward the workplace and environmental satisfaction

Expectations of employees

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## Abstract

**Purpose** – The purpose of this paper is to prove the linkage between environmental satisfaction and work outcomes; to investigate how employees perceive characteristics of their physical environment and what they expect of their workplace; and to consider the usefulness of gap approach in measuring employees' expectations.

**Design/methodology/approach** – A questionnaire measuring workplace characteristics was developed. The questionnaire design is based on the propositions of SERVQUAL. The employee population used in this study was limited to office workers in manufacturing headquarter facilities or office settings in Michigan, USA. Of the 409 completed questionnaires, 384 were analyzed for this study.

**Findings** – Satisfaction with the workplace was positively associated with job satisfaction. Using linear regression analysis, no significant difference was found between perception-based measures and gap measures for explaining work environment satisfaction. However, results propose that physical environmental status below expectation levels leads to dissatisfaction, but exceeding expectation levels does not increase satisfaction levels.

**Research limitations/implications** – The items used in this study regarding physical environmental characteristics are not exclusive enough to concisely encompass workplace characteristics. Future studies need to develop a more sophisticated measure.

**Practical implications** – The results from the gap model highlighted which aspects of the workplace employees would like to see improved. The gap measurement is effective for use in managerial decisions to improve and diagnose physical environmental features.

**Originality/value** – This study explored both perception and expectation levels of employees of the workplace in relation to satisfaction with workplace.

**Keywords** Employee attitudes, Conditions of employment, Job satisfaction, Workplace, SERVQUAL, United States of America

**Paper type** Research paper

## 1. Introduction

In the workplace, it is often assumed that employees who are more satisfied with the physical environment are more likely to produce better work outcomes. User satisfaction is recognized as an important factor in the success of an organization and is regarded as a key indicator of performance. This is based on the rationale that higher levels of satisfaction improve morale and reduce voluntary turnover (Dole and Schroeder, 2001). Customer satisfaction surveys are considered to be an important means to improving performance (Varady and Carrozza, 2000). Carlopio (1996) found that employees' satisfaction with their work environment is directly related to their job satisfaction and indirectly related to organizational commitment and turnover intention. Investigators have demonstrated that the physical environmental quality



affects job perception, attitudes, and job satisfaction (Zalesny *et al.*, 1985; Ferguson and Weisman, 1986; Oldham and Fried, 1987; Sundstrom *et al.*, 1994; Carlopio, 1996; Leather *et al.*, 2003; Lee and Brand, 2005). Research of employees' appraisal of and satisfaction with their physical work environment should provide an understanding of the linkage between objective properties, subjective attributes and work outcomes. From a user's perspective, satisfaction is related to confirmation or disconfirmation of expectation. This study explored the differences between employees' perception of environmental features and the attributes employees expect, based on the propositions of SERVQUAL (Parasuraman *et al.*, 1988) versus SERVPERF (Cronin and Taylor, 1992).

The purpose of the present study was not only to prove the linkage between environmental satisfaction and work outcomes, but also to investigate how employees perceived physical environmental characteristics and what they expected about their workplace. Thus, the primary focus of this study was to investigate what kind of aspects contribute to physical work environment satisfaction based on employees' perceptions and expectations.

## **2. Gaps between perceptions and expectations within a physical milieu**

Many environmental satisfaction studies attempt either to determine the importance of various properties or components which form part of a user's environmental satisfaction/dissatisfaction, or to specify more complex relationships between people and the environment. For instance, attitudes and socio-demographic variables influence evaluative hierarchies of environmental aspects, thus contributing to the relationship between the persons and the environment (Bonnes and Secchiaroli, 1995; Varady and Carrossa, 2000).

In the majority of perception-based studies investigating satisfaction with the physical environment, researchers directly ask questions such as "all things considered, how satisfied are you with your primary workplace?" without asking about opinions or expectations toward workplaces (Marans and Spreckelmeyer, 1982; Marans and Yan, 1989; Lantrip, 1993; Spreckelmeyer, 1993; Sundstrom *et al.*, 1994). Unless people indicate severely low satisfaction levels, it is hard to provide specific managerial direction from the results. For instance, in the Pugsley and Haynes' (2002) study, the mean satisfaction with storage is below that of office design (68 percent), and the mean satisfaction level of flat screen PC monitors is much higher than the mean level of ICT (61 percent). How should a reader interpret this? Does the higher satisfaction level mean no action is required, or should more flat screen monitors be provided because people are satisfied with that type of monitor? In Carlopio and Gardner's (1992) study, satisfaction with the work environment in general, satisfaction with the work site, and satisfaction with health and safety were, respectively, 3.72, 3.47, and 3.65 (1: very dissatisfied to 5: very satisfied). It is hard to get specific direction from these results.

Frequently, satisfaction results may be interpreted with the researcher's perspective rather than reflect the actual user's perspective. Varady and Carrozza (2000) also argued that structured questions tend to limit the kinds and the depth of questions, and results from satisfaction surveys are likely to have a number of different interpretations. They emphasized that simple results from a satisfaction survey would be of no use unless the data would be compared to the results in other times,

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locations, or subgroups. Therefore, it would be useful to compare the present features perceived by employees with users' expected features.

Environmental evaluation is redefined as a function of the "congruence" people perceive between their own needs and aims and the opportunities offered by their environment rather than as a response directly attributed to the objective properties of the latter (Bonnes and Secchiaroli, 1995).

In a similar context, researchers have investigated incongruence between what users' environment is and what their environment should be in order to fulfill the required function of people's needs. Szigeti and Davis (2002) developed a building evaluation form (ASTM standards on Whole Building Functionality and Serviceability), which incorporates customer satisfaction needs and customer functional needs. "Functionality" is defined according to the levels of functionality and service of a facility from stakeholders' views. Serviceability is rated according to the levels of capability. By comparing supply aspects (serviceability) with demand aspects (required functionality), people can easily assess the building performance or capability and specify which aspects should be improved. These results provide specific managerial information to managers so that shortfall aspects can be changed to save later costs.

Brackertz and Kenley (2003) developed a facilities management tool to measure service performance in government facilities. With this tool, people can score on a Likert-type scale for functional requirement (1: not needed to 5: essential) and actual performance (1: does not meet to 5: exceeds). In Brackertz and Kenley's (2003) study, the functional requirement and the actual performance scales were independent. However, the study was also designed to reveal differences between present performance and required performance of facilities or buildings.

Performance of physical environment has been defined as the difference between the needs of users and their current diagnosis of their environment. Lantrip (1993) measured perceived differences between what is needed by an inhabitant and what is provided by his or her environment by examining the effects of constraints on human movement on productivity in an office environment. In Lantrip's (1993) study, various methods such as video records, questionnaires, and analysis of floor plans were employed to measure actual spatial characteristics, environmental characteristics, and worker characteristics.

However, in these abovementioned approaches (Brackertz and Kenley, 2003; Szigeti and Davis, 2002), subjects who evaluated the present environmental quality and those who identified future environment quality requirements were different subjects. Because of a lack of perspective that users are "customers" in relation to the built environment, a large amount of research deals with perception but leaves out the expectations of users.

In marketing research, satisfaction is related to confirmation or disconfirmation of expectation (Smith and Houston, 1982; Parasuraman *et al.*, 1988). Parasuraman *et al.* (1985) developed "SERVQUAL" to measure customers' appraisal together with expectation of service quality. In SERVQUAL, perceived quality is represented by the difference in scores between perception rating and expectation rating. Some of the study's interesting propositions include "the quality that a consumer perceives in a service is a function of the magnitude and direction of the gap between expected service and perceived service" and "consumers typically rely on experience properties

when evaluating service quality.” Criticizing redundancy of SERVQUAL measure and propositions, Cronin and Taylor (1992) developed “SERVPERF,” which is a simple performance-based measures of service quality without expectations. If people have the highest or maximum level of expectation of every aspect, it may be worthless to ask how much they expect. In order to prove the redundancy of the “gap” approach of SERVQUAL, Cronin and Taylor examined the predictors of service quality using linear regression analysis and compared the number of predictors from both gap measures and perception measures, and regression models. They found that simple performance measurement appeared superior in terms of explaining variation, and it required less efforts for respondents since the questionnaire items were simple. Bolton and Drew (1991) initially proposed that service quality is affected by disconfirmation process, expectations and current performance, but found, however, that the effect of disconfirmation was transitory and current performance has strong effects on service quality.

In the service area, people can compare several service providers; then they might expect the highest ratings for each desirable aspect. Still, the findings raise some questions. If consumers have built a relationship with a certain type of service provider and have built up expectations over time, the results might be different from those who have not. Especially regarding the physical environment, users of the space have had cumulative experiences over longer periods. Although some desired quality in other workplace environments might be the norm, users may not expect the same quality from their own workplace. This is because users daily use and reside in their present employment environment, know some physical environmental limitations and other limitations, and expect desirable yet feasible potentials from their work environment. For instance, employees in offices have experiences and expectations based on their residency experiences in the physical environment. Other office environments can be the norm but employees rarely expect implausible features toward their work environment. However, this inquiry has been rarely explored in research related to the physical environmental features. Thus, it is valuable to investigate the gaps between perceived environmental features and expected environmental features by occupants.

This approach can tell whether accumulated experiences in an environmental setting affect expectations and appraisal of the environment. Measuring the gaps is especially useful in managerial application. People can easily define which aspects are less than the level of expectations and should be improved. In order to measure employees’ satisfaction of their workplace, it is useful to measure their expectations collectively. Therefore, the present study proposed the following hypotheses:

- H1.* Gap measures between perceived environmental features and expected environmental features are stronger predictors in explaining environment satisfaction and job satisfaction than perception-based measures.
- H2.* Satisfaction with physical environment is positively related to job satisfaction.

### **3. Method**

The employee population used in this study was limited to office workers in manufacturing headquarter facilities or office settings in Michigan, USA. After a pre-test, questionnaires were distributed to employees in participating companies

using written and web based questionnaires. Of the 409 completed questionnaires, 384 were analyzed for this study.

The building of Corporation “A” is a one-story building built in 1925. The original building was expanded while maintaining the original façade and entrance hall. “Building 1” of Corporation “B” consists of three stories; its basement is connected to that of the second building and other buildings in the complex. “Building 2” of Corporation “B” has four stories. Corporation “B” has recently replaced office furniture. Each floor had slightly different furniture and furniture arrangements. Corporation “C” is housed in a one story building, connected to its manufacturing areas. Other small office buildings are scattered around the building. Different from the other two buildings, private closed offices and open offices were provided together (Table I).

The average space size per occupant was 243, 112, 51, and 165 gross square footage per occupant, respectively, for each building in which participants resided. For headquarters or offices, the means of gross square footage per occupant were 399 and 456 based on the IFMA benchmarking report (IFMA, 1997). Thus, all buildings in this study had high space utilization rates. None of buildings provided local unit controls for heating and ventilation.

Items on the questionnaire represented various physical environmental aspects. Each aspect was concisely repeated in two statements: one to measure expectations (Table II) and the other to measure perceptions about workplace physical environmental aspects (Table III), following the method used by Parasuraman *et al.* (1988). These aspects included control, flexibility, openness, adequacy of equipment, adequacy of storage, and size, and were presented as a pair of statements such as “[m]y workplace is open enough to see my colleagues working” and “[m]y workplace should be open enough to see my colleagues working.” Employees were asked to choose a number on a seven- point scale ranging from “1: strongly disagree” to “7: strongly agree” for each statement. Gap measures were defined as the difference in scores between the rating of each perception measure statement and the rating of its corresponding expectation statement (Gap = perception measure-expectation measure).

#### 4. Results

In order to determine employees’ expectations toward their workplace, this study investigated the relationship between expectation levels and perception levels of physical environmental features. Mean differences between perceptions and expectations are presented in Table II. Standard deviations are shown in parentheses.

The results indicated that employees participating in this study expected to have more flexibility in their workplaces to readjust, reorganize, have more quiet undisturbed time, have more lighting control, have more adequate storage area, and

	Clerical/support	Engineer/professional	Manager	Other	Total
Private closed	4	10	8	2	24
Open individual high (> 54'')	27	174	68	10	279
Open individual low (< 54'')	14	33	12	4	63
Open	5	3	3	0	11
Total number	50	220	91	16	377

**Table I.**  
Office type arrangement  
by job type

Items <sup>a</sup>	Perception Mean (SD)	Expectation Mean (SD)
My workplace is open enough to see my colleagues working	4.12 (2.088)	3.12 (1.722)
My workplace provides an undisturbed environment so that I can concentrate on my work	3.35 (1.709)	5.64 (1.272)
My furniture is flexible enough to adjust, rearrange, or reorganize my workspace	3.05 (1.985)	5.32 (1.460)
I am able to control the social contact with others around me	3.94 (1.792)	5.48 (1.300)
I have informal and impromptu meetings in my private workstation	5.52 (1.493)	5.91 (1.191)
The quality of my equipment is more than sufficient to work effectively	4.89 (1.626)	6.23 (0.942)
My workplace serves multi-purpose functions for informal and instant meetings	4.80 (1.754)	5.65 (1.283)
I am able to personalize my workspace	5.18 (1.558)	5.90 (1.067)
I am able to control temperature or airflow in my office	1.40 (1.004)	5.10 (1.750)
My work environment is quiet	3.18 (1.676)	5.46 (1.221)
I am able to determine the organization/appearance of my work area	4.73 (1.802)	5.75 (1.126)
I am able to be easily accessed from my colleague's workstation	5.43 (1.520)	5.29 (1.393)
My workstation is over-equipped for my typical needs	2.05 (1.246)	3.08 (1.777)
In general, my workspace is flexible	3.81 (1.716)	5.41 (1.094)
My furniture is a fixed system ( <i>R</i> )	2.55 (1.857)	4.50 (1.710)
My workstation is large	3.85 (1.692)	4.82 (1.319)
I am able to have quiet and undisturbed time alone	3.24 (1.806)	5.79 (1.101)
My work area has many visual distractions	3.10 (1.794)	2.54 (1.500)
I have ample storage in my work area	4.32 (2.007)	5.95 (1.088)
I am able to control the lighting level in my workstation	3.23 (1.998)	5.59 (1.329)

**Note:** <sup>a</sup>Perception items. The questionnaires paired perception and expectation measures

**Table II.**  
Summary of differences  
between perceptions and  
expectations

have more control over social contacts compared with the existing condition of their workplaces. The largest gap was found in temperature and air control (the mean difference was  $-3.698$ ). The gap measures suggest which features should be improved in the workplace, beginning with temperature and air control.

Examination of gap measures suggest that the most significant aspects related to satisfaction with work environments are a quiet and undisturbed environment, quality of equipment, control over temperature, flexible workplace, amount of storage, lighting control, etc (Table III). These results are similar to previous findings. O'Neill (1994) found that adjustability and storage were positively related to satisfaction with workspace, and distraction was negatively associated. Ferguson and Weisman (1986) found that openness and distraction were negatively related to satisfaction with office environment, and privacy was positively related.

Next, the effectiveness of gap measures and perception measures was examined in order to test this study's hypotheses:

- H1.* Gap measures between the perceived environmental features and the expected environmental features are stronger predictors in explaining environment satisfaction and job satisfaction than perception based measures.

Stepwise regression analysis was conducted for each measure, and Table III summarizes the results. Perception measures had a larger number of significant

Items <sup>a</sup>	Perception		Gap		Expectations of employees
	WS	JS	WS	JS	
My workplace should be open enough to see my colleagues working					<b>349</b>
My workplace should provide an undisturbed environment so that I can concentrate on my work	0.218 <sup>***</sup>		0.175 <sup>**</sup>		
My furniture should be flexible enough to adjust, rearrange, or reorganize my workspace			0.148 <sup>**</sup>	0.117 <sup>*</sup>	
I should be able to control the social contact with others around me		0.133 <sup>*</sup>		0.144 <sup>**</sup>	
I should be able to have informal and impromptu meetings in my private workstation					
The quality of my equipment is more than sufficient to work effectively	0.108 <sup>***</sup>	0.142 <sup>**</sup>			
My workplace should serve multi-purpose functions for informal and instant meetings					
I should be able to personalize my workspace		0.122 <sup>*</sup>		0.124 <sup>*</sup>	
I should be able to control temperature or airflow in my office	0.105 <sup>*</sup>				
My work environment should be quiet				0.144 <sup>*</sup>	
I should be able to determine the organization/appearance of my work area	0.114 <sup>*</sup>	0.144 <sup>**</sup>	0.150 <sup>**</sup>		
I should be able to be easily accessed from my colleague's workstation					
My workstation should be over-equipped for my typical needs	-0.083 <sup>*</sup>				
In general, my workspace should be flexible	0.137 <sup>**</sup>		0.151 <sup>**</sup>		
My furniture should be a fixed system ( <i>R</i> )	0.111 <sup>**</sup>				
My workstation should be large					
I should be able to have quiet and undisturbed time alone	0.173 <sup>***</sup>	0.126 <sup>*</sup>	0.147 <sup>**</sup>		
My work area should have many visual distractions ( <i>R</i> )					
I should have ample storage in my work area	0.178 <sup>***</sup>		0.126 <sup>**</sup>		
I am able to control the lighting level in my workstation	0.114 <sup>**</sup>		0.120 <sup>**</sup>		
$R^2$	0.476	0.173	0.445	0.134	
Adjusted $R^2$	0.460	0.161	0.433	0.124	

**Notes:** \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ ; entries in the cells represent standardized coefficients. All nonsignificant coefficients are omitted; WS: satisfaction with work environment; JS: job satisfaction; <sup>a</sup>expectation items. The questionnaires paired perception and expectation measures

**Table III.**  
Variation explained by perceptions and expectations toward workplace

predictors (ten items) than did gap measures (seven items) among 20 items for explaining work environmental satisfaction. However, no substantial difference between perception measures and gap measures for explaining job satisfaction was found. The values of squared multiple correlation ( $R^2$ ) and adjusted  $R^2$  were not considerably different. Based on this result, the gap measure did not have greater predictive power of workplace and job satisfaction compared to the simple perception measures. Therefore, the hypothesis *H1* was not confirmed. The results are further discussed in a later part of this paper:

*H2.* Satisfaction with the physical environment is positively related to job satisfaction.

To examine the relationship between physical environmental satisfaction and job satisfaction, a correlation analysis was conducted between the environment satisfaction variable and four job satisfaction variables at the 0.001 probability level. A summated job satisfaction indicator of four variables was also positively associated with work environment satisfaction ( $r = 0.434$ ,  $p = 0.000$ ). Thus, hypothesis *H2* was confirmed. This result was consistent with previous findings (Carlopio, 1996; Sundstrom *et al.*, 1994; Ferguson and Weisman, 1986; Zalesny *et al.*, 1985) except for Lee and Brand (2005), who did not confirm the significant relationship between workplace satisfaction and job satisfaction.

## 5. Discussion

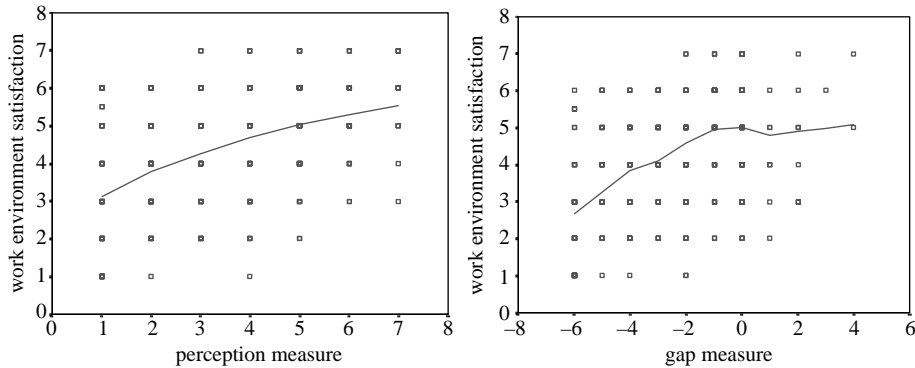
In general, this study's findings supported the prevailing belief that satisfaction with physical environment leads to job satisfaction. However, the focus of this study was to examine employees' expectation levels of features of their work environment and how useful it is to measure satisfaction levels through comparison with expectations.

The gap measure shows large discrepancies between perception of employees' current status and their expectations regarding workplace control, flexibility and workplace adequacy aspects. However, the study's findings did not show that the gap measure is superior to simple perception measures in explaining satisfaction with the workplace environment and job satisfaction.

There are two possible interpretations of these results. One may be due to the questionnaire design. To reduce the time and to increase response rates from employees, statements measuring perception and expectation were parallelized. Respondents showed some tendency to reply on both measures at the same degree of agreement or disagreement. People may judge two items as similar because they look almost identical, or people may be reluctant to answer similar questions differently.

The other interpretation may be due to the method of analysis. Cronin and Taylor (1992) conducted linear regression analysis to test whether a weighted performance-based measure of service quality (perception only, SERVPERF) is a more appropriate basis for measuring service quality than SERVQUAL (gaps between perception-expectation). As mentioned earlier, the Cronin and Taylor method was repeated in this study. This study used linear regression analysis to determine the predictors of physical work environment satisfaction. Linear regression analysis assumes linear relationships between independent variables and a dependent variable. If the linear relationship is not straight form, the results indicate weaker relationships between the independent variables and dependent variables. For instance, as shown in Figure 1, once people fulfill their expectation levels (no discrepancy between the perception and expectation), exceeding expectations (where current status exceeds the desired level) does not increase satisfaction any more (see gap measure in Figure 1), and thus there is not a straight linear relationship.

To test this assumption, scatter plots with fit lines were generated. Figure 1 shows the differences when a researcher uses a linear regression option versus quadratic regression or lowess options, which supports the proposition. For the relationship between simple perception of physical environmental features and physical environmental satisfaction, the linear line option and quadratic or lowess option did not produce a great amount of difference in the shape of lines.



**Figure 1.**  
Linear and nonlinear relationship in perception and gap measure

However, for the gaps, there are large differences in the shape of the linear line option and in that of the quadratic or lowess option. In the non-linear line plot, the line shows that the increase of gaps is in proportion to that of satisfaction until the point at which the gap is 0, where perception level and expectation level meets. After that point, the value of  $Y$  (satisfaction) does not increase in proportion to that of  $X$  (gaps). Therefore, this result indicates a weakness in Cronin and Taylor's (1992) conclusion. In their conclusions, which are based on linear analysis, a simple perception measure explains more of the variation in predicting service quality. This result describes the quality of a workplace in which physical environmental features often play a strong role as dissatisfiers according to Herzberg's theory. Findings based on scatter plots proposed that physical environmental status below expectation levels leads to dissatisfaction, but exceeding expectation levels does not increase satisfaction levels. However, this conclusion should be tempered with caution. Scatter plots from all pairs of perception measure and gap measure did not appear as apparent differences.

Since, the gaps do not have straight linear shapes, comparing results based on linear regression analysis is not valid. Furthermore, this result indicates that physical environmental features lower in quality than people's expectations are strongly positively related to satisfaction, but physical environmental features which surpassing expectations do not notably affect satisfaction.

In a simple graphical presentation, the gap model is useful in presenting which physical aspects should be improved. The issue of which is a better predictor of work environment satisfaction is different from that of which aspects should be changed to improve the quality of the work environment. The different patterns between perception measure and gap measure were not consistently apparent across various items.

This study was an exploratory stage in investigating an approach meant to capture users' expectations toward their physical work environment. Although the items in this study's questionnaire covered various aspects of the workplace, those items might not be comprehensive and exclusive enough in order to concisely include workplace characteristics. Future studies need to develop a more sophisticated measure to achieve a more reliable and better constructed measure validity that captures workplace quality.

Notwithstanding these limitations, the results of the study have a number of important implications. Because there are few empirical approaches to measure users' expectations of their workplace, it is worth investigating physical environmental aspects based on employees' expectations. With respect to an application such as workplace management, the findings of this study underline the usefulness of the gap measure approach. Varady and Carrozza (2000) remarked that the results from satisfaction studies often fail to pinpoint specific reasons for physical environment shortcomings. Using linear regression analysis, the gap approach is not superior to the simple perception measure of environmental aspects to predict either workplace or job satisfaction, but the gap approach nevertheless shows which aspects should be improved in comparison to employees' perception of physical conditions. For designers, space planners, or facility managers who need to make decisions about which aspects should be improved or need to be diagnosed, the gap measure provides improved apparent direction compared to information from perception measures. Without such research, specifying employees' needs and understanding their expectation toward workplace might lead to incomplete workplace practice.

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