

## EXAMINING CASUAL LINKAGES BETWEEN PRODUCTIVITY AND MOTIVATION OF WORKERS OF SUGAR MILLS

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### ABSTRACT

*This study validates that change in productivity as gains in profitability are significantly related with the motivation levels at all tiers of organization structure. Moreover, motivations among workers assist in maintaining and keeping confidential as well as secret policy and procedural data from the competitors.*

*This paper aims at exploring the changes in productivity with major supposition of quantifying, the relationship in terms of changes in the production caused by motivation and link organizational efforts as result of motivation among workers in maintaining secrecy and security of the confidential data. Matiari sugar mills were used as the study universe. The theoretical framework was thoroughly tested through both primary and secondary data.*

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**Key words:** Motivation, industrial security, Management, Confidential records.

### 1. Introduction

Sugar industry falls under agro-based industrial structure. It is one of the major industries in Sindh. The overall success of this industry is highly dependent upon the motivational levels among its workers and measures by the organizational security concerned. It is argued that security is not simply locking up company's property and watch at gates; but it is a systematic approach to protect all valuable and secret information, confidential data, records, cares for business ethics and organizational reputation. This paper examines the causal relationship between the levels of motivation among employees and their response to maintain security, especially secrecy about confidential data and policy. The case of Matiari sugar mills is used for study purposes. The paper is

divided into four parts. Part one and two focuses upon the conceptualization of research process. This includes reviewing literature, setting objectives and exploring research justification. Whereas, parts three and four largely aim at explaining research methodology, study results, conclusions and recommendations.

## **2. Study Rationales and Data Collection Modes**

Motivation is an essential part of effective management whereas, the term management is described by various scholars as physiological process, and similarly others suggest that it was a predisposition to behave in purposive manner to achieve organizational goals. It is argued that among other goals priority of an organization could be to ensure that it maintains productivity marks higher profits as well as it keeps intact it's confidential, operational and policy records so that it stays in a competitive market.

The conceptual framework derived from the literature clearly demonstrates that there was a significant relationship between the motivation among the workers of the organization and its impact on both the maintenance of confidential record and well as achieving higher productivity

For study purposes number of sugar bags produced in past five years was correlated with workers attitudes i.e. response towards ownership of organization and their commitment in keeping confidential data secret so that policies are not disclosed to market. For study purposes, Matiari sugar mills were used as sample study universe. Matiari sugar mills were established in 1988. The mills are spread over 140 acres. Annually, this mill produces one million bags of sugar along-with various bio-products as molasses, press mud and bagasse. Table 1 shows sugar production from 1998-99 to 2007-08 confirming that there is a lot of fluctuation in production of sugar each year as the size of crop varies due to certain market factors like price of crop, change of government policies and improper planning etc .

**Table - 1**

Sugar Production in Pakistan from 1998-99 to 2007-08

YEAR	SUGAR PRODUCTION (TONS)
1998-99	3,531,073
1999-00	2,415,018
2000-01	2,481,010
2001-02	3,192,053
2002-03	3,662,285
2003-04	4,001,610
2004-05	2,921,966
2005-06	2,537,752
2006-07	3,516,218
2007-08	4,740,913

Source: Pakistan Sugar Mills Association, 2009.

Table 2 shows the production of molasses from 1998-99 to 2007-08.

**Table - 2**

Molasses Production in Pakistan from 1998-99 to 2007-08

YEAR	MOLASSES PRODUCTION (TONS)
1998-99	2,113,594
1999-00	1,397,377
2000-01	1,501,501
2001-02	1,82,2961
2002-03	2,04,4204
2003-04	2,122,099
2004-05	1,497,395
2005-06	1,437,955
2006-07	1,911,102
2007-08	2,663,708

Source: PSST, 2009.

This may also be pointed out that another by-product of sugar is press mud, used as fertilizer to agricultural lands and 30 kg mud is achieved by crushing of one ton of sugarcane Table 3 shows summary of research modes adapted to carry this study.

**Table - 3: Summary of Research Mode**

<b>Study Universe</b>	<p>Matiari Sugar Mills</p> <p>a) Selection of respondents (i.e. mills employees) by three major tiers with each having varying levels of responsibilities:</p> <p><input type="checkbox"/> Tier one: Top Management</p> <p><input type="checkbox"/> Tier two: Middle Management</p> <p><input type="checkbox"/> Tier three Bottom Management</p> <p>b) Growers interviews</p> <p>c) Interviews with the contractors.</p>
<b>Mode of Data collection</b>	<p>a) Detailed secondary data via Internet, sugar journals, PSST Conventions, PSMA handouts etc.</p> <p>b) Primary data using both close and open ended modes of data collection.</p> <p>c) Group interviews with the growers, contractors, employees in the mills.</p> <p>d) In-depth interviews with Board of Directors in the mills.</p>
<b>Data processing &amp; Analysis SPSS Windows</b>	<p>a) Descriptive and inferential statistics using</p> <p>b) Qualitative analysis on some general aspects of study.</p>

The table1 shows that Matiari Sugar Mills (MSM) was selected universe and the employees were divided in three tiers of management for collection of data. The growers were also divided in three categories. Data was also collected from the contractors. The organizational structure in MSM comprises of Top, Middle and Bottom management tiers. In order to collect reliable primary data on parameters i.e. security, motivation and productivity all three tiers were selected. The details are provided Table 4.



**Table - 4**  
Summary of Selected Respondents

Tire	Total Size	Samples	Percentage
Top management	20	6	30
Middle management	325	38	11.6
Bottom management	152	30	19.7
Growers 1-25 acres	840	84	10
Growers 26-100"	210	21	10
Growers above 100"	37	4	10.8
Contractors	9	9	100

### 3. Study Results

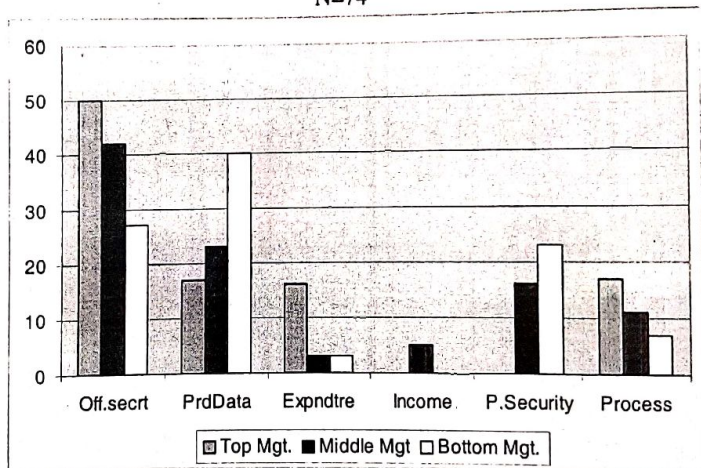
#### 3.1. Assessing Motivation, Security and Secrecy of Data

It is not too difficult to deal with machines as they have the catalog and moreover if one understands the functioning of one machine; he can go for thousands of machine. But dealing with security is dealing with the human minds; and one is always different from another. Not only different minds but also these behave different at different times. As when there is a school problem with employee child; employee will behave differently in morning, different behavior at afternoon after having meals from canteen and yet again different after meeting with big boss. As such, the degree and level of behavior of same person differs at different times but no doubt he is an asset to the organization. He is to be thoroughly watched and to be looked after in a way as he shall also consider himself as the part of the organization and shall take proper care of the data, records, policies, information, secrets, organizational reputation and ethics.

Figure 1 provides details about the importance of data in terms of rank and management tier. Data reveal that office records are top-secret area for security; its percentage in all tires was 50, 42 and 27 respectively. The other important factor was production data as 17, 23 and 40 percent, respectively. Tire-wise percentages for others are expenditure 16, 3, 3-physical security 0, 16, 23-process 17, 11, 7 and income 0, 5, 0-, respectively. Similarly the overall results for distribution of factory security was office secrets at top with 38.5 percent, production data were 29.5 percent, physical security 17.5 percent, process 9 percent, expenditure and income were 3 and 2.5 percent respectively.

**Figure 1: Distribution of Factory Security**

N=74

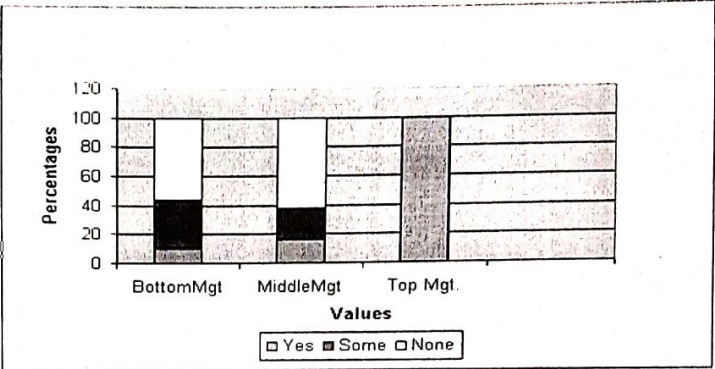


Source: Survey Data of MSM, 2005.

Figure 2 reveals that around 63 and 57 percent of employees of middle and bottom management respectively didn't deal with the confidential matters; otherwise 100, 16 and 10 percent of all tires respectively were fully dealing with it. 21 and 33 percent of both lower tires partially dealt with the confidential matters. This shows the tendency of confidential matters in the organization, for which motivation is very much required to retain data. They are

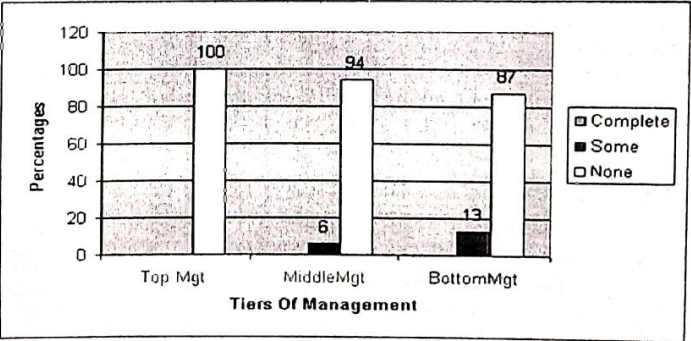
those employees who deal with files, programming, laboratory, equipment, growers, contractors, government agencies etc.

Figure 2: Deal with Confidential Matters  
N-74



Source: Survey Data of MSM, 2005.

Figure 3: Do Leak Data

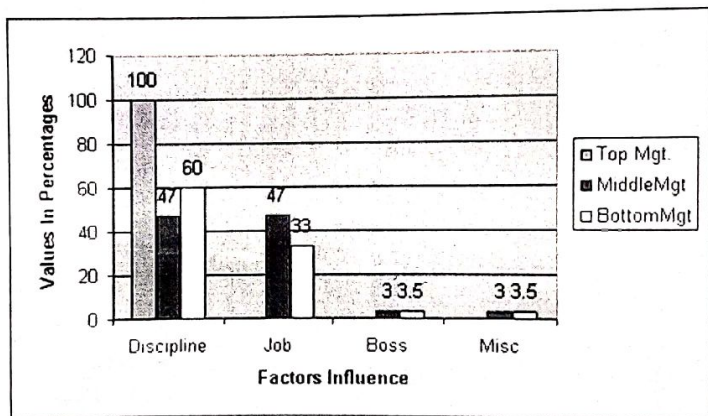


Source: Survey Data of, 2005.

Figure 3 demonstrates that employees were very much aware for the importance of data. Around100, 98 and 87 percent in all tires of management validated that they did not leak any

confidential information Only 6 and 13 percent of two lower tiers of management shared information with others. However, reliability of information leaked by them was questionable due to source through which the information was gathered. Figure 4 demonstrates that organization ensures through all measures to protect confidential data. All possible measures are taken into account to protect the secrecy. Further, all tiers of management showed that they were motivated to put all potentialities towards job; they were exercising necessary care to keep all information, secrets, and files in safe custody. All employees were observed exercising good business ethics.

**Figure 4: What Motivate to not Leak**



Source: Survey Data of MSM, 2005.

### 3.2 Changes in productivity

In order to examine the relationship of sugar production in Matiari sugar mill with motivation and the levels of security in the organization, multiple regression analysis was carried out on following equation:

**Production = Management levels + salaries of staff + cash benefits + security of organization**

**It can be written mathematical in this form:**



$$Dy = \beta_0 + \beta_1MLDUM + \beta_2MW + \beta_3HS + \beta_4SODUM + \mu$$

Where:

DY = with observation of change in production

b  $\beta_0$  = Intercept

b<sub>1</sub>  $\beta_j$  = Slope coefficients, j= 1,2,3,4

ML = Management levels (dummy)  
1 = Top management  
0 = other (i.e. Middle + Bottom)

MW = Motivation among Workers

HS = Health and Schooling

SO = Security of Organization (dummy)

1 = Yes

0 = No

= Error term

OLS: With 74 observations used for estimation from 1 to 74.

The analysis indicates motivation among workers and all these levels of management is important and significant factor towards positive changes in productivity. As indicted at table 5 as Test for Multiple Regression Analysis

**Table - 5:** Test for Multiple Regression Analysis

	Co-efficient	Standard error	T - Ratio (Probability)
Interception	5.8103	.2968	14.027 (.000)
ML	2.3421	.4940	3.163 (0.41)
MW	.7432	.3341	6.61 (.032)
HS	.2392	.3923	4.67 (.000)
SO	.5232	.2934	4.21 (.000)

R<sup>2</sup> = .7593

Mean of dependent variable = 6.8321

D.W = 1.6829

74 percent of the variation is dependent variable i.e. 'Y' is due to changes in explanatory variables. T-ratios are significant at

5 percent. It may be concluded that motivation including staff salaries and cash benefits are significantly explained by the productivity of Matiari Sugar Mills. The T-values at 14.207 with probability (P) value 0.000 are highly significant at 95 percent Confidence Interval 'CI'. The equation shows that more than one explanatory variables influence the production variables.  $R_2 = 0.7593$  & P value at 0.000 validates that  $R_2$  is very unlikely to have arisen by chance if there was no relationship between the dependent and independent variables. Besides Durbin Watson at 1.6829 is well under the acceptable levels showing that there is no significant serial correlation and the equation is valid in statistical framework. This indicates that management levels are not important but the much important is given to motivation among workers, health and schooling.

#### 4. Conclusion

It is mentioned that Matiari sugar mills since its inception from 1991 has progressed upwards in terms of its scale of operations, production and the margin of profitability, for it several factors could be used as explanatory variables. For this study purposes plus change of productivity over a period of time was linked with workers attitude in keeping secrets of the organization away from competitors and also their motivation levels towards achieving organizational goals along with management's attitude for promoting and recruiting employees' at all three tiers were examined. Based upon empirical data the study shows a significant relationship between the productivity and independent variables.

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