

THE INTERNATIONAL JOURNAL OF BUSINESS & MANAGEMENT

Employee Perception on Organizational Performance: A Structural Equation Modeling Approach

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Abstract:

Organizational Performance Measurement has been gaining significant importance in recent times. Some of criteria that determine the performance of the organization are efficiency, quality, quality of work life, productivity and profitability. In order to make any performance measurement method effective it is very important to know perceptions of the employees regarding the criteria involved in the measurement. This paper focuses upon capturing the perceptions of the employees with regard to the criteria involved in the performance measurement using Structural Equation Modeling (SEM) approach. The study was carried out in a reputed Line Pipe manufacturing firm in India. The results show that quality and quality of work life had a significant relationship with productivity and productivity had a significant relationship with profitability.

Keywords: *Efficiency, quality, quality of work life, productivity, profitability, structural equation modeling*

1. Introduction

In this era of globalization and increasing competition, every organization is very keen on sustaining the competition and market adversities and at the same time are keen on achieving the top position in their respective sectors. This gave rise to the need to measure the overall performance of the organization so that it could be possible to determine the performance levels, set new standards of performance and formulate new strategies to be implemented in order to improve the performance.

In recent times extensive research has been carried out on as to how the overall performance of the organization can be measured. Researchers have come up with several methods in order to effectively measure and analyze the overall performance of the organization (Kennerley & Nelly, 2003). Many of these techniques have been implemented in the organizations in order to measure the performance of their respective organizations and at the same time to use it for setting up benchmarks against the best organization in their respective sector.

The current work focuses upon capturing the employees' views about the organization they are associated with, the awareness about the various constructs associated with the performance measures and the perceptions of the employees on how these constructs are interrelated. The current study was carried out in a reputed line pipe manufacturing company in India. This paper is divided into five sections. The next section focuses upon the literature available on the basis of which the hypotheses are developed. Section three focuses upon the methodology selected for the research. Section four focuses on the results that are obtained from the current research. The last section is the conclusion part.

2. Literature Review

This section focuses on the literature related to the various criteria involved in performance measurement. This literature forms the basis for the hypotheses development for the current research.

The hypothetical model in the current research consists of three independent variables and two dependent variables. The three independent variables under consideration are efficiency, quality, and quality of work life; and the two dependent variables include productivity and profitability.

According to Franceschini, Galetto, and Domenico (2007) efficiency means getting the most from the resources. It defines the link between resources employed and process performance. According to Kulawik, Wludyka, and Prusak (2007) a high correlation exists between the efficiency of machines and equipment, and productivity. Thus a hypothesis as stated below can be formulated.

- H₁: Efficiency has a significant influence on productivity.

According to Juran and Godfrey (1999) quality means “freedom from errors that requires doing work over and over again or that results in field failures, customer dissatisfaction, customer claims, and so on.” According to Kumari, Anuradha, and Sharma (2013) quality is defined as the ability of the product to perform in a satisfactory manner or free of failure. In a finding Gidey, Beshah, and Kitaw (2014) emphasizes that in the present time that the organization can improve productivity by focusing on quality. Thus, both the concepts of quality and productivity are considered. Based on the above mentioned the hypothesis as stated below is formulated.

- H₂: Quality has a significant influence on productivity.

According to Timossi, Pedroso, de Francisco, and Pilatti (2008), Quality of work life is concerned with trying to provide better working conditions to the workers so that they can develop their tasks with satisfaction and well-being. Phusavat (2002) in his research concluded that Quality of work life has an influence on the productivity. This forms the basis for formulating the hypothesis as stated below.

- H₃: Quality of Work life has a significant influence on productivity.

Bashir, Alzebdeh, and Al Riyami (2014) observed that productivity at an organizational level measures how well the input resources are converted into goods and services by the organization. According to the findings of Sinha and Bandyopadhyay (2014) for the selected metal industry firms in India improvements in labour productivity and capital productivity had positive implication on the firm’s profitability. Based on the findings the hypothesis as stated below can be formulated.

- H₄: Productivity has a significant influence on profitability.

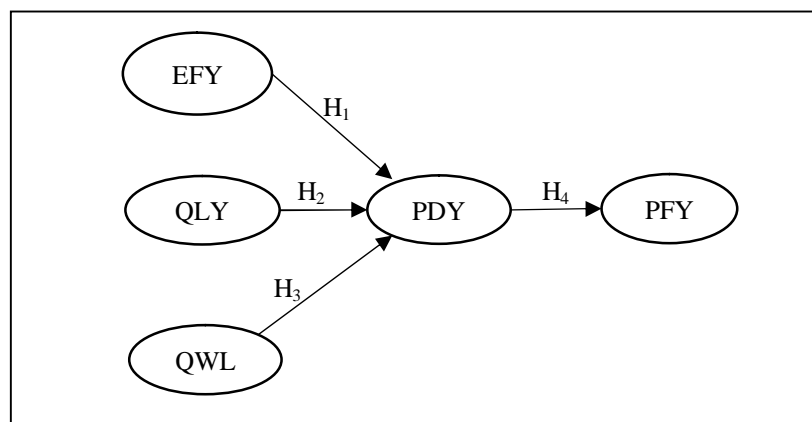


Figure 1: Hypothetical Framework

By considering all the above hypothesis the hypothetical framework (Figure 1) is developed to study the influence of independent variables on the dependent variable and the successive variable.

3. Methodology

According to Schumacker and Lomax (2010) the basic goal of Structural Equation Modeling (SEM) is to provide a quantitative test of a theoretical model that is hypothesized by the researcher and in order to fulfill its goal it uses different types of models to depict the relationship among the observed variables.

For the purpose of deciding the questions to be included in the final questionnaire that is to be administered to the selected sample; a pilot study was conducted. The items in the questionnaire considered for the pilot study were selected from the research work (Mwelu et al., 2014; Puvanasvaran et al., 2009; Raja, 2011; Rathilall, 2011) and distributed to 30 employees of the line pipe manufacturing plant. The questionnaire for the pilot study consisted of 28 items under five constructs (Table 1). A five point Likert- type scale with 5-Strongly Agree and 1-Strongly Disagree was used to collect the responses. The data obtained after collecting the responses was analyzed by implementing PLS-SEM technique using the software “SmartPLS 2.0” and the final questionnaire was prepared by selecting the top three questions in each of the constructs. The survey carried out had 200 responses.

Efficiency (EFY)	
1	Energy Efficiency is a critical success factor.
2	Manufacturing cycle times are kept to a minimum i.e. employees do not spend excessive time waiting for the cycle to be completed.
3	The products are manufactured only when required and adhering to the production plan
4	There are no unnecessary processing steps involved in the manufacturing line. **
Quality (QLY)	
1	Defects resulting in scrap and rework are constantly monitored.
2	All the work centers/processes are capable of producing quality product.
3	Measuring and Inspection are carried out after every critical process. **
4	The top priority in evaluating the plant is quality performance.
5	5S methodology is used to maintain clean and organized working environment. **
6	Kaizen activities are held at regular intervals of time. **
Quality of Work Life (QWL)	
1	All employees are provided training from time to time.
2	Safety protocols are enforced strictly. **
3	There exists a feel of job security among the employees.
4	The overall rate of attrition is low.
5	The quality of air, lighting and other basic facilities at the workplace are satisfactory. **
6	The Contributions of the employee receives due recognition from the management. **
Productivity (PDY)	
1	Trainings given to the employees and the advancement in technology has increased productivity over the years.
2	The ability of the employee to deliver work output has improved over the period of time.
3	Work in progress inventory is kept to minimum. **
4	Short distances are maintained to transport parts within the different manufacturing cells. **
5	Overall Equipment Effectiveness has led to the increase in the plants' productivity.
6	The number of times the product is transferred within the different manufacturing cells is kept minimum. **
Profitability (PFY)	
1	The plant usually meets its revenue target.
2	The plants' profit have been increasing over the period of time.
3	The assets of the plant are utilized optimally. **
4	The ROA of the plant is above the average ROA of the parent company. **
5	The annual net margin of the plant is high.
6	ROCE of the plant depends upon actual profits made and not estimated profit. **
** indicates the questions that were eliminated after the pilot study.	
Return on Assets (ROA)	
Return on Capital Employed (ROCE)	

Table 1: Questionnaire for the survey

4. Results and Discussions

The results from the survey are discussed in this section. The factor loadings after the reduction, were the items of the questionnaire that were considered for carrying out the survey (Table 2).

	EFY	PDY	PFY	QLY	QWL
EFY1	0.830	0	0	0	0
EFY3	0.736	0	0	0	0
EFY2	0.733	0	0	0	0
PDY1	0	0.865	0	0	0
PDY2	0	0.708	0	0	0
PDY5	0	0.702	0	0	0
PFY1	0	0	0.894	0	0
PFY5	0	0	0.802	0	0
PFY2	0	0	0.801	0	0
QLY1	0	0	0	0.934	0
QLY2	0	0	0	0.904	0
QLY4	0	0	0	0.891	0
QWL1	0	0	0	0	0.837
QWL3	0	0	0	0	0.832
QWL4	0	0	0	0	0.823

EFY1, EFY2, EFY3 indicate the three items used under the Efficiency (EFY) construct.
 PDY1, PDY2, PDY5 indicate the three items used under the Productivity (PDY) construct.
 PFY1, PFY2, PFY5 indicate the three items used under the Profitability (PFY) construct.
 QLY1, QLY2, QLY4 indicate the three items used under the Quality (QLY) construct.
 QWL1, QWL3, QWL4 indicate the three items used under the Quality of Work life (QWL) construct.

Table 2: Factor Loadings after reduction

To verify the reliability of the latent variables item reliability measure, internal consistency reliability measure and composite reliability measures were calculated (Table 3). Convergent validity indicates the degree to which the measures of the construct are related. Based on the factor loading and composite reliability a moderate to high acceptable range of factor loading for all items is expected and good composite reliabilities in general indicates the convergent validity.

	AVE	Composite Reliability	R Square	Cronbachs Alpha	Communality	Redundancy
EFY	0.473	0.723	0	0.448	0.473	0
PDY	0.546	0.781	0.404	0.588	0.546	0.014
PFY	0.591	0.812	0.258	0.654	0.591	0.152
QLY	0.516	0.761	0	0.547	0.516	0
QWL	0.536	0.763	0	0.620	0.536	0

Table 3: Reliability Measures

The square root of the Average Variance Extracted (AVE) for each construct is compared with the correlation of the constructs and other constructs to test the discriminant validity. The square root of average variance extracted was found to be greater when compared to the correlation that existed between the constructs (Table 4). As all the other methods of validity and reliability indicate high measures the result is accepted.

	EFY	PDY	PFY	QLY	QWL
EFY	0.688	0	0	0	0
PDY	0.397	0.739	0	0	0
PFY	0.337	0.508	0.769	0	0
QLY	0.560	0.616	0.458	0.719	0
QWL	0.445	0.442	0.288	0.499	0.732

Table 4: Latent Variable Correlations and Discriminant Validity

Where EFY= Efficiency, PDY= Productivity, PFY= Profitability, QLY= Quality, QWL= Quality of Work life; major diagonal value shows the square root of AVE, n=200.

The results indicate that one of the hypothesis is not supported (Figure 2 and Table 5). In order to indicate that the model is good enough the model accounts for 25.75% - 40.41% of explanatory power which is determined by the coefficient of determination (R²) value. The strength of association between the variables can be indicated through the path coefficient values.

	Original Sample	Sample Mean	Standard Deviation	Standard Error	T Statistics	Hypothesis
EFY→PDY	0.035	0.056	0.105	0.105	0.333	Not Supported
PDY→PFY	0.508	0.523	0.100	0.100	5.060	Supported
QLY→PDY	0.512	0.496	0.100	0.100	5.124	Supported
QWL→PDY	0.172	0.200	0.073	0.073	2.342	Supported

Table 5: Measurement Model

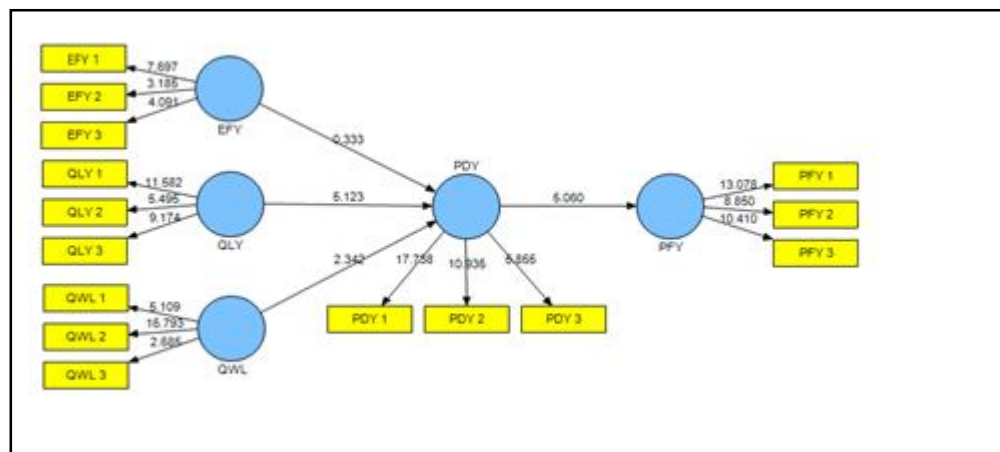


Figure 2: Hypothesis tested t-values

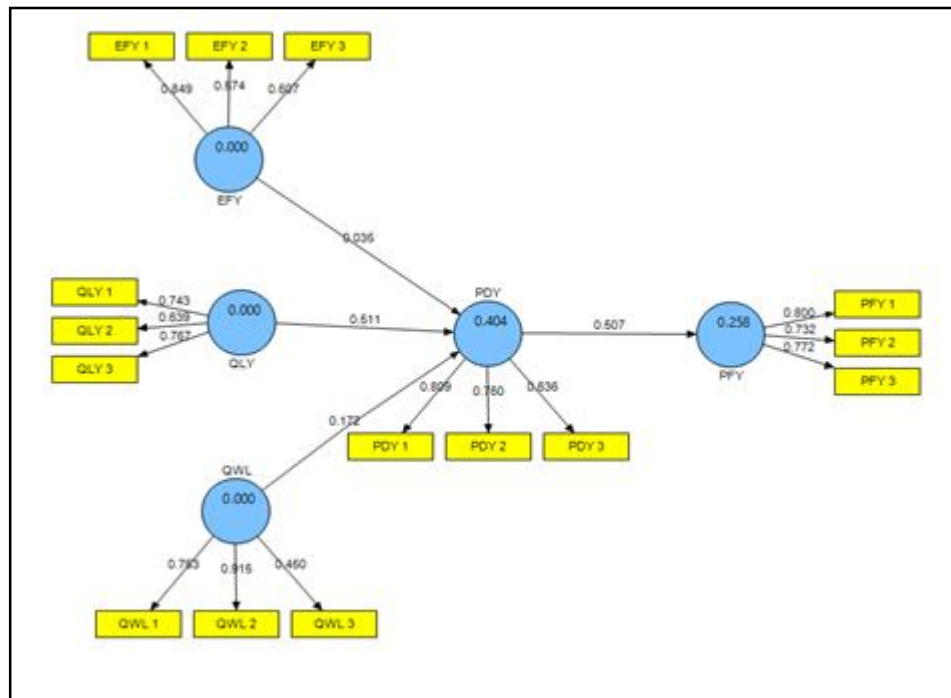


Figure 3: Path Coefficients

The path coefficient values for the model (Figure 3). Gefen, Straub, and Boudreau (2000) observed that the hypothesis is supported when t-value is above 1.96 for 0.05 level of significance.

The hypothesis that are accepted are given below:

- H_2 : Quality has a significant influence on productivity.
- H_3 : Quality of Work life has a significant influence on productivity.
- H_4 : Productivity has a significant influence on profitability.

From Figure 3, the following inferences can be drawn.

i. Explanation of Variance in Target Endogenous Variables.

Profitability (PFY) is an endogenous dependent variable. Its coefficient of determination R^2 value is 0.258. This means that 25.8% of the variation in Profitability can be explained by Productivity (PDY). The variation in Productivity (PDY) is of 40.4% and it is explained by the three independent variables namely Efficiency (EFY), Quality (QLY) and Quality of Work life (QWL).

ii. Path Coefficient sizes of Inner model and its significance.

The inner model suggests that Quality (QLY) has the strongest effect on Productivity (0.511) followed by Quality of work life (QWL) (0.172). It is observed that Efficiency (EFY) has no significant effect on Productivity. Thus the following conclusions are drawn.

- The hypothesized path relation between EFY and PDY is statistically insignificant.
- The hypothesized path relation between QLY and PDY is statistically significant.
- The hypothesized path relation between QWL and PDY is statistically significant.
- The hypothesized path relation between PDY and PFY is statistically significant.

5. Conclusion

From this study as perceived by the employees it was found that efficiency does not have significant relationship with productivity in the particular organization. As perceived by the employees this is due to deviations that take place from the production plan due to the unavailability of raw materials and due to the ineffective utilization of the available production hours. Another factor contributing to this is that the plant is designed to have a capacity which is higher than demand from the market and hence shows lower efficiency.

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