International Journal of Latest Engineering and Management Research (IJLEMR)
ISSN: 2455-4847
www.ijlemr.com || Volume 03 - Issue 07 || July 2018 || PP. 63-71

The Management Commitment to OHS, Employee Satisfaction and Safety Performance: An Empirical Study

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Abstract: Organizations are increasingly interested in having a good safety performance bycontrolling OHS risks by occupational health and safety (OHS) policies [1]. Today, many businesses are implementing occupational health and safety management systems (OHSMS) to ensure the creation of a safe and healthy workplace byeliminating or minimizing the risks with a proactive approach. The purpose of this studyis to analyse the relationship between management commitment to OHS, employee satisfaction and safety performance. For this purpose, data were collectedfrom 171 firms that operate in Turkey and analysed through exploratory factor analysis (EFA) and structural equation modelling. It was found that management commitment toOHS has a positive effect on employee satisfaction, and employeesatisfaction has a direct significantimpact on safety performance. Also, management commitment to OHS affected safety performance indirectly via employee satisfaction.

Keywords: employee satisfaction, management commitment, safety performance, OHS, OHSMS

I. INTRODUCTION

There are various studies [2] reporting negative consequences of the high rates of workplace accidents that occur due to the lack of a preventive safety culture in organizations. In today's world, many organizations are trying to improve OHS of their employees. Studies show that ensuring health and safety is usually done through complying with legal arrangements, developing a management system and establishing a healthy and safe working environment [3, 4]. However, the improvement of safety culture in an organization is not only achieved through a strong institutional pressure but also through a change of mind-set and a real commitment of all employees to the issues of OHS. Such commitment should begin from the top management to all members of the organization [5]. Therefore, having an OHS Management System and implementing it stands as a good opportunity for the organizations intending to act in accordance with the occupational safety laws as well as having a sustainable safety culture.

As an important factor of production, human resources have an uncontroversial effect on the profitability and productivity of an organization. Decisions that will affect employee satisfaction taken by managers may be extremely helpful for a company, or on the contrary, may cause considerably high costs. Therefore, due to its important effect on organizational performance, the employee satisfaction has been thoroughly examined by the studies in the literature [6]. Humans naturally desire to work in a healthy and safe environment free of all risks that threaten their physical and mental existence, and they are more easily satisfied when the necessary safety measures are taken[7]. Employees satisfied with their job perform their task better and exhibit more commitment to their job and their organization[8]. Therefore, organizations should pay attention to winning the hearts of their employees while making an investment in an OHS management system intended to be used for preventing and mitigating occupational accidents and improving safety performance [9].

Measurement of the safety performance and follow-up of OHS statistics are important for the management of OHS-related activities, just like performance measurement and analysis is important for the management of an organization[10]. Workplace accidents and the number of occupational diseases are important indicators of whether OHS services are effective and sufficient [11]. The measurement of safety performance allows for finding out whether organizations or organizational units perform appropriately to the health and safety system as well as defining the problems and solving them[12].

In this respect, this study analysed whether there is a statistically significant relationship between management's commitment to OHS, the employee satisfaction and the safety performance. Therefore, a theorized model was developed and then tested. The best of our knowledge that there is a lack of empirical study in the literature. Also, the theorized model was tested for the first time in Turkey.

The following sections of this study are organized as follows: First, the literature review presents the previous studies on management commitment to OHS, the employee satisfaction and the safety performance.The next chapter includes the proposition of a model and development of hypotheses to examine the above-mentioned relationship within the framework of a research model. After that, the method of the study is presented, and then the results of the exploratory factor analysis (EFA) and confirmatory factor analysis

(CFA) are given in detail to confirm the research model. Finally, the findings of the study are provided together with some suggestions for the researchers intending to conduct similar studies in the future.

II. LITERATURE REVIEW

2.1. Management Commitment to OHS

OHSMS are comprised of five basic components, i.e. policy, organization, planning and implementation, performance measurements and audit assessment (review) and improvement[13]. OHSMS is a systematic method guaranteeing that risk controls performed at workplaces to define the threats are effective. This method explains how policies and procedures are implemented by means of setting goals, making a planning and measuring health and safety performances at workplaces [4]. As part of the policy component, the resource requirements of an organization are defined together with a policy statement including the management commitment and OHS goals [14]. Management commitment should not only be expressed clearly in the OHS policy but also should be put into practice[15].

Organizational commitment to occupational safety expresses to what extent top management of an organization prioritize occupational safety during the decision-making process and how much resource is allocated for it. Particularly, the importance attached by an organization to the issue of safety is represented by three basic elements, (1) Safety Values—Values expressed by the top management in charge of their behaviours and safety (verbally or through measures), (2) Safety Principles—Compliance with the organized safety principles such as training requirements, handbook and procedures and equipment maintenance, and (3) Other Safety Measures—Priority given during the allocation of organization's sources (equipment, staff time) although they do not require any regulation [16].

There are some studies in the literature on the effect of the management commitment on the employee satisfaction and the safety performance [17-20]. Fernandez-Muñiz et al. [17] examined the relationship between the management commitment to occupational safety and safety behaviour, encouragement, work pressure, communication and transfer of information. They found that the management commitment had a negative impact on work pressure, but positive impact on encouragement and communication. Vinodkumar and Bhasi [18] defined the management commitment and safety measures as the factors of safety climate. Their results revealed that the management commitment positively affected safety behaviours and the safety performance, the employee satisfaction and competitiveness. The researchers also revealed that organizations with low accident rates value these factors more than those with high accident rates. Besides, Vinodkumar and Bhasi [18] reported that employees, who experienced an occupational accident before, take fewer safety precautions, showed low commitment to the management, did not comply with the occupational safety precautions and exhibited low participation in occupational safety issues. McGonagle et al.[19] reported that the management commitment is positively associated with occupational safety motivation of employees, safety participation and compliance with safety rules, but negatively associated with minor injuries. Seixas et al.[20] also examined whether the OHS committee had a positive effect on the management commitment, and the improved safety performance in a small company where dangerous works are carried out and, they observed a clear improvement in employee participation and the safety performance, but only a small improvement in top the management commitment.

2.2. Employee Satisfaction

Employee satisfaction or job satisfaction defines the extent to which employees are satisfied with their job. There are certain factors that affect an individual's job satisfaction. Among these factors are wage and benefits, the perception of a promotion system for a fair company, quality of working conditions, leadership and social relations and the job itself (variety of tasks, interest and challenge deriving from the job, explicitness of job definition/requirements etc.)[21]. Most organizations are regarded to be successful when the satisfaction levels of their employees are high. Therefore, the issue of job satisfaction has been attracting the attention of many researchers, driving them to make research on this issue [22].

The related studies dwelled on the importance of job satisfaction for organizations especially in terms of productivity, efficiency, employee relations, absence and leave of employment. Employees who exhibit high performance, have job safety and are more committed to their organizations and satisfied with their job were reported to have higher job satisfaction. Contrary to their dissatisfied colleagues, those individuals are less absent and leave their job willingly[23]. The low employee satisfaction also leads to health problems within the organizations[24].

Gyekye and Salminen[23] and Gyekye [25] reported that employee satisfaction reduced occupational accidents, thus affected the safety performance positively. Gyekye[25] revealed that there is a positive relationship between job satisfaction and safety climate, indicating that employees who are more satisfied with their job have positive perspectives on the safety climate. Therefore, employees more satisfied with their job are more committed to occupational safety management policies, thus organizations with such employees have

lower accident rates. Gyekye and Salminen [23] examined causality attributions made for workplace accidents and how these attributions may be influenced by job satisfaction. They found that there is an association between job satisfaction and causality attributions for the accident occurrence, and also reported that dissatisfied employees tended to use external attributions in their causal analyses for accident occurrences. Authors such as Muñiz et al. [17] and Bayram et al.[26] also suggested that the safety performance has a direct significant impact on the employee satisfaction. During the literature review, we found only one study that reveals the relationship between the management commitment and the employee satisfaction[8]. That study conducted by Rajeswari and Rajakrishnan[8] showed that the dimensions of job satisfaction had a statistically significant impact on organizational commitment.

2.3. Safety Performance

Safety performance can be defined as the measurement of activities carried out to protect employees from workplace accidents and occupational diseases [27]. Performance measurement system of an organization includes two separate monitoring data; proactive (positive) and reactive (negative). Proactive data should be used for measurement and monitoring. Reactive data should be used when the safety performance has been found to be insufficient [28]. Negative performance indicators based on accident ratios are good to be used for the management of accidents leading to injury of employees, but not for taking control of great risks [29].

Today, there is a tendency to use more detailed measurement methods. With these new methods, information is collected about both positive and negative aspects of health and safety practices. In today's world, the safety performance indicators are usually a composition of result-oriented output indicators and positive performance indicators [27]. In this study, we used negative performance indicators as a variable since the aim was to monitor the improvements caused by the management commitment and the employee satisfaction for the last three years in accident rates and their financial costs.

III. PROPOSED MODEL AND HYPOTHESES

Based on the literature review, we proposed the following hypotheses together with theresearch model given in Fig. 1.

H_1: The management commitment to OHS affects the safety performance positively.

H_2: The management commitment to OHS affects the employee satisfaction positively.

H_3: Employee satisfaction affects the safety performance positively.

H_4: The management commitment to OHS indirectly and positively affects the safety performance through the employee satisfaction.

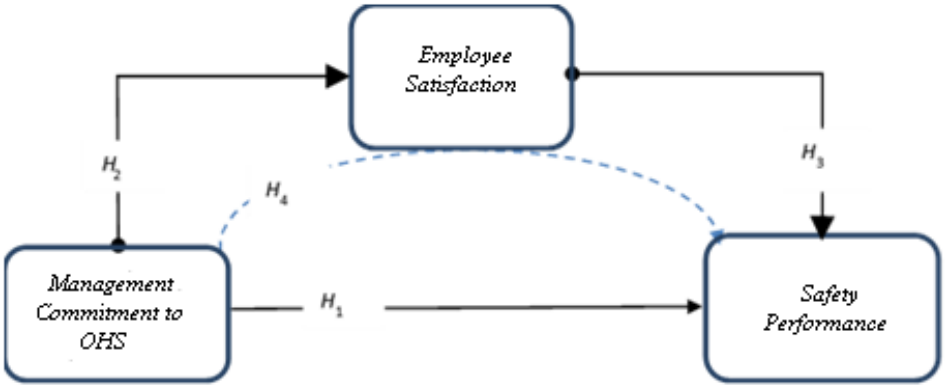

Figure1. Research model

IV. METHOD

The survey technique was used to confirm the research model.The survey form was sentto 580 OHSMS certified firms operating in different industries in Turkey, and 174 forms filled by the OHS managers of the firms were received back. 171 questionnaire forms were exposed to the analysis because three of them were incomplete. The response rate was 29.1% (171/588), which is acceptable for survey-based studies. the sample was 15.2 percent metal industry, 13.5 percent chemical, rubber, and plastic industry, 9.4 percent glass, ceramics etc. industry and 61,9 percent the others. To validate the research model, three scales given in Table 1 were used, and all of them were adopted from Bayram and Ünğan[30].

Table 1 The Preliminary List of the Scales

Variables	Description
	Management Commitment to OHS (MC)
MC1	To what degree your OHS policy is announced to your employees
MC2	To what degree your OHS policy is revised periodically
MC3	To what degree your organisation complies with the OHS legislation and the requirements of the organisations that it has a membership with
MC4	To what degree your top management prioritises OHS issues
MC5	To what degree all resources required for the implementation of your OHS policy are allocated
	Employee Satisfaction (ES)
ES1	Employee performance improved
ES2	Employee absenteeism reduced
ES3	Employee harming the enterprise reduced
ES4	Employees' physical and mental health statuses improved
ES5	Employee turnover rate improved
	Safety Performance (SP)
SP1	Accident frequency rate reduced
SP2	Accident severity rate reduced
SP3	Accidents involving death and/or loss of limb reduced
SP4	Tangible losses reduced

The analysis part of this study consisted of two main steps. These steps will be explained in the following parts.

V. RESULTS

The procedure introduced by Anderson and Gerbing[31] was used while analysing the scales in terms of unidimensionality, internal consistency, composite reliability, convergent and discriminant validity. The findings of the research were explained intotwo phases: first wasthe exploratory phase, during which SPSS 18 was used, and the second was the confirmatory phase, during which SmartPLS 2 was used.

5.1. Exploratory Phase

At the firstexploratoryphase, EFA was carried out for each structure to examine whether each latent variable shares a basic factor. This factor analysis was performed using a varimax rotation according to the procedure developed by Lumpkin and Dess[32].Before the performance of EFA, we used Barlett's test of sphericity (Bartlett[33]) to examine the factorability of the data and the Kaiser-Meyer-Olkin (KMO) test[34] to measure sampling adequacy. The findings showed a significant test statistic. Bartlett's sphericity test gave $p < 0.000$ and the KMO value was found to be 0.854. These findings mean that the data used for the structural test are appropriate. In EFA, 72.00% of the variance was accounted for in total and 3 factors were extracted.

The first factor titled 'MC' included five variables. For the factor 'MC', 39.86% of the total variance was explained. The second factor titled 'SP' consisted of four components, with 19.11% of the total variance explained. The third factor titled 'ES' consisted of five components, with 13.53% of the total variance explained. Harman's single factor test was used to test the common method bias (CMB) Podsakoff et al. [35]. If the measures are affected by the CMB, then they tend to load on a single factor[36]. At the end of the factor analysis (Harman's single-factor test), three factors whose validity was confirmed were extracted. Therefore, the CMB did not stand as a problem. Following EFA, the data were imported on Smart PLS 2 to perform the confirmatory phase.

5.2. Confirmatory Phase

First, the convergent and discriminant validity of the measurement model was assessed. Convergent validity of measures depends on meeting the following three criteria[37, 38]: (1) Loading of all indicators should exceed 0.703; (2) Composite reliability values should be greater than 0.8 or, alternately, the Cronbach alphas should be greater than 0.65[39]; and (3) average variance explained should be more than 0.5 for each structure. Table 2 shows that psychometric characteristics of structures and variables. As shown in Table 4, all indicator loadings except for ES2 were above the suggested threshold level. So, ES2 was not included in the further analysis. After the exclusion of SAT5, composite reliability values were found to be between 0.89 and 0.95, the explained common variance was between 0.62 and 0.81 and the Cronbach's α values were found to be between 0.85 and 0.92. All three criteria for convergent diversity are met in this way. To ensure discriminant

validity, the square root of the explained common variance of a latent variable must be greater than the correlations among the latent variables in the same column and row in the correlation matrix [37].

Table 2 Psychometric characteristics of structures and variables

Variable	**M**	**SD**	**Factor Loading**	***t*-statistics**	**Cronbach's α**	**CR**	**AVE**
MC					0.88	0.91	0,68
MC1	4.32	0.73	0.811	16.99			
MC2	4.25	0.80	0.830	19.84			
MC3	4.42	0.67	0.791	11.97			
MC4	4.32	0.75	0.843	15.57			
MC5	4.26	0.82	0.847	16.01			
ES					0.85	0.89	0.62
ES1	3.74	0.84	0.817	18.30			
ES2*	3.20	1.06	0.651	7.12			
ES3	3.41	1.05	0.795	14.48			
ES4	3.87	0.86	0.845	23.21			
ES5	3.69	0.91	0.824	18.27			
SP					0.92	0.95	0.81
SP1	2.81	1.30	0.931	52.29			
SP2	2.88	1.27	0.912	28.53			
SP3	3.08	1.66	0.844	18.00			
SP4	2.99	1.38	0.920	45.69			

* Item deleted due to low factor loading

Table 3 shows the square root of the explained common variance of each latent variable and the correlations of these latent variables with the other variables. As shown in the table, the square root of the explained common variance of each latent variable is greater than the correlation values in the same row and column. Hence, discriminant validity can be said to be achieved. Another way of assessing discriminant validity is to use the results of the CFA. In this case, the factor loading of an indicator on its assigned latent variable should be higher than its loadings on all other latent variables[40]. This criterion was also met in this study.

Table 3 Latent variables and AVE square root correlation

	SP	MC	ES
SP	**0.825**		
MC	0.245*	**0.787**	
ES	0.419*	0.384*	**0.900**

* $p<0.05$

Second, the quality of the path model was evaluated before testing the hypotheses. It can also be evaluated by calculating the Q^2 statistics. Q^2statics >0 means the model has predictive relevance [41]. In PLS-SEM two kinds of Q^2 statistics are estimated. One of them is cross-validated (CV)-communality and the other one is cross-validated (CV)-redundancy[42]. Since both CV-communality and CV-redundancy indexes became positive (see Table 4) measurement and structural model had a good quality for this study

Table 4Measurement and structural model's quality

	CV-communality	CV-redundancy
MC	0.681	0.695
SP	0.814	0.143
ES	0.623	0.091

In addition to the assessment of CV-communality and CV-redundancy indices, the coefficient of determination (R^2) of the endogenous latent variables can be observed toevaluate the exploratory power of the proposed model. Figure 2 shows the significance levels, R^2 values of endogenous structures and the results of the structural model analysis with the path coefficients. Based on the R^2 scores, we can say that this model explains 18.4% of the variance in PER (R^2).

Standardized Root Mean Square (SRMR) isa measure of goodness of model fit for Smart PLS [43]. When a goodness of fit value below 0.10 then the research model has a good fit [44]. The goodness of fit was found to be 0.081 in this study, which indicates the model has a good fit.

Before testing the hypotheses, it should be ensured that there is no multicollinearity among the independent variables; because multicollinearity might affect the test results. In this study, variance inflation factors for latent variables (factors) were found to range between 1.000 and 1.280, which are far below the threshold values of 5 to 10 for multicollinearity[45].

Fig. 2.shows the findings obtained from the structural modelling.Accordingly, H_2, H_3 and H_4 were accepted, while H_1 was rejected.

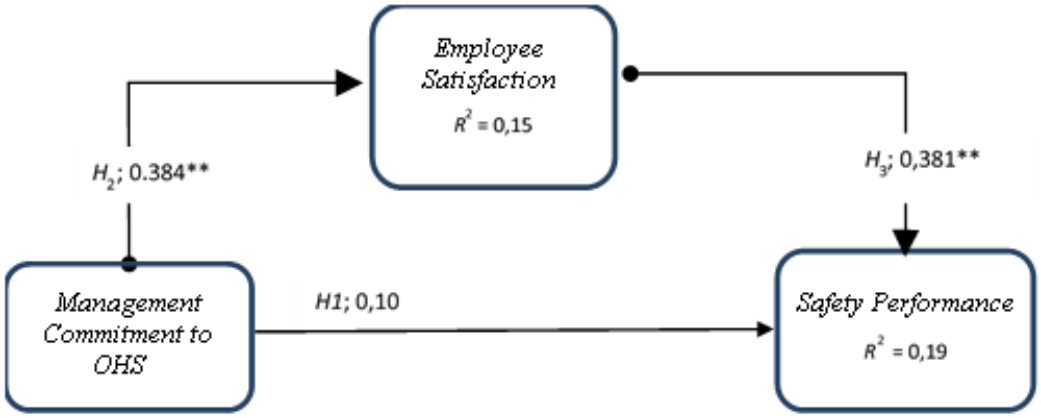

Figure 2. Findings obtained from the proposed research model (** p<0.001)

Table 5 shows the details of the tests for H_1, H_2 and H_3.

Table 5 Detailed test results (H_1, H_2 and H_3)

Hypotheses	Relation	Path Coefficients	*t*-statistics	*p*	Support?
H_1	MC-SP	0.099	0.981	0.920	No
H_2	MC-ES	0.384	5.002	0.000	Yes
H_3	ES-SP	0.381	4.454	0.000	Yes

While testing H_4, a different path was followed since the indirect effect of on the SP is tested through the means of ES.Two different SEM models proposed by Little et al. [44] were constructed to test the mediation effect. In the first model, the mediator ES was excluded and the significance of the coefficient for the direct pathway from the MC to SP was examined. As shown in Table 6, the path coefficient was found to be significant. As part of the second step, the mediator was included in the model and the significance of the path coefficients was examined. The coefficient for the pathway from MC to SP lost its statistical significance; however, the coefficients for the pathways from MC to ES, and from ES to SP were found to be statistically significant. It was concluded that ES was fully mediating the effect of MC on SP. Therefore, H_4 was accepted.

Table 6 Results of the mediation effect

Independent Variable	Dependent Variable	Mediator	Unmediated Path	Coefficient	Mediated Paths	Coefficient	Result
MC	SP	ES	MC-SP	0.248*	MC-ES ES-SP MC-SP	0.384** 0.381** 0.099	Full mediation

* p<0.05, ** p<0.001

VI. CONCLUSION

The main objective of this studyto analyse the relationships between the management commitment and OHS, the employee satisfaction and the safety Performance. The findings revealed that "management commitment to OHS" has a direct and positive effect on "employee satisfaction". Besides, "Employee Satisfaction" was also found to affect "safety performance" directly and positively.

No direct relationship was found between "management commitment to OHS" and "safety performance". However, we found that "Management commitment to OHS" indirectly affects "safety performance" through the mediation of "employee satisfaction". On the other hand, it was found that "management commitment to OHS" affected "safety performance" indirectly via "employee satisfaction". These findings are in compliance with those of Fernández-Muñiz et al. [17], McGonagle et al. [19] and Seixas et al.[20].

It was found that there is a direct significant positive relationship between "management commitment to OHS" and "employee satisfaction". It was also found that "employee satisfaction" has a direct significant positive impact on "safety performance". This finding is in compliance with the findings of Gyekye and Salminen [23] and Gyekye [25].

The findings obtained in this study reveal that top management should make a strong commitment. Besides, it is possible to achieve improvement in the safety performance by increasing the employee satisfaction in companies with positive safety culture through the mobilization of all resources of the company.

As a result, the establishment of healthy and safe working environments under the leadership and commitment of top management and the increasing employee satisfaction reduce the occurrence of workplace accidents and injuries when employees exhibit safe behaviours.

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