

IMPACT OF OCCUPATIONAL HEALTH AND SAFETY MEASURES ON EMPLOYEES' PRODUCTIVITY

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ABSTRACT

Purpose of Study: The present study is focused upon the health and safety measured in context of sugar industries which is considered as backbone for development of national economy. To examine the impact of occupational health and safety measures on the employees' productivity, existing data was collected from different available sources while the primary data was collected from employees hailing from sugar industries located in District Dera Ismail Khan, KP, Pakistan.

Methodology: Research design of this study is both descriptive and inferential. Survey approach was used by researcher by following cross-sectional design. The population of study comprises

all the employees working in sugar mills in District Dera Ismail Khan while a sample was chosen from same population by using statistical formula. Population comprises 800 employees wherein a sample of 170 employees was chosen by using statistical formula suggested by Yamani (1967).

Main Findings: The data was analyzed through the different statistical procedure to examine the relationships (association) through correlation among independent variables (health measures, safety measures, technical measures & psychological measures) and dependent (employees' productivity). Therefore, the correlation shows positive relationship among the research variables.

Applications of Study: The results of this might be helpful for the employees and management of the industrial sector to find out the valuable information about the research variables under examination by providing suitable recommendations for policy makers and for future researchers.

Novelty/Originality of Study: Employees' productivity is requisite for performance of industrial sector which is further dependent on numerous factors like working environment, compensation, employees and management relations and precautionary measures. Among these measures, most vital are the health and safety measure that are known as occupational health and safety measures.

INTRODUCTION

In present technologically advanced era, the occupational health and safety measure are the only prerequisite for the employees' productivity in industrial sector. In industrial sector, most of the work is done through heavy machineries which needs technical knowledge and skills to better operate these machineries and to meet the demand of productions. While using these machineries there are always some eventual injuries which greatly influence the physical, mental and health conditions of employees in industries ([Dorman, Quinlan & Wilthagen, 2000](#)). These accidents are mainly occurs due to errors that happens from employees in production processes. Therefore, it not only requires the feasibilities of machineries but also requires the conducive environmental hazards which are feather helpful in making the situation responsive ([Irvin, Culyer & Mahood, 2007](#)). Therefore, when these measures are not properly addressed, it might be result in injuries and accidents in the production process.

[Makhamara and Alice \(2013\)](#) argued that undesirable accidents put the industrial sector to look for certain measures in maintaining situation more conducive. Thus, importance of occupational health and safety measures are direly needed in almost all organizations including the industrial sector [Gabriel, Edwin and Mabel \(2014\)](#). Although, advanced technologies facilitated industries to be more productive but it is also fact that these desired production demand cannot be achieved with effective utilization of the labor force ([Lefter, Davidescu, & Casuneanu, 2017](#)). Therefore, when the working forces are not well abreast of usages of advanced technologies then the result would the accidents and injuries caused at the workplaces ([Manzoor, Wei, Bányai, Nurunnabi & Subhan, 2019](#)), and also recommended the impact of occupational health and safety measures on the employees' performance and productivity ([Suárez, Resino, Gutierrez & Jimenez, 2021](#)) both in developed and developing countries but limited research was explored in context of Khyber

Pakhtunkhwa, Pakistan and this gap is expected to be filled through the investigation in present research study.

The sugar industry is the most vital sector which provides the largest share to national economy along with the opportunities of employment to the general population. This industry provides the opportunities of investment to regional population wherein most of the farmers earn their income from crossbow sugar cane ([Gabriel, Edwin & Mabel, 2014](#)). It might not provide investment opportunities to local investors but also helps in providing employment opportunities at regional level ([Katsuro, Gadzirayi & Suzanna, 2010](#)). For this purpose, government has played supportive role to facilitate the sugar industries by their facilitating role in the national economy. The sugar industry is more hazardous industry in which every year, many employees lost their health and lives due to various accidents caused in at the workplaces ([Manzoor, Wei, Bányai, Nurunnabi & Subhan, 2019](#)). The occupational health and safety measures are directly required at workplaces to reduce uninvited accidents ([Womoh, Owusu & Addo, 2012](#)). Occupational health and safety defined as skill of recognition, anticipation, valuation and mechanism of vulnerabilities ascending at work places which might damage health and safety of employees which might further support the general environment and the contiguous communities.

PROBLEM STATEMENT

In industrial sectors, at workplace, various incidences befall which results in different injuries, deaths and huge undesirable costs which mainly affects workforces' credibility and the level of production. This eventually results in the loss of human and financial capitals which are the vital components for economic development of country. Keeping in view this assertion, occupational health and safety measures becomes the need of workforces and the industries as well to save their human and economic capitals. Therefore, this study aims to examine impact of occupational health and safety measure on employee productivity in sugar industries in Khyber Pakhtunkhwa, Pakistan.

RESEARCH OBJECTIVES

- ✓ To determine main role of occupational measures in the productivity of the employees in the context of sugar industries in Khyber Pakhtunkhwa.
- ✓ Determine the relationship between the occupational measures (health safety, technical and psychological) and employees' productivity at the workplaces in sugar industry.
- ✓ Determine impact of occupational measures (health safety, technical & psychological) on the employees' productivity at the workplaces in sugar industry.
- ✓ Determine the significance of effect occupational measures and employees' productivity and performance across the firms by generalizing findings obtained from the research.

JUSTIFICATION OF RESEARCH

The justification of this study is transformation of occupational measures as vital for workforces in industrial sector (sugar industry) by reducing incidents, injuries and compensation costs. Thus, this study might be helpful in producing more valuable results regarding issues of occupational health and safety measures along with its vitality for employees' productivity and performances.

Thus, significance of study is to arrange basis for devising an efficient safety and health strategy which might reports definite safety and health requisites which ultimately increase productivity and performance of employees in Khyber Pakhtunkhwa specifically in entire country generally. This study might be helpful in serving reference measure for both students of academic research and decision-makers of industrial sector (sugar industries) about occupational health and safety policies and employees' productivity.

RESEARCH HYPOTHESES

- ✓ There is significant association between health measure and the employees' productivity (**H₁**) (correlation).
- ✓ There is significant association between safety measure and the employees' productivity (**H₂**) (correlation).
- ✓ There is significant association between technical measure and employees' productivity (**H₃**) (correlation).
- ✓ There is significant association amid psychological measure and employees' productivity (**H₄**) (correlation).

LITERATURE REVIEW

The sugar industry has played significant role in development of national economy by providing their economic share to the national exchequer ([Munir, Ashraf & Awan, Hensel, 2012](#)). Thus, by adopting the advanced technologies like industrial advance and heavy machineries which draws the attention towards fact that eventual consequences of these technologies bring along negative repercussions of unsafe and unhealthy working environment ([Lefter, Davidescu, & Casuneanu, 2017](#)) remain to pandemic workforces' productivity within industry and bring certain tendencies about clogging economic development in long-run. Most of economic outlay occurs on agreeing complications related to scarce health and safety management ([Mozaffarian & Dariush, 2017](#)). [Katsuro, Gadzirayi and Suzanna \(2010\)](#) discussed that occupational health, safety, technical and psychological measures are most rounded elements which are vital for the workforces in order to improve productivity and performance. In this connection, desirable productivity is dependent on the imperative role occupational measures to increase the level of production ([Gabriel, Edwin & Mabel, 2014](#)). The innovative and advanced machineries might be hazardous to health and safety dimensions. The change in workstation can cause enlarged productivity primary to an ignorance of occupational health and safety allegations ([Manzoor, Wei, Bányai, Nurunnabi & Subhan, 2019](#)). Thus, it is dishonest to limit that workplace transformation grows occupational standards with regard to augmented productivity.

HEALTH MEASURES

The occupational health measures are generally related to healthiness and fitness of employees at the workplaces which has strong affiliations which productivity and performance of employees. A good health is directly related with level of productivity and desired outcomes ([Irvin, Culyer & Mahood, 2007](#)). When the employees are not feeling well and have different health related issues then it might automatically affect the performance level of the concerned employees and results into the lower productivity ([Gabriel, Edwin & Mabel, 2014](#)). For this

determination, it is main responsibility of concerned organization/industry to be focused upon the basic health facilities provided to their employees like medical allowance and other health related perks and privileges ([Tawiah, Ntow& Mensah, 2016](#)). The employees concerned will resultantly show performance at their level best when organization provide them health facilities ([Godderis&Luyten, 2020](#))and resultantly their productivity will be at highest level by keeping in view the organizational well managed healthcare facilities available to the employees at each level in the organizational hierarchy.

SAFETY MEASURES

[Thuo, Kiongera, Muchilwa and Makori \(2015\)](#) shows that occupational safety measure denotes to the care, security and protection of employees from the undesirable events. The workforces will show their commitment and dedication when they feel that their organizations are serious about their safety and protection ([Liu, Gyabeng, Sewu, Nkrumah & Dartey, 2019](#)). The safety measures are vital for protection of the concerned employees from any undesirable consequences in the organizations. The concerned employees are required to adopt all the safety measures at workplaces which are according to the standards already set by organizations([Gabriel, Edwin & Mabel, 2014](#)). As sugar industries are equipped with heavy machineries and thus the employees are required always to perform their production processes with great care to avoid undesirable circumstances([Maryjoan&Ebitu, 2016](#)). In this regard, the organizations are also required to provide the employees all the safety measures which might be helpful for the employees in case of the emergency.

TECHNICAL MEASURES

[Womoh, Owusu and Addo \(2012\)](#) argued that occupational technical measure describes control on mechanical processes for mitigation, mechanism and prevention of the main coincidences. For technical measure, different researchers proposed different models containing diverse measures, for the best interest of the employees and for the best interest of the industry ([Tawiah, Ntow& Mensah, 2016](#)). For this purpose, each industries have their own booklets to publish their rules, regulations, precautionary measures for workers while their entry at the workplace or becoming the part/roll of organization([Makhamara& Alice, 2013](#)). The technical measures most related with the usages of different machines which requires technical knowledge from their employees ([Godderis&Luyten, 2020](#))that how to operate the machines and how to cater the situation when undesirable circumstances arose/happen. The technical safety is mainly related with advanced tools and techniques that are used in concerned organizations in order to facilitate organizational smooth functioning.

PSYCHOLOGICAL MEASURES

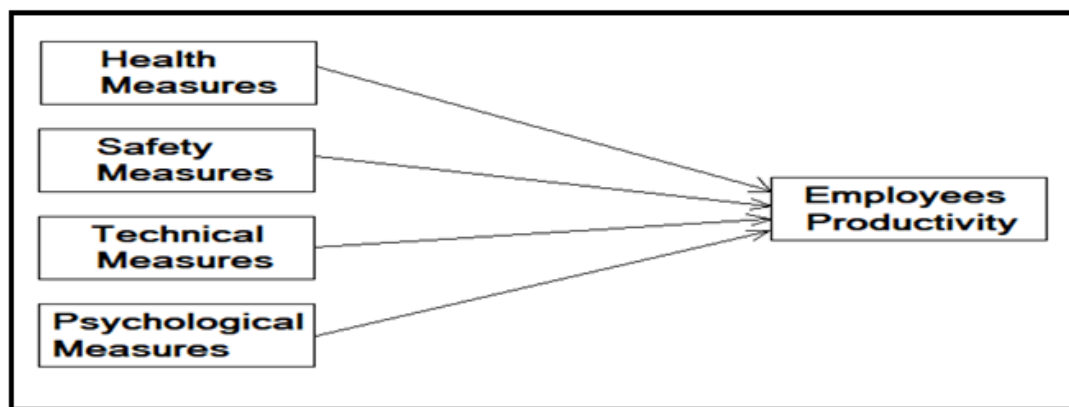
The psychological conditions of the workforces are vital for the activities at the workplaces as some of these activities needs special attention due to critical usages([Irvin, Culyer&Mahood, 2007](#)). Thus, concerned management is direly required to put their emphasis on the psychological measures to focus more on the emotional strengths of workforces and ultimate measures which are needed to be analyzed while performing the hazardous activities in the concerned workplaces([Wilde & Agarwal, 2016](#)). The psychological measures comprise complete package which needs further attention on part of management and the workforces of the

concerned industries([Gabriel, Edwin & Mabel, 2014](#)). The knowledge and skills are vital for the workers in the sugar industry as these industries are considered as the vital sector which needs further examinations on the part of the psychological measures and other related activities at workplace([Weinberg &Doozba, 2016](#)). These measures further needthe attentions since the industrial activities requires certain specific knowledge and skills which are prerequisite for the sugar industries among all the other industries.

EMPLOYEES PRODUCTIVITY

[Oxenburg, Marlow and Oxenburg \(2004\)](#) argued that employees' productivity generally defines the working potential of employees at workplaces that how much the employees are efficient in achieving assigned tasks. It relates to employees' possible contribution in organization deeds that has significant impact towards organizational objectives([Katsuro, Gadzirayi& Suzanna, 2010](#)). Employees who are emotionally fit and have technical knowledge are expected to be productive as compared to those who are not serious in their assigned duties and responsibilities. Therefore, productive employees are foremost assets of concerned organization/industries and organization in turn to be more careful about their needs and rights ([Thirapatsakun, Kuntontbutr&Mechida, 2015](#)). Literature showed that occupational measures have weighty relationships with employees' productivity in industrial sector([Womoh et al., 2012](#)). Also, undesirable events caused various hindrances for organization covering employee assistance, disability and workers' compensation, health insurance, occupational safety programs and paid sick leave for eventual incidents ([Katsuro et al., 2010](#)). Likewise, other measures include activities predestined to reduce turnover, improve morale and enhance the level of productivity. In this regard, the cohesive safety, health and productivity managing model changed from time to time to manage situation and to produce better results on part of productivity.

Figure 2.1 Conceptual Model/Framework



Research use own Source

RESEARCH METHODOLOGY

This study used both the quantitative approach which are the elements of positivism philosophy that aims at exploring the existing realities in native environment to produce desired information about these realities, therefore, positivism is research philosophy used in this research study as

per the nature and as per the requirements of the current study in order to examine the variables and to produce new knowledge.

DESIGN& APPROACH

Research design of this study is both descriptive as well as the inferential. The descriptive mode will be used to describe variable regarding their basic characteristics while the inferential mode will be used to examine the relationships among research variables ([Creswell & Williams, 2012](#)). Without the research design, no study might be undertaken as it is the basic theme of the research studies. In this connection, numerous approaches are offered by different researchers, however, when the entire population is not accessible due to some reasons then survey is recommended as best choice.

POPULATION AND SAMPLE

The population is the entire group of elements in which the researcher is interested and plan to generalize the outcomes. The population of this study comprises all employees working in Sugar Mills in District Dera Ismail Khan while a sample has been chosen from the same population by using the statistical formula. The regular employees in three all Sugar Mills in Dera Ismail Khan is 800. Therefore, a sample of 170 employees has been chosen thereby using statistical formula for sample-size determination. So, 170 questionnaires were distributed and 162 were recollected.

DATA COLLECTION & NALYSIS

Both secondary and primary data collection methods have been used. The secondary data which is most comprised of existing data already examine and explore by different researchers in previous studies and which is used by scholar as per research requirements as obtained from diverse research articles, books and library materials ([Monagahn& Hartman, 2007](#)). Data analysis is a vital part of research as data obtained from the different sources but not analyzed properly useless. The data analysis is essential part of research studies as it helps the researchers in finding the answers of research questions. The measurement of data, 5-point Likert Scale was used by scholar “ranging from 1 to strongly disagree while 5 to strongly agree”.

RESULTS AND DISCUSSIONS

The results obtained through statistical procedures about the relationships among the research variables (association in present study) have been presented in the results section which have been validated and confirmed through the existing research studies to provide backing to the outcomes of present study.

Table 1 Correlation Analysis (H₁)

		Health Measures	Employees Productivity
Health Measures	Pearson Correlation	1	.366
	Sig. (2-tailed)		.001
	N	162	162

Employees Productivity	Pearson Correlation	.366	1
	Sig. (2-tailed)	.001	
N		162	162

The table provided the significant information about the correlation between the health measures and the employees' productivity (.366 & .001). The analysis shows that the health issues of the occupational health and safety measures have positive relationship with the productivity of the employees in the sugar industrial context. Therefore, from these results, the hypothesis # 1 about the association between health measures and employee productivity is therefore accepted as true and thus substantiated.

Table 2 Correlation Analysis (H₂)

		Safety Measures	Employees Productivity
Safety Measures	Pearson Correlation	1	.382**
	Sig. (2-tailed)		.000
	N	162	162
Employees Productivity	Pearson Correlation	.382**	1
	Sig. (2-tailed)	.000	
	N	162	162

The above table provided the information about the correlation amid the safety measures and the employees' productivity. The analysis showed positive relationship between safety dimension of the occupational health and safety measures (.382 & .000). This positive relationship was also previous researched by different researchers in same or diverse context. Therefore, from these results, hypothesis # 2 about association between safety measures and employees' productivity is therefore accepted as true and thus substantiated.

Table 3 Correlation Analysis (H₃)

		Technical Measures	Employees Productivity
Technical Measures	Pearson Correlation	1	.449
	Sig. (2-tailed)		.000
	N	162	162
Employees Productivity	Pearson Correlation	.449	1
	Sig. (2-tailed)	.000	
	N	162	162

The correlation analysis concerning the technical measures and the productivity of the employees shows the positive relationship between both the variables (.449 & .000). The technical measures concerning the workforces are considered vital for the employees' productivity. Therefore, from these results, the hypothesis # 3 about the association between safety measures and employees' productivity is therefore accepted as true and thus substantiated.

Table 4 Correlation Analysis (H₄)

		Psychological Measures	Employees Productivity
Psychological Measures	Pearson Correlation	1	.320**
	Sig. (2-tailed)		.000
	N	162	162
Employees Productivity	Pearson Correlation	.320**	1
	Sig. (2-tailed)	.000	
	N	162	162

The hypothesis about the relationship between the psychological measures and the employees' productivity was also tested through correlation. The correlation shows the positive relationship between both the research variables (.320 & .000). The emotional conditions of the workers are highly needed for the high productivity. Therefore, from these results, the hypothesis # 4 about association between safety measures and employees' productivity is therefore accepted as true and thus substantiated.

CONCLUSION

The present study examined the association between the occupational health and safety measures (health, safety, technical & psychological) with employees' productivity. The results of the study revealed that there is positive and significant association between all measures of occupational health and safety and employees' productivity in the context under consideration. These are most significant issues which are required at the workplace in order to protect the employees from the undesirable eventualities that leads the employees to show their utmost performance leading to higher level of productivity and success and which are further critical for the determination of employees' attitude and behavior towards higher level of the commitment towards the concerned organization. Therefore, these are the leading and burning issues which are explored in present that has provided sufficient information through statistical outcomes about the association amid the health and safety measures and employees' productivity in the context of sugar industries in the developing countries like Pakistan.

LIMITATIONS AND RECOMMENDATIONS

- ✓ The study also has some limitations. First, study used a cross-sectional design to collect data using survey approach, data was collected from employees of sugar mills employees, which limits the researcher's ability to claim causal effects.
- ✓ The management of sugar industry are required to introduce some very critical measures and steps to bring certain positive changes in the health measures to facilitate workforces towards the attainment of desired goals.
- ✓ The sugar industry is further required to put their emphasis more on the safety measures and safety precaution to save the lives of general public by introducing some innovative techniques at the workplaces.
- ✓ The industry is required further to adopt the technological changes thereby improving the knowledge and skills of the workforces to make them technical sound and rigorous to achieve their assigned responsibilities.

RECOMMENDATIONS FOR FUTURE WORK

- ✓ The future researchers are advised to adopt the latest methodologies for their research studies thereby go through the existing research studies to introduce and apply the novel tools for analysis.
- ✓ The future scholars are recommended to examine these variables by selecting huge sample size to produce better results about the significances of these variables in similar and well as the diverse context.
- ✓ The future researchers are suggested to examine these variables and their interrelationship in other contexts (other than sugar industries) to produce new knowledge and to contribute the existing database of knowledge.
- ✓ The future researchers are required to add some mediators or moderators in connecting occupational health and safety measured and employees' performance and productivity to extract new information and knowledge.

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