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How External Factors Affect Productivity in Brick Factories

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How External Factors Affect Productivity in Brick Factories

In Context of Mirpur Ceramic Works Limited

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ID# 0730086
Date of Submission: 29 April, 2012

Submitted To:
Mr. Chowdhury Rajkin Mohsin

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Letter of Transmittal

April 29, 2012
Mr. Chowdhury Rajkin Mohsin
Internship Supervisor
School of Business
Independent University, Bangladesh
Bashundhara, Dhaka

Subject: Submission of Internship Report

Dear Sir,

I have completed this report as part of my internship program. The report has been compiled as per your requirements and those set by the host organization. It gives me immense pleasure to tell you that working on this internship report has given me a wide range of exposure.

The report is based on the knowledge, experiences and the skills that I have acquired during my period of internship at Mirpur Ceramic Works Limited (MCWL) and also a research on "How external factors affect productivity in brick factories" in context of MCWL.

I am thus submitting this report with the hope that it lives up to your satisfaction. However I would be glad if you enlighten me with your thoughts and views regarding the report. In addition, if you wish to enquire about any of the aspects of the report, I would be glad to answer your queries.

Sincerely

Buland Rahman
ID: 0730086
Independent University, Bangladesh

Acknowledgment

First of all, I would like to thank the Almighty Allah for blessing me with the strength, aptitude and patience for successfully completing my internship and this report.

I would like to thank my Faculty Advisor, Mr. Chowdhury Rajkin Mohsin for giving me the opportunity to work with him during my period of internship. I have been able to compile and complete this report in a comprehensive manner due to the guidance, support and counseling that he has provided me with during this period. I have tried my best to implement his constructive suggestions while writing my report.

I would also like to take this opportunity to acknowledge the help provided to me by some people of the company. My sincere gratitude goes to Mr. Asif Ariff Tabanai (Director of MCWL) , Ms. Ayesha Sanaa Asif Tabani and Mr. Md. Mazniul Hasan (AGM Accounts), for giving me time from their busy schedule, providing me with information that was required to complete the report, and for guiding me properly throughout the period of my internship. I would also like to thank all the employees of MCWL who has supported me and co-operated with me during my internship period.

Lastly, but most importantly, I would like to thank my husband Zeeshan, my family and my friends. Their support helped me through every stage of this process.

Abstract

Bricks are an essential building material in the construction industry since the very beginning in Bangladesh. Mirpur Ceramic Works Limited (MCWL) has been successfully manufacturing bricks, blocks, pavers, etc for over 50 years. However, a few external factors such as poor quality of raw material supplies, availability of skilled and semi-skilled labour and change in weather conditions adversely affect MCWL's productivity levels. This research intends to investigate why and how these factors are affecting productivity. It will be a causal study aimed to measure if the existence of or a change in one variable causes or leads to a change in the other variable. The size of the research will be 223. Questionnaires containing 15 questions will be distributed among the 223 employees of the company. The questionnaires' validity and reliability have been tested before by scholars and the alpha values are available. The SPSS software and step-wise regression analysis will be performed to analyze the collected data. This study will offer an insight thorough a "snapshot" view of a particular period of time, but not an ongoing picture of the changing scenario. This research work will be expected to make a significant contribution as such study has not been conducted before in the context of MCWL.

Introduction

Brick sector has a high demand in the construction industry both in developed and developing countries. This sector remains one of the largest employment generators in most developing countries given that it is the most important supplement to feed the construction industry. In recent years brick kilns have mushroomed up in the rural areas of Bangladesh taking up agricultural land which has resulted in inefficient management of resources as well as finished products. This in turn has also affected the quality of supplies which has gone unregulated. According to United Nations Office for Project services, “Bricks form the backbone of the aggregate requirement in Bangladesh. Traditionally, brick making is a small-scale business mostly located in peri-urban areas. In Bangladesh, there are over 4,000 brick making enterprises producing over 12 billion bricks annually. Annual growth rate of the construction sector in Bangladesh has ranged from 8.1% to 8.9% in the last decade and this is expected to continue into the foreseeable future” ("Project fact sheet”, 2005).

Mirpur Ceramic Works Limited (MCWL) is a private limited company registered under the Companies Act 1913 on 19, November 1959. This company is the largest of its kind, engaged in manufacturing quality structural clay products like Bricks, Blocks, Pavers, and Unglazed Tiles using state of the art machinery and technology being developed from time to time by its Research and Development department, through which the company is able to market various products to meet the growing demands of the market. MCWL has 7 showroom outlets, 4 in Dhaka, 2 in Sylhet and 1 in Chittagong.

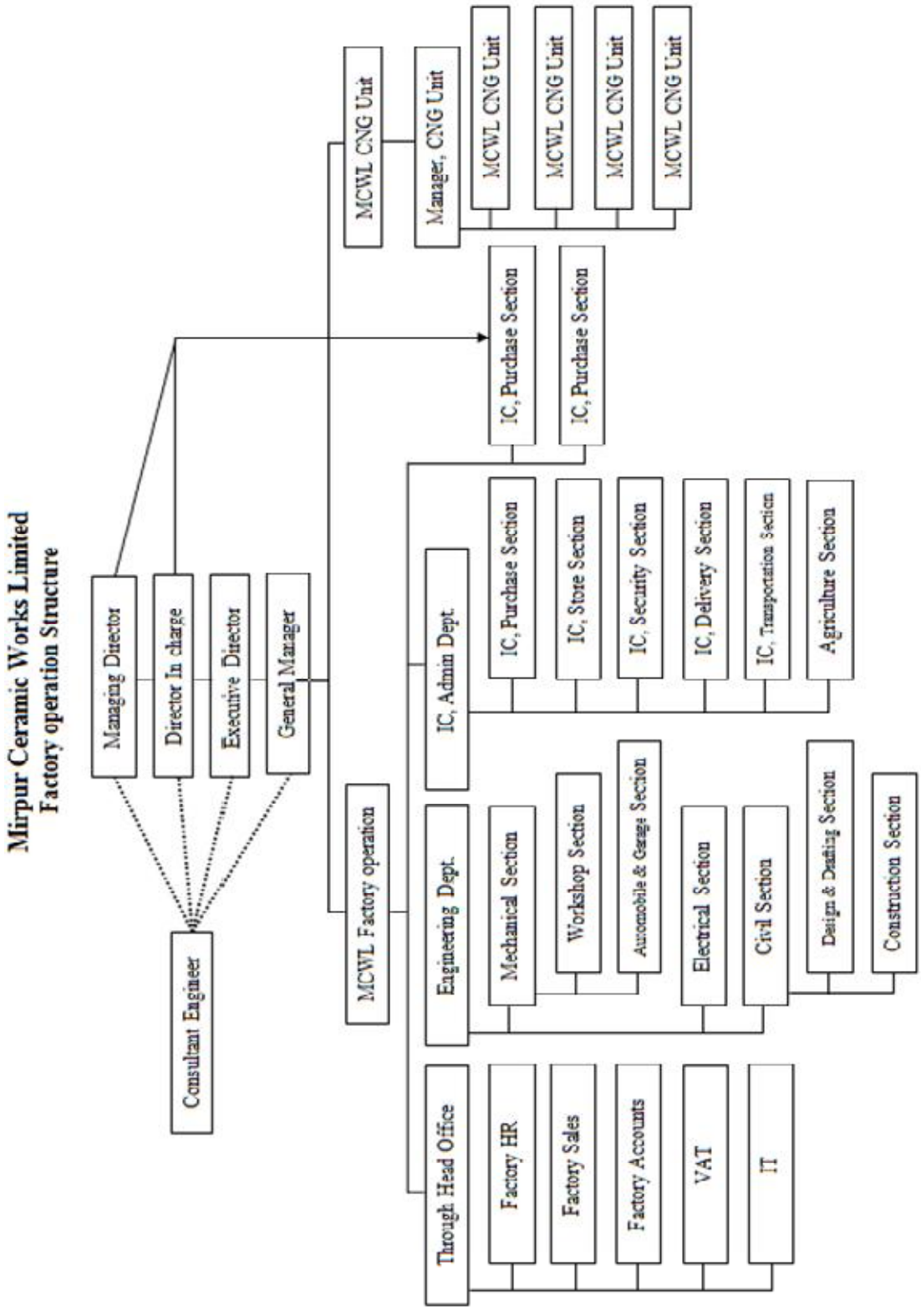
The Company produces 30 million pieces of different products per annum. Besides meeting the country's requirement, they also export a sizeable quantity and earn foreign

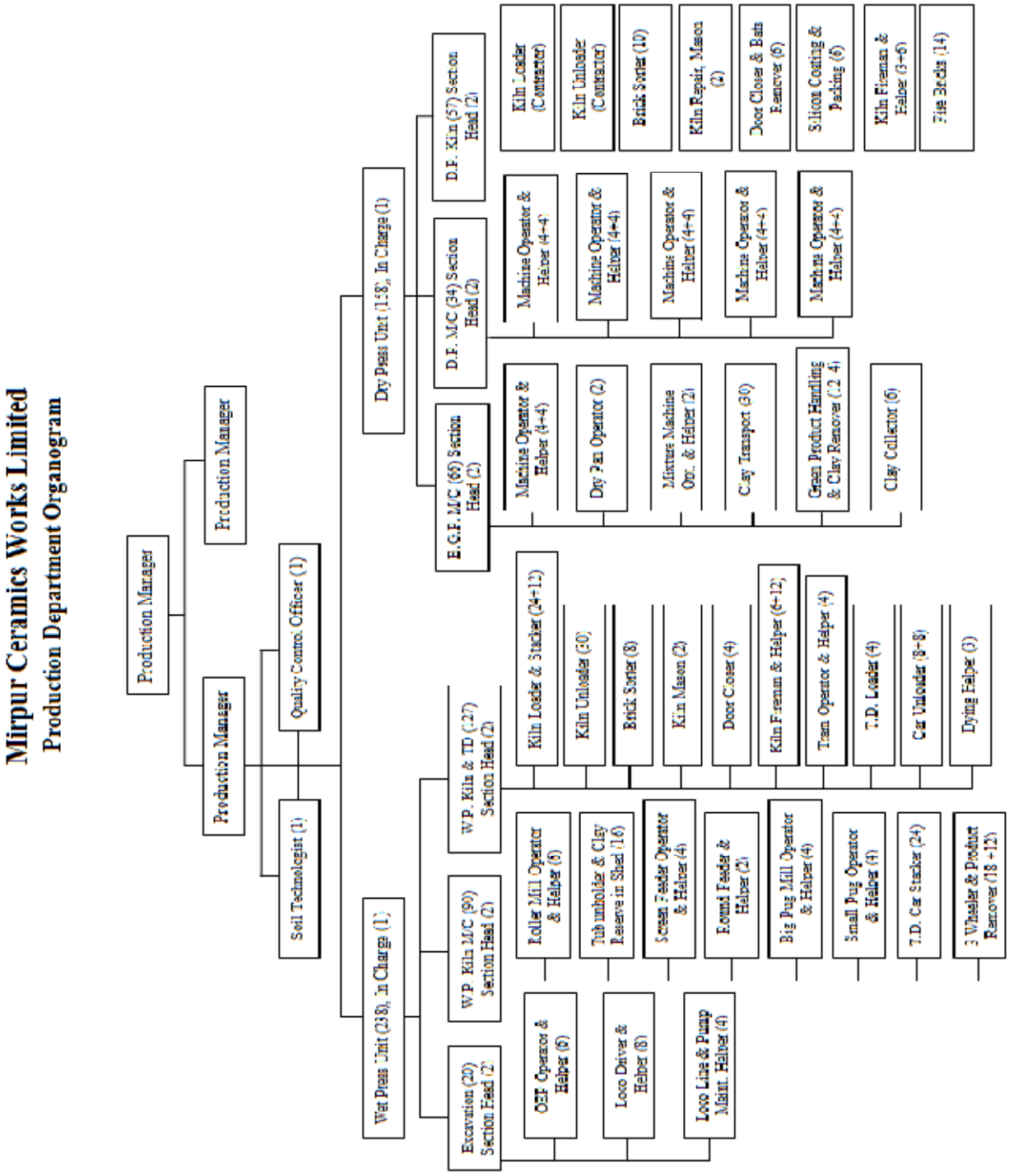
exchange. They have also gained a reputation in both the domestic and international market for their reliable and high quality goods. This Company was also awarded Export Trophy for the financial year 1996-97 due to its outstanding export performance in its own field. MCWL also owns a CNG Refilling Station and Conversion Workshop.

However, MCWL has been facing a fluctuation in their productivity levels mainly because of 3 external factors:

- **Poor quality of raw materials from suppliers:** MCWL requires batches of new raw materials, essentially clay, for manufacturing bricks among others. It has been discovered innumerable times that the supplier occasionally combine poor quality raw materials with their supplies, hence, a great deal of time is wasted in performing quality management and control activities putting pressure on the cost front. The suppliers are forced to exchange the batch of goods for better quality when found guilty of supplying poor quality goods; however, this process takes up even more time leading to lower productivity levels and rise in costs.
- **Availability of labour:** There are particular times in the year when MCWL needs to increase and/or decrease the work force. Since MCWL's factory is not yet fully automated they require a sizeable number of labourers when demand is at peak, which is usually the non-monsoon season. Also, the recruitment of new untrained labour for short periods has a direct correlation with low levels of productivity.
- **Change in weather:** Because MCWL is not yet a fully automated factory, they are excessively reliant on manual measures and therefore do not have an automatic drying chamber which is essential to surmount the problem of fluctuating productivity during

monsoon. In addition the demand during monsoon dips to levels where an economy of scale becomes difficult to achieve. During monsoon the construction industry also goes into slumber and thereby a demand deficit is created. Even though production continues they are scaled down to meet the demands of that period alone as a result the factory is unable to operate at an optimum level.


Mirpur Ceramic Works Limited
Factory operation Structure
Managing Director
Director In charge
Executive Director
General Manager
Consultant Engineer
MCWL Factory operation
MCWL CNG Unit
Manager, CNG Unit
MCWL CNG Unit
MCWL CNG Unit
MCWL CNG Unit
MCWL CNG Unit
IC, Purchase Section
IC, Purchase Section
IC, Admin Dept.
IC, Purchase Section
IC, Store Section
IC, Security Section
IC, Delivery Section
IC, Transportation Section
Agriculture Section
Engineering Dept.
Mechanical Section
Workshop Section
Automobile & Garage Section
Electrical Section
Civil Section
Design & Drafting Section
Construction Section
Through Head Office
Factory HR
Factory Sales
Factory Accounts
VAT
IT


Mirpur Ceramics Works Limited
Production Department Organogram
Production Manager
Production Manager
Production Manager
Soil Technologist (1)
Quality Control Officer (1)
Wet Press Unit (218), In Charge (1)
Excavation (20) Section Head (2)
OSF Operator & Helper (6)
Loco Driver & Helper (8)
Loco Line & Pump Maint. Helper (4)
W.P. Kiln M/C (90) Section Head (2)
Roller Mill Operator & Helper (6)
Tub unholder & Clay Reserve in Shed (16)
Screen Feeder Operator & Helper (4)
Round Feeder & Helper (2)
Big Pug Mill Operator & Helper (4)
Small Pug Operator & Helper (4)
T.D. Car Stacker (24)
3 Wheeler & Product Remover (18 -12)
W.P. Kiln & TD (127) Section Head (2)
Kiln Loader & Stacker (24+12)
Kiln Unloader (30)
Brick Sorter (8)
Kiln Mason (2)
Door Closer (4)
Kiln Fireman & Helper (6+12)
Tram Operator & Helper (4)
T.D. Loader (4)
Car Unloader (8-8)
Drying Helper (3)
Dry Press Unit (138), In Charge (1)
E.G.F. M/C (66) Section Head (2)
Machine Operator & Helper (4+4)
Dry Pan Operator (2)
Mixture Machine Opr. & Helper (2)
Clay Transport (30)
Green Product Handling & Clay Remover (12+4)
Clay Collector (6)
D.F. M/C (34) Section Head (2)
Machine Operator & Helper (4+4)
Machine Operator & Helper (4+4)
Machine Operator & Helper (4+4)
Machine Operator & Helper (4+4)
Machine Operator & Helper (4+4)
D.F. Kiln (57) Section Head (2)
Kiln Loader (Contractor)
Kiln Unloader (Contractor)
Brick Sorter (10)
Kiln Repair, Mason (2)
Door Closer & Bats Remover (6)
Silicon Coating & Packing (6)
Kiln Fireman & Helper (3+6)
Fire Bricks (14)

Work Experience

An ideal work environment in my opinion is in simple words an atmosphere where one is able to engage and learn with the help of superiors. My personal experience at MCWL was nothing short of extraordinary. First, because the wealth of experience gained at every level of the Company and especially in the field in which I major, was immense. Secondly, the engaging atmosphere with different levels of management has taught me how important decentralized system of management is, where everyone is approachable and finally, my personal satisfaction of having learnt the intricacies of accounting and to a certain extent a peep into how a company is managed. I am certain I have taken a lot from this experience and whatever I have learnt will be with me for a long time to come.

I started working as an intern at MCWL from 19, February 2012 and continued to work till 19 April, 2012. I worked for the Accounts Department and my position as an intern required me to fulfill several tasks.

The first two days of work involved among other things a thorough tour of the office where I visited all the departments starting from the accounts department. I also got the opportunity to go round the factory and the CNG refilling and conversion workshop. After exploring all the places I was taken back to accounts department where Mr. Md. Mazniul Hasan (AGM Accounts), my supervisor, gave me more knowledge about the company and also explained their accounting process and my tasks.

Responsibilities as an Intern at Mirpur Ceramic Works Ltd:

- Preparing Cash Memos: Cash memo is a document that a seller passes to a buyer at the time of a specific purchase of goods or services. It is the equivalent of an invoice and is only used to record transactions that are paid for using cash, rather than bank transactions or checks. The following information is required while making a cash memo:

ü Date of purchase: This is vital as the date of the purchase enables the transaction to be placed in the correct month.

ü Details of goods or service sold: This shows the amount of items purchased so that the amounts can be tracked easily in the future.

ü Price of items sold: The price of individual items is included in the cash memo. There are also sub-totals for totals of the same item, as well as the final total of the transaction that took place.

ü Name and address of seller: This is vital as the finances of the company may be checked in the future, and this enables those auditing the accounts to be able to cross-reference the two companies, and will ensure that both companies have placed the cash sale/purchase through their books.

ü Name and address of buyer: As with the above point, this is vital to cross-reference the transaction, if this is needed.

A cash memo is recognized as a legal document, in the same way that an invoice is.

- Preparing Delivery Orders: A delivery order is the document which details the delivery information of an item, is very important in distribution. A delivery order is an important document in 2 ways: it has full details of how the delivery will take place and, in some cases, warrants the release of a shipment from port or other authorities.

While having an item delivered, the delivery order outlines who it will be shipped to, how it

will be shipped, special needs for the delivery, and when to release the delivery. This information is important because delivery is one of the most important aspects to the sales process.

The delivery is made when the customer shows the delivery order. Along with the delivery a gate pass and VAT receipt/challan.

- Preparing Money Receipts: A money receipt is a document which records the details of a financial transaction between two parties. It is prepared by the seller of goods or services and given to the purchaser. The receipt names the seller and often the purchaser as well, lists the date, and often records the nature of the transaction itself.

  Money Receipts are made when the customer wishes to make payment through cheques/ when goods are sold on credit.

- Preparing Credit Delivery Orders: Credit orders are sales orders that that are received without requiring payment at the time of delivery. Instead, the sales order is processed and an invoice is issued for the goods and services received. Generally, an invoice for a credit order will carry terms of payment that commit the recipient to pay the outstanding balance within a given period of time.

- Preparing minutes: Meeting minutes are instant written record of a meeting or hearing. They typically describe the events of the meeting, starting with a list of attendees, a statement of the issues considered by the participants, and related responses or decisions for the issues. After a meeting, my responsibility was to record all the events/decisions taken at the meeting and list the attendees. This helps to streamline future meetings, hence, making them more productive.

- Preparing Sales Statements: I was given the opportunity to prepare sales statements along with my supervisor. Sales statement shows all sales transactions being done, and the collection associated with the sales (both credit sales and cash sales). Other collections like deposits and collection for previous sales are also included in this report. This report is extremely informative which captures the entire performance of the business for a period of time. With detailed payment modes, one will be able to know exactly the cash flow in relation to sales.
- Checking attendance sheet of employees: I was required to check the attendance sheet of employees to see if they had taken any leave (with or without notice). This had to be done before proceeding to the salary sheet/ wage sheet and making salary payments. If an employee had taken leave without notice, an amount would have to be deducted from his/her salary and thus adjusting the salary payment. Another important issue that had to be checked was whether the employees took out any loans from the company. If loans were taken then an amount would be deducted from the salary.

Problem Statement

The researchers will investigate the impact of external factors on the productivity of bricks in context of MCWL.

Although MCWL is considered to be one of the largest brick manufacturers in Bangladesh, the management team at MCWL believes that their productivity is affected by external factors such as inferior quality of raw material supplies, availability of labour and change in weather conditions. They want to take immediate action that will ensure a steady rise in productivity. Therefore, this study will investigate the affects of poor quality of raw material

supplies, availability of labour and change in weather conditions on productivity in context of MCWL.

Purpose of the Study

The purpose of the study is to present and test a model that identifies the relationship between the external factors such as quality of raw material supplies, availability of labour, change in weather and productivity in MWCL. This study will assist the researchers to look into the causes of the problems that MCWL is facing and clear the dilemma that they are experiencing. MCWL wants to maintain its position in the brick manufacturing industry in Bangladesh.

Literature Review

There is no doubt that construction is a key activity within any economy; it influences, and is influenced by, the nation's gross domestic product (GDP) (Cox et al, 1998, cited in Madi, 2003).

Productivity:

Productivity is about the effective and efficient use of all resources. Resources include time, people, knowledge, information, finance, equipment, space, energy, materials.

Improving productivity is a major concern for any profit-oriented organization, as representing the effective and efficient conversion of resources into marketable products and determining business profitability (Wilcox et al, 2000).

Consequently, considerable effort has been directed to understanding the productivity concept, with the different approaches taken by researchers resulting in a wide variety of definitions of productivity (Lema, 1995; Pilcher, 1997; Oglesby, 2002). Productivity has been generally defined as the ratio of outputs to inputs.

Employees at MWCL feel that there is a fluctuation in their productivity due to the external factors.

Poor quality of raw materials from suppliers:

The most important raw material for manufacturing bricks is clay; hence, a well structured quality management system should be implemented in all to ensure finer quality of raw materials from suppliers for superior finished products. Good quality of raw materials plays an important role in obtaining a stable production of high quality products.

According to the United Nations Industrial Development Organization (2006), it is important to ensure the quality of raw materials and components by undertaking regular checks on the suppliers' processes and also where necessary by carrying out incoming inspection. The working paper also mentions that: No one can make a good product from unsatisfactory raw materials (UNIDO, 2006).

Availability of labour:

Employment in Bangladesh is seasonal, especially in small and medium industries.

One big positive side of this industry is that it is very labor intensive and employs a large number of workers (2,000,000 workers during peak-season and 800,000 workers during off-season) (Photography at brick kilns of Bangladesh, travel-o-grapher, n.d.)

When businesses are faced with the extra work of a peak season, they can turn to temporary staff in order to fill the requirements they need to continue functioning at full capacity. Hiring part-time workers enables a business to have a more flexible schedule for these employees, who are not locked into a job like a full-timer is. Part-time staff will be able to work at a stronger pace because they have less time to work than do full-time employees. Finding

these employees is possible by understanding the nature of the job ("Benefits of Utilizing Temporary Staff during Peak Seasons," n.d.).

Change in weather:

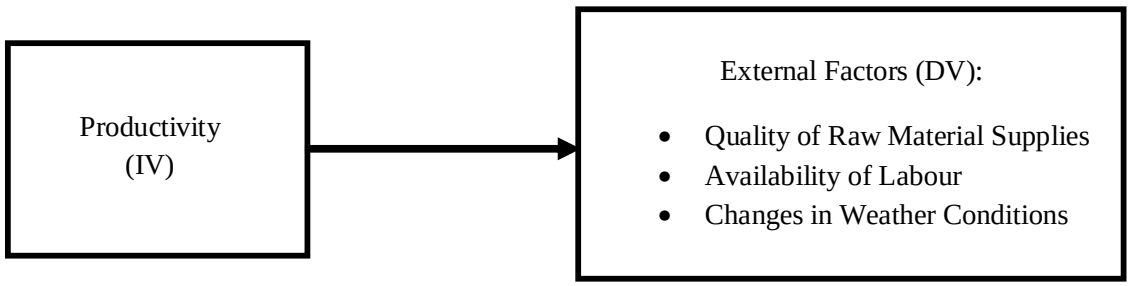
Brickfields are inundated during the rainy season. Almost every year, the water exceeds the capacity of the rivers and water enters the areas adjacent to brickfields, which are not protected by any ramparts. Because being able to enter the brickfields without hindrance, flood water damages the field for drying the raw-bricks and the walls of the oven. (Abheuer et al. 2009)

Abheuer et al. (2009) also added that, more damage is caused by rain. Annually, about four to five hundred thousand raw bricks per brickfield are damaged by rain (about 10 percent of the seasonal production). Whereas the burned bricks are not at all affected by rain, the raw bricks are soft and rain drops destroy the structure of the brick. Raw bricks are spread out in the open sky to dry without any protection or cover. Rain also prevents the workers from working, which results in a loss of income for them.

Proposed Conceptual Framework

Figure 1 presents a diagram of the proposed causal model showing productivity is affected by external factors such as poor quality of raw materials, availability of labour and change in weather conditions. In this section, the proposed model, and the development of hypotheses regardingspecific causal paths between the variables specified in the model has been presented.

Figure 1: Conceptual Framework



Proposed Research Questions and Hypotheses

RQ1. Does quality of raw material supplies affect productivity in context of MCWL?

H1. Quality of raw material supplies affects productivity in context of MCWL.

RQ2. Does availability of labour affect productivity in context on MCWL?

H2. Availability of labour affects productivity in context of MCWL.

RQ3. Does change in weather condition affect productivity in context on MCWL?

H3. Change in weather conditions affects productivity in context on MCWL.

Methodology

Research Design

In order to find appropriate answers to the research questions and to test the hypotheses, the researchers will select a causal study as it is applicable for this research. The research that implies that the existence of or a change in one variable causes or leads to a change in the other variable is referred to as a causal study (Cooper & Schindler, 2009). That is why; a causal study will be adopted to investigate the research questions and to examine the hypotheses.

Mixed methods research will be used in this study. Qualitative approach will be used to develop the external factors and productivity.

To be more specific, the researchers will select an explanatory causal study for this research. Explanatory research goes further than merely indicating that relationships exist between variables. It indicates the direction of the relationships in a causal relationship model (Mouton & Marais, 1994). In this research, particular external factors are hypothesized to have an impact on the productivity. This research can thus be described as being explanatory in nature. In this study the researchers will investigate the relationships between the external factors- quality of raw material supplies, availability of labour and changes in weather conditions with productivity in context of MCWL. Here, the external factors - quality of raw material supplies, availability of labour and change in weather conditions are the independent variables and productivity is the dependent variable. This study attempts to explain relationships among these variables and learn how one variable produces changes in another, therefore it is a causal explanatory study.

This explanatory causal study will be carried out once for budget and time convenience. Therefore, this study will adopt a cross-sectional time dimension.

After collecting the data, a pilot test will be conducted to confirm the variables' reliability and validity. Secondly, the self-administered and close-ended survey questionnaire with ordered choice will be used to survey a sample of employees of MCWL and similar brick factories.

This research will investigate how external factors- quality of raw material supplies, availability of labour, change in weather conditions and productivity are related in the context of MCWL.

Research Approach

The information will be collected from all the employees at MCWL of different of various departments and authority levels. Questionnaire method will be used. Researchers will explain the objective of the research and also clarify the questionnaire to the respondents.

Sampling Method

First, the usual practice for research is 'Probability Sampling'; reasons being that the researchers have first hand information and access to the sampling frame of MCWL. Also they are the ones who have the ability to draw differing samples from the list. The primary observation of the researchers is investigating the relationship between the extrinsic factors which affect or potentially affect productivity level; which is specific to MCWL. Whilst conducting such investigation it is imperative to adopt probability sampling strictly for this study due to the availability of information exclusive to MCWL.

Second, stratified probability sampling will be chosen, because the employees of the company can be divided by their authority level or organizational position (e.g. top management, mid-level management, lower level employees). The population can be segregated into several mutually exclusive sub-population or strata. A simple random sample can be taken from each stratum and thus the results from the study can then be weighted and estimated into appropriate population estimates. Since the researchers' objective will be to collect sample from each level and compare the respondents' answers, stratified probability sampling is most applicable technique.

Third, proportionate stratified sampling will be selected because it is much easier to carry out than other sampling methods and has higher statistical efficiency (Cooper & Schindler, 2009).

The population size of MCWL's factory staff and head office is 531. The researchers will select a sample size of 435, which will be found by applying the formula –

Sample Size formula:

ss = (Z 2 * (p) * (1-p)) / c 2

Where:

Z = Z value

p = probability

c = confidence interval

If the researchers consider a 95% confidence interval at a 2% error limit, the sample size would be 435. However, given the feasibility of this study, the researchers could increase the error limit to about 5%, which would bring the sample size down to 223 which is a more convenient sample size)

The above sample size is large enough to permit tests of variance and significance. Any sample size over 120 permits "Z" tests at small significance levels where there is a normal distribution in the population universe.

Population sampling method will be chosen. Employees of MCWL will be chosen to fill in the questionnaire in order to strengthen the reliability of the research. From each and every department of MCWL 2 employees will be chosen as respondents

Instruments

To gather information, a Structured Questionnaire will be used for this study. A questionnaire is a group or sequence of questions designed to elicit information from an

informant or respondent when asked by an interviewer or completed unaided by the respondent. This is the most practical method as the results can be effortlessly analyzed and interpreted.

- The questionnaires have been adapted from previous self administered survey questions. Pre tested well structured questionnaires will be provided to the respondents.
- In the questionnaire 5 point Liker scale will be used.

Pilot Test of Questionnaire

A pilot test is conducted to detect weakness in the research design and the survey instrument and to provide proxy data for probability sample (Cooper & Schindler, 2009).

A pilot study is imperative in any study since it

- Enables the researcher to identify and rectify problems prior to the survey being conducted.
- Provides an indication of the response rate that can be expected.

So the researchers will perform a pilot test to evaluate the questionnaire for clarity. Burns and Bush (1998) suggested that a pretest of 5-10 representatives is usually sufficient to problems with questionnaire. However, the researchers will distribute 14 questionnaires among 14 managers and assistant managers of the MCWL.

Data Collection

Questionnaires will be distributed among the employees of the organization to collect data. The reasons accounted for this choice are because of the following distinct advantages:

- They are more cost effective to administer than personal (face-to-face) interviews.
- They are relatively easy to administer and analyze.

- Most people are familiar with the concept of a questionnaire.
- They reduce the possibility of interviewer bias.
- They are perceived to be less intrusive than telephone or face-to-face surveys and hence, respondents will more readily respond truthfully to sensitive questions.
- They are convenient since respondents can complete it at a time and place that is convenient for them.

Data Analysis

The researcher will initiate an investigation on how the extrinsic factors, i.e. quality of raw materials, availability of labour and change in weather conditions affect productivity. In order to do so the researcher will utilize a method called step wise regression analysis for this study.

Stepwise regression analysis is carried out to test hypotheses to find which independent variable(s) individually and collectively provide a meaningful contribution towards the explanation of the dependent variable (Jahangir, 2003). Steven (1996) noted that if an investigator wishes to determine whether some conceptually newer measures add anything to the depending variable.

SPSS will be used for research purpose as it provides in-depth investigation in data analysis and visualization. Although this is a causal study, since there is no mediating variable, SPSS software will support the study. In addition, SPSS offers advanced options such as path analysis, hence, using such software will aid in further studies conducted by the researchers.

Limitations

The present study is limited by a couple of factors. First, this study emphasizes only on the situation faced in MCWL and not the entire brick manufacturing industry as a whole. MCWL does not manufacture bricks using an entirely automated procedure; their production involves a large number of labourers. This report may not be valid/appropriate for the study of other brick factories that produce bricks using fully automated procedures (or any other factory as this report is exclusively based upon MCWL) because the stated external factors may not affect their productivity. Second, whilst conducting this research one would face problems with extracting data. This is because much of this sector (brick industry) is unorganized and unregulated as mentioned above. In addition Bangladesh does not have data banks or in other words enough research centers that have handy such statistics needed. For example it would be a daunting task for MCWL itself to give data going back 5 years to study the trend it has had in those years in relation to number of labourers used or number of hours the factory was operational.

Significance of the Proposed Study

MCWL's objective is to remedy its fluctuating productivity levels and ensure a steady and sustainable production level. Further to enhance growth of their company and maintain their status in this particular industry. The current study will shed light on the problems, deficiencies and flawed procedures (if any) of MCWL and in turn help surmount the problems by way of constructive and forward thinking remedies.

In this study, responses from questionnaires will greatly contribute in the assessment of the impact rendered by the external factors on productivity levels through the process of regression analysis. Furthermore, it will assist the management of MCWL to consider the

outcome of the study and remedy their problems in a way they consider fit. In short he results of this study will act as a guide to drive the company into the future well equipped to counter their current problem of fluctuating productivity levels.

This study is the first empirical research of its kind to investigate the dynamics of external factors affecting productivity levels exclusive or specific to MCWL using primary sources of data. In fact, there is no published study on this topic which could be relied on; therefore this study will be a stepping stone towards guiding our industries of such kind to better levels of productivity by better managing their resources. Needless to say it will further encourage more research in this area and hence drive this industry and other small industries and business linked to this sector to a better future- which sees better production levels, better use of labour and last but not the least a positive contribution to the development of the sector(s) and the economy over all.

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Appendix

Structured Questionnaire Survey

Following are some questions which will measure the affect of quality of raw material supplies in context of Mirpur Ceramic Works Limited. Circle one number per statement using the following scale.

1 = Strongly Disagree	2 = Disagree	3 = Neither Disagree nor Agree	4 = Agree	5 = Strongly Agree

1. Poor quality of raw materials has an impact on productivity.	**1**	**2**	**3**	**4**	**5**
2. Quality check of raw materials takes up a lot of time.	**1**	**2**	**3**	**4**	**5**
3. The time taken to check quality of raw materials has an impact on productivity levels.	**1**	**2**	**3**	**4**	**5**
4. Measures must be taken to ensure high-quality raw materials are given from the start.	**1**	**2**	**3**	**4**	**5**
5. More suppliers should be taken into consideration for the purchase of raw materials	**1**	**2**	**3**	**4**	**5**

6. Quicker methods of quality check controls must be implemented.	**1**	**2**	**3**	**4**	**5**

Section 2: Following are some questions which will measure the affects of availability of labour on productivity in context of Mirpur Ceramic Works Limited. Circle one number per statement using the following scale.

1 = Strongly Disagree	**2 = Disagree**	**3 = Neither Disagree nor Agree**	**4 = Agree**	**5 = Strongly Agree**

1. Availability of labour has an impact on productivity.	**1**	**2**	**3**	**4**	**5**
2. During peak season, there is a need for more labourers to tackle the increased rate of production.	**1**	**2**	**3**	**4**	**5**
3. It is difficult to seek more labourers in the peak season.	**1**	**2**	**3**	**4**	**5**
4. Finding the appropriate number of labourers on time for peak season is hard.	**1**	**2**	**3**	**4**	**5**
5. Finding skilled or semi skilled labourers during peak time is difficult.	**1**	**2**	**3**	**4**	**5**

Section 3: Following are some questions which will measure the affects of change

in weather conditions on productivity in context of Mirpur Ceramic Works Limited. Circle one number per statement using the following scale.

1 = Strongly Disagree	**2 = Disagree**	**3 = Neither Disagree nor Agree**	**4 = Agree**	**5 = Strongly Agree**

1. Change in weather conditions has an impact on productivity.	**1**	**2**	**3**	**4**	**5**
2. Monsoon season is the only season when productivity is affected the most.	**1**	**2**	**3**	**4**	**5**
3. Drying chambers could be installed to prevent such impacts.	**1**	**2**	**3**	**4**	**5**
4. Increasing production could cover up the loss before the start of monsoon.	**1**	**2**	**3**	**4**	**5**