

## IMPACT OF BRAIN STORMING ON PRODUCTIVITY, QUALITY, EFFICIENCY, GLOBALIZATION OF ORGANIZATION

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**ABSTRACT:** Productivity and quality are an integral component of organization's operational strategies. Globalization of market and operations forces companies to rethink their productivity and quality problems and in turn their overall organizational competitiveness. This directs the researchers and practitioners to look at productivity and quality improvements issues from a perspective of needs, issues and enablers. The productivity measure has several purposes. It is used principally to compare the economic performance of one country with that of another. It can also be used as an efficiency indicator. The economic growth of a country is usually measured by its increase in production or the gross domestic product (GDP), which comes from two sources: a larger quantity of production factors used (inputs) and/or an increase in productivity. Productivity is therefore considered to be a component of growth.

**Keywords:** GDP, ISO, PDCA, EFFICIENCY, UTILIZATION, QUALITY, PRODUCTIVITY, GLOBALIZATION



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### [1] Introduction

Productivity and quality are an integral component of organization's operational strategies. Globalization of market and operations forces companies to rethink their productivity and quality problems and in turn their overall organizational competitiveness. This directs the researchers and practitioners to look at productivity and quality improvements issues from a perspective of needs, issues and enablers. Productivity of a production system is analogous to the efficiency of a machine. "Productivity" is nothing but the reduction in wastage of resources or it is connected with optimal utilization of inputs may be men, machine, energy, space time and building etc. for producing goods or service. Productivity of a production system may be defined as ratio between output and input. Output means the number of items produced or amount produced and the input means the resource used. Productivity can be increased by increasing the input but productivity may not increase Productivity means how much and how well we produce from the resources used. If we produce more or better goods from the same resources, we increase productivity. Productivity - efficiency \* effectiveness = value adding time/total time Productivity - (output/input) \* quality = efficiency \* utilization \* quality .Partial Factor Productivity:- It is the ratio of total output to a single input. Multifactor Productivity:- It is the ratio of total output to a subset of inputs. Total Factor Productivity:- It is measured by combining the effects of all the resources used in the production of goods and services (labor, capital, raw material, energy, etc.) and dividing it into the output. In manufacturing, Quality is simply defined as the products should work as intended with a minimum number of faults or failures. Quality is the characteristics of a product or service that bear on its

ability to satisfy stated or implied needs. According to **Crossby** Quality is defined as conformance to requirements. According to **Juran** Quality is defined as fitness for use. **W. Edwards Deming** concentrates on the efficient production of the quality that the market expects and he linked quality and management. According to **ISO** Quality is degree to which a set of inherent characteristics fulfills requirements. **Genichi Taguchi** says Quality is uniformity around a target value. The inability to measure, evaluate, and manage the productivity of white-collar employees can cause a shocking waste of resources. Rewards and benefits given without requiring the equivalent in productivity and accountability causes spiraling inflation. Diffused authority and inefficiency in complex organizations cause delays and time delays. There is low motivation among a rising number of affluent workers with new attitude. Late deliveries may be caused by schedules that have been disrupted by scarcity of materials. Unresolved human conflicts and difficulties in teamwork result in firm's ineffectiveness. Increased legislative intrusions or antiquated laws result in constrained management options and prerogative. Overspecialization in work processes result in monotony and boredom. Capital investments in production .Capital investments in technology Capital investments in equipment .Capital investments in facilities Economies of scale Workforce knowledge and skill resulting from training and experience .Technological changes

### [2] Literature Review

1.In an document published in 1987 by Michael Diehl & Wolfgang Strpebe on tile "Productivity Loss In Brainstorming Groups: Toward Solution of a Riddle" considered some of basic concepts of brainstorming & represented same by experiments. They conducted four



experiments to investigate free riding, evaluation apprehension, & production blocking as explanations of difference in brainstorming productivity typically observed between real & nominal groups.

In Experiment 1, they manipulated assessment expectations in group & individual brainstorming. Although productivity was higher when subjects worked under personal rather than collective assessment instructions, type of session still had a major impact on brainstorming productivity under conditions that eliminated temptation to free ride. Via these experiments they also discuss that finding that subjects produced more ideas when working under personal-assessment as opposed to collective-assessment instructions is consistent with assumption that subjects' expectations about assessment of their contributions could account for some of difference between real & nominal groups

2. Chad Syverson published his research in 2011 titled “**What Determines Productivity?**” in which he talks about Economists having shown that large & persistent differences in productivity levels across businesses are ubiquitous. This finding has shaped research agendas in a number of fields, including (but not limited to) macroeconomics, industrial organization, labor, & trade. This paper surveys & evaluates recent empirical work addressing question of why businesses differ in their measured productivity levels. causes are manifold, & differ depending on particular setting. They include elements sourced in production practices & therefore over which producers have some direct control, at least in theory as well as from producers' external operating environments. After evaluating current state of knowledge, it lay out what it see are major questions that research in area should address going forward. He went on to state that thanks to massive infusion of detailed production activity data into economic study over past couple of decades, researchers in many fields have learned a great deal about how firms turn inputs into outputs. Productivity, efficiency with which this conversion occurs, has been a topic of particular interest. particulars of these studies have varied depending on researchers' specific interests, but there is a common thread. They have documented, virtually without exception, enormous & persistent measured productivity differences across producers, even within narrowly defined industries.

3 A discussion paper series was published in 2014 by John Pencavel titled “**The Productivity of Working Hours**” in which observations on munitions workers, most of them women, are organized to examine relationship between their output & their working hours. relationship is nonlinear: below an hours threshold, output is proportional to hours; above a threshold, output rises at a decreasing rate as hours increase. Implications of these results for estimation of labor supply functions are taken up. findings also link up with current

research on effects of long working hours on accidents & injuries. In empirical research on measuring input of labor in production, hours of work are treated in different ways. One approach is to neglect work hours entirely & to measure input of labor by number of employed workers. Another practice is to use worker-hours, product of number of workers & average hours per worker, an approach implying that a given proportionate change in number of workers has same effect on labor input as same proportionate change in working hours per worker. Either of these two ways of proceeding might be correct although it would seem worthwhile to ascertain whether it is.

4. Research titled “**The Problems of Quality Control in Manufacturing Sector A Study of Nigeria Breweries Plc, Enugu**” was published by Mary Ijeoma Marire, Barnabas Ekpere Nwankwo & Ngozi Sydney-Agbor in 2014. This research work was undertaken to examine problems of quality control in manufacturing firms, various techniques of quality control used & to assess effectiveness & efficiency of their applications. This study also set to find out what manufacturing firms seek to achieve through quality control practice. To achieve these objectives, a study of Nigeria Breweries Plc, Enugu, south east Nigeria was carried out. A review of related literature was also undertaken. Data were collected through distribution of questionnaires & use of textbooks, newspapers, magazines, & journals. method of statistical analysis used includes table & percentage while chi-square was used to test hypotheses formulated. From study, it was discovered that quality control practice in manufacturing firms encountered problems as a result of following; non-awareness of quality control techniques, inability to understand need of customers, cost of application & management attitude. It was also discovered that manufacturing firm have some quality objectives they want to achieve through quality control practice. These include; creating a good corporate image, to meet consumer needs & create consumers satisfaction, to achieve lower cost in production etc. Based on findings, it was recommended that training & seminars should be organized for entire workers always, strict compliance to established standard must be ensured & that job description should be properly done to help every staff know his or her role towards achievement of firm's quality goals.

In order to assess product standards to ensure that sub-standard products are detected, SON introduced use of Electronic Product Registration Scheme (EPRS). Also in a situation where consumers are harmed as a result of using any of such sub-standard products, compensations will be given. Also in 2005, SON introduced a scheme known as Standard Organization of Nigeria Offshore Conformity Assessment



Program which is related to pre-shipment verification of quality. Yet there is still an ongoing problem of quality control in Nigeria especially in manufacturing sector.

5. In 2013 a research titled “ **How Quality Affects Productivity & Price in Manufacturing Industries**” was published by Suman Kumari, Anuradha & Dr. SK Sharma. In this they talk about today’s competitive environment mere success & survival of any enterprise whether it is a small scale unit or large scale enterprise depends upon achievement & maintenance of a satisfactory level of quality, productivity, & at same time at reasonable price with optimum use of all factors of production , not just one of them. An enterprise is productively efficient when it is producing its product or service at lowest unit cost that it can. This paper describes how quality directly or indirectly affects productivity & then cost of product. In developing countries like in India there are so many difficulties to gain high quality & high productivity due of many reasons. concept of quality existed much before concept of productivity. There existed a belief till first half of twentieth century that productivity & quality are not related to each other, they can not progress together. Perhaps it was due to mindset of those people who were considered most advanced in industrial world. But during & after twentieth century, Japan automobile & entertainment goods overtook American’s market. It was like a shook. People thought that they are making good quality product but after sometime it was revealed that they adopted quality as a management tool which improved quality, productivity at same time reducing cost by avoiding waste.

#### 6. Tomas Chamorro-Premuzic (2015) wrote Why Group Brainstorming Is a Waste of Time

To grow and innovate, organizations have to come up with creative ideas. At the employee level, creativity results from a combination of expertise, motivation, and thinking skills. At the team level, it results from the synergy between team members, which allows the group to produce something greater than the sum of its parts. The most widely used method to spark group creativity is brainstorming, a technique first introduced by Alex Osborn, a real life “Mad Man,” in the 1950s. Brainstorming is based on four rules: (a) generate as many ideas as possible; (b) prioritize unusual or original ideas; (c) combine and refine the ideas generated; and (d) abstain from criticism during the exercise. The process, which should be informal and unstructured, is based on two old psychological premises. First, that the mere presence of others can have motivating effects on an individual’s performance. Second, that quantity (eventually) leads to quality.

#### 7. Paulus, P B. (2015). Electronic brainstorming research and its implications for e-planning. International Journal of E-planning Research

Sharing ideas efficiently and effectively in groups is a

challenge groups and teams face on a daily basis. In typical face to face meetings, many factors can serve to inhibit a full sharing of ideas and thus the development of effective decisions and plans. To overcome the limitations of face to face meetings, computer based group decision support systems have been developed to facilitate both idea exchange and evaluation. Evidence suggests that such systems can lead to beneficial outcomes. However, unless they are utilized appropriately, even electronic meetings may not effectively tap the intellectual and creative potential of groups. The authors will critically evaluate the theoretical and practical issues involved in the use of this technology and make recommendations for using electronic systems for e-planning.

### [3] PROBLEM FORMULATION

**Statement of Problem:-** After the study of various literatures on productivity improvement, I found the effects of various tools and techniques of productivity improvement in various fields. But, it is not possible to implement all tools and techniques at same time in one organization, therefore some are chosen among of them. The initial step in this research is to systematically study and define the productivity concept and various tools and techniques for productivity improvement. It will then examine where most of tools and techniques are used. In present study the problems of higher cost and low productivity is identified in the company. To solve these problems through the implementation of the ideas generated by the brainstorming in SONA SOMIC LEMFORDER, Gurgaon and results are analyzed for future work.

### [4] Objective of Research

The primary objective of the present study is to improve the productivity and reduce the cost by the implementation of the ideas generated through brainstorming. The main aim of the problem is to show that ideas generated by nominal brainstorming leads to productivity improvement in manufacturing. The secondary objective of research is to keep cost and quality in mind while improving productivity. Brainstorming:- It is an an effective way to generate lots of ideas on a specific issue and then determine which idea – or ideas – is the best solution. Brainstorming is most effective with groups of 8-12 people and should be performed in a relaxed environment. If participants feel free to relax and joke around, they'll stretch their minds further and therefore produce more creative ideas. Brainstorming:- It is an an effective way to generate lots of ideas on a specific issue and then determine which idea – or ideas – is the best solution. Brainstorming is most effective with groups of 8-12 people and should be performed in a relaxed environment. If



participants feel free to relax and joke around, they'll stretch their minds further and therefore produce more creative ideas. Define your problem .Give yourselves a time limit. shout out solutions to the problem while the facilitator writes them down. Select the best ideas. Write down about five criteria for judging which ideas best solve your problem. Give each idea a score. The idea with the highest score will best solve your problem. Nominal Group Technique. Group Passing Technique Team Idea Mapping Method. Electronic Brainstorming. Directed Brainstorming. Guided Brainstorming. Individual Brainstorming

[5] Result and Discussion

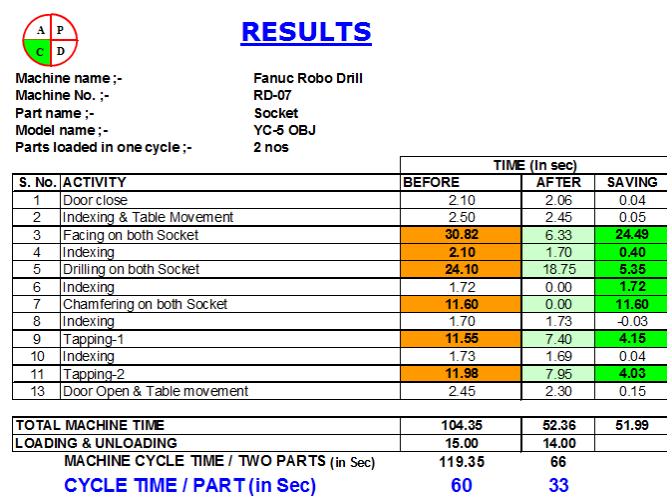


Fig 1

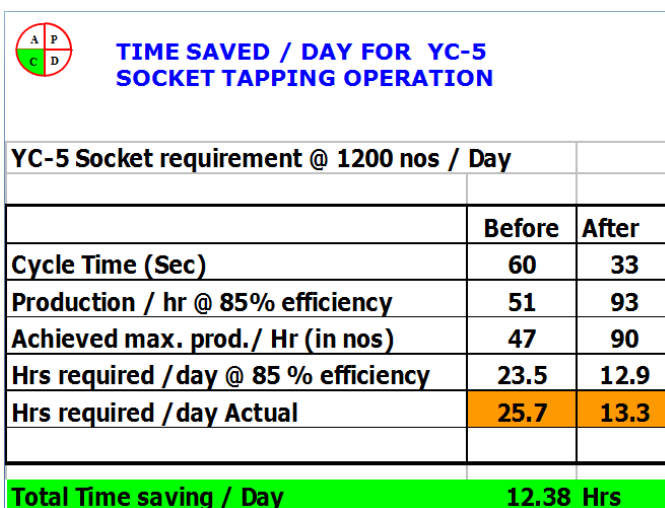


Fig 2

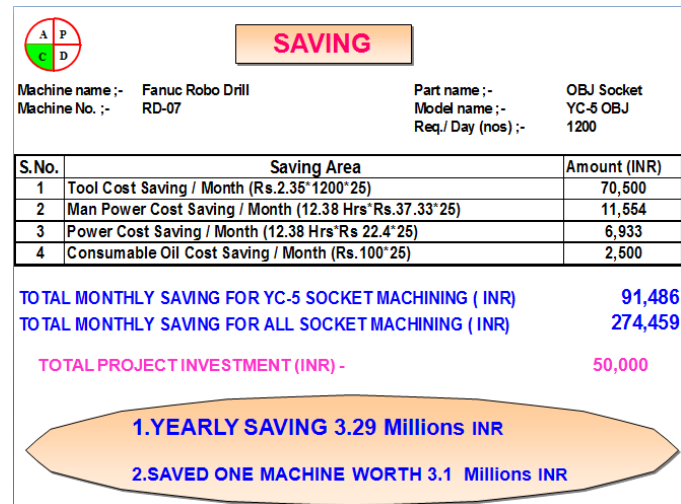


Fig 3

[6] CONCLUSIONS

Productivity and quality improvement does not mean that people should work harder but smarter with better tools, technique, process, resource, and implementation of new ideas. It concludes that everybody in the organization has to play a role in the quality and productivity improvement program. There will not be any rigid formula or practice strategy which can be universally applied to bring about quality and productivity improvement. For productivity and quality improvement efforts to continue to yield positive improvement and result, everyone within the organization must be encourage the team work. The only way, an economic entity can overcome its any problem is thorough formal productivity and quality management. Quality and productivity are inter-related and connected the two are inseparable. The PDCA Cycle with Brain Storming technique is found to be an effective tool to improve productivity with Quality control. From the results it was observed that the 27 seconds reduction in cycle time leads to productivity improvement up to 91 per man-hour with the cost saving of 31 lakhs per year with good quality control.

[6] REFERENCES

- Pardeep K. Chatterjee, "Quality Excellence for productivity improvement", Productivity Vol. 34, No.2, July 1993.
- Shams-Ur-Rahman, "Increasingly Productivity the Quality Circle way," Productivity Vol.31, No.2, July-Sept.1990.





- Daniel G. Hotard, "Quality and Productivity: An Examination of some Relationship," *Engineering Management International* 4(1988).
- Horst Wildemann, "Productivity: A Key Factor for Market Success," *Productivity* Vol. 34, Mp/3, Oct.-Dec., 1993.
- Neeraj and Sushil, "Existing and Awareness of Corporate Strategy for Quality and Productivity," *Productivity* Vol.36, No.3, Oct.-Dec., 1995.
- Nar Singh, "Measurement of Productivity," *Productivity* 1984, XXV, 1, 1995-96.
- Kampan Mukherjee and C.M. Krishna, "Quality and Productivity: Study on a Public Sector Unit," *Productivity* Vol.36, No.3, Oct.-Dec., 1995.
- M.V.V. Raman, "Quality- Productivity Interface," *Productivity* 1985, XXV, 4.
- American Society for Quality, Glossary - Entry: Quality, retrieved 2008-07-20.
- Chowdhury, Subir (2005). *The Ice Cream Maker: An Inspiring Tale About Making Quality The Key Ingredient in Everything You Do*. New York: Doubleday, Random House. ISBN 978-0385514781.
- Crosby, Philip (1979). *Quality is Free*. New York: McGraw-Hill. ISBN 0070145121.
- Edwards Deming, W. (1986). *Out of the Crisis*. Cambridge, Mass.: Massachusetts Institute of Technology, Center for Advanced Engineering Study. ISBN 0-911379-01-0.
- Drucker, Peter (1985). *Innovation and entrepreneurship*. Harper & Row. ISBN 9780060913601.
- Juran J. N. (1979), "A Quality Control Handbook". McGraw Hill New York.
- TC 176/SC (2005). *ISO 9000:2005, Quality management systems -- Fundamentals and vocabulary*. International Organization for Standardization.
- Kano, Noriaki (1984-04-01). "Attractive quality and must-be quality". *The Journal of the Japanese Society for Quality Control*: 39–48.
- Pirsig, Robert M. (1974). *Zen and the art of motorcycle maintenance: an inquiry into values*. New York, N.Y.: Morrow. ISBN 0688002307. Cited by: Jones, D.R.
- (September 1989). "Exploring quality: what Robert Pirsig's "Zen and the Art of Motorcycle Maintenance" can teach us about technical communication". *IEEE Transactions on Professional Communication (IEEE)* 32 (3): 154–158.
- Motorola University. "What is Six Sigma?". Motorola, Inc... Retrieved 2008-07-20.
- Weinberg, Gerald M. (1991). *Quality Software Management: Volume 1. Systems Thinking*. 1. New York, NY: Dorset House. p. 7. ISBN 978-0932633729. OCLC 23870230.
- Kurosawa, K., 1991. *Productivity Measurement and Management at the Company Level: The Japanese Experience*, Elsevier, Amsterdam.
- Drucker, P., 1991. *The New Productivity Challenge*. *Har. Bus. Rev.*, 69(6): 69-79.
- Judson, A.S., 1976. *New strategies to improve productivity*. *Tech. Rev.*, 78(8): 61-67.
- Judson, A.S., 1984. *Productivity strategy and business strategy two sides of the same coin*. *Interfaces*, 14: 1033115.
- Prokopenko, J., 1987. *Productivity Management*, International Labour Office, Geneva.
- Shapiro, B.P., 1977. *Can marketing and manufacturing co-exist?* *Har. Bus. Rev.*, 1044114.
- Rossler, P.E. and Sink, S., 1990. *What's ahead for productivity and quality improvement?*
- Gold, B., 1985. *Foundations of strategic planning for productivity improvement*, *Interfaces*, 15(3): 15-30.
- Melman, S.1956, *Dynamic factors in Industrial Productivity*, John Wiley and Sons, New York.
- Mundel, M.E., 1976 *Measure of Productivity*, *Industrial Engineering*, Vol. 8, No. 5.
- Turner, J.A., 1980, *Computers in bank Clerical function: Implication of Productivity and the Quality of working life*. Doctoral Dissertation Columbia University, New York.
- Siegal, I.h...1976, *Measurement of company Productivity, in improving Productivity through industry and company Management*. National Center for Productivity and Quality working of life, Washington,Dec., Series 2.
- Craig, C.; Harris, R. (1973). "Total Productivity Measurement at the Firm Level". *Sloan Management Review* (Spring 1973): 13–28.
- Sumanath, D.J., 1979, *Productivity Measurement and Evaluation Models for Manufacturing Company*. Doctoral Dissertation Illion Institute of Technology, Chicago.
- Edosomwan, J.A., 1980, *Implementation of total Productivity Model in a manufacturing company*.



Master's Thesis, Department of Industrial Engineering, University of Miami, July.

- Mali, P. 1978, "Improving Total Productivity MBO Strategy for Business Government and not for Profit Organization", John Wiley and Sons, New York.
- Kendrick, J.; Creamer, D. (1965). Measuring Company Productivity: A handbook with Case Studies. The National Industry Productivity Board.
- Taylor, B.W. III, and R.K. Davis, 1977, Corporate Productivity getting it all together, Industrial Engineering Vol. 9, No. 3.
- Deming, E. W. 1982, "Quality Productivity and Competitive Position," MIT Press Cambridge, Massachusetts.
- Tomas Chamorro-Premuzic (2015) "Why Group Brainstorming Is a Waste of Time"
- Paulus, P. B. (2015). Electronic brainstorming research and its implications for e-planning. International Journal of E-planning Research
- Suman Kumari, Anuradha & Dr. SK Sharma. (2013) How Quality Affects Productivity & Price in Manufacturing Industries

