

## Re-Designing Of A Service Center with the Free and Open Source Softwares Providing R<sup>4</sup> (A Comparative Study with the Existing and the Modern Tools of Technology)

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### ABSTRACT

**Aim:** To conduct a research study in a service center with the systematic scientific approach as an activity for the purpose of the descriptive analysis .And to suggest a method to customize the service offerings to the customer using the internet technologies .

**Methodology:**As an ex post facto study ,there was no control over the local and the global variables but an attempt had been made with the service determinants and the SPSS to relate the same to the modern times .This paper focuses on the observations from the concepts of the industrial Engineering practice for a Service Center and with the help of the QWERLS tries to develop the redesign for the same using the Internet of the Services .

**Result(S):**The results of the same had been analysed with the graphs ,tables and the cronbach's alpha model.

**Conclusion(S):**The conclusion of the paper ended up with the suggestive opinions on the usage of the latest tools and techniques which could be inherited from the concepts of the Total Quality Management and the Information Technology (IT).

**KEYWORDS:**QWERLS,SPSS,TQM,IT

### I. INTRODUCTION

The technological usage could be classified according to the generations that had been harnessing and using the methods , in the following ways (Derived from the Commonality Analysis):

Table-1 Generations and Technology

| Generation | Technology                   | Generation | Technology              |
|------------|------------------------------|------------|-------------------------|
| I          | Agricultural Technology (AT) | IV         | Biotechnology (BT)      |
| II         | Industrial Technology (IT)   | V          | Nanotechnology (NT)     |
| III        | Information Technology (InT) | VI         | Service Technology (ST) |

Porter very clearly classified the activities into the primary and the secondary ,as mentioned below[4]:

Table-2 [B3] Primary Activities and Secondary Activities

| Sl No. | Primary Activities | Sl No. | Secondary Activities       |
|--------|--------------------|--------|----------------------------|
| 1      | Inbound Logistics  | 1      | Firm infrastructure        |
| 2      | Operation          | 2      | Human Resources Management |
| 3      | Outbound Logistics | 3      | Technology Development     |
| 4      | Marketing & Sales  | 4      | Procurement                |
| 5      | Services           |        |                            |

In this paper ,the same concept had been mapped to provide the Right Information to the Right Person at the Right Place and at the Right Time for the Right Job .

Profits are the devices which transform the selfishness of making into channels of useful service (Adam Smith) and the relevant information with the manager is far from the complete(H.S.Simon).Through a research on a particular problem statement , opportunities are explored to move beyond and look at the situations from the various different angles in-order to empower and facilitate a globally accepted solution .

Although there are various transformational delivery models of high quality which are always available which could provide the anytime,anywheresynchronized solutions accessiblewiththe Laptops/Notebooks/PC's/Tablets/Smartphones ,etc.

The next talk points from the TQM could be planning ,Organising,Motivating ,Leading and Controlling .Questions asked by the customers are always like the QWERLS(Questions Which Enhances and Reinforces Learnings) and provide(s) the gateway for the development.

Colin Grant Clark (1905-1989) ones said that the Service sector is a tertiary sector of the Economy .According to Lewis and Booms (1983) service quality is a measure of how well a delivered service matches the customers expectations.It has been assumed,both explicitly and implicitly,that the service quality dimensions found in consumer settings can be applied to business markets as well (Holmlund and Kock,1995) .

Service quality is a measure of how well a delivered service matches the customer expectations(Lewis & Blooms ). Service sector is a tertiary sector of the economy (Colin Grant clark).In general there are so called front stage and back stage activities in any business transactions – front stage being the part that comes in contact with

the customer and the back stage being the part that does not .(Teboul)

## II. LITERATURE

From the service perspective ,if E-Com is to be defined ,then E-Com is a tool that caters to the need of the firm ,consumers and management to cut-down the transaction costs in-order to improve the quality of the goods and the services and hence increase the speed of the delivery .For most of the successful companies ,E-Com means everything Digital.Some of the successful companies in nut-shell proved the following [2]:

1. Amazon.com-An online book store started in 1995 grew its revenue to more than 600 dollars in 1998.
2. Fed Ex & UPV – A supplier , made this possible with the digitization ,very easy for the customer to track their packages to schedule packings on the web.
3. CISCO –An inter-networking company that makes the routers and switches could market the orders world-wide in just no time .

According to the rule of the Digitization ,



The categories for the Digitization could be B2B,B2C,C2C,C2B and Intra Business . Driving forces for any E-Commerce is MESET (Market-Economy-Societal Pressures-Environmental pressures-Technical Pressures).

From the Service point of view ,which requires providing the following R-IPTL :

Right information to the Right Person at the Right Time and at the Right Location .

The above mentioned automatically takes care of the following bullets :

Table-3

|  |
|--|
| Both the Qualitative and the Quantitative aspects clearly balanced .   |
| Left Hand Side = Right Hand Side ,i.e. Balance between the Functional Equations on both the sides .  |
| Would lead to the Product Differentiation involving[4] Patents/Trademarks/Copyrights/Quality/Durability/Design/Style/Colour/Packagings/Method/Time/Cost. |

Material Handling also is the Art and the Science of involving Movement ,Packagings and the Storing of the materials in any form by means of gravity ,manual effort or by power actuation (British Institute of Material Handling)[4].

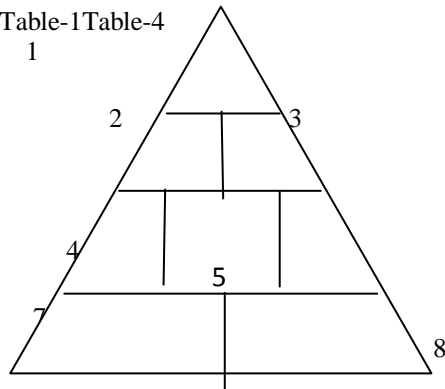
Material Handling embraces the movement handling and storage of everything within and around an establishment(M.K.Compton)[4].

A good plant layout is the one which allows materials rapidly and directly for processing (F.G.Moore)[4].The cost of production which is directly proportional to the location varies from region to region and this causes the concentration of the industries at some of the places and not at the other (Alfred Weber).Based on the line of thinking and postulation , Weber developed what is called as Location Material Index (LMI) to explain the pulls and the pushes of the location .

$$LMI = (WLM/WFP) ; \quad 1 < LMI < 1$$

WLM= Weight of the localized materials .WFP=Weight of the finished products. More-over,according to the Council of the Logistics Management ,Oak Brook –III[4],

Table-1 Table-4  
1



| SI No. | To-Do            | SI No. | To-Do                |
|--------|------------------|--------|----------------------|
| 1      | Customer Service | 5      | Transportation       |
| 2      | Channel Design   | 6      | Materials Management |
| 3      | Network Analysis | 7      | Organisation         |
| 4      | Ware-Housing     | 8      | System               |

Accordingly Logistics ,Planning could be enumerated as  
 Table-5 To-Do's

| SI No. | To-Do         | SI No. | To-Do          |
|--------|---------------|--------|----------------|
| 1      | Mission–Goals | 4      | Time-Tables    |
| 2      | Programmes    | 5      | Responsibility |
| 3      | Activities    | 6      | Manger         |

Table-7 Important Formulae

| SI No. | Formulae  |
|--------|---|
| 1      | Maximum Level =Reorder Level +Reorder Quantity (Minimum Consumption *Minimum Reorder Period ) |
| 2      | Reorder Level=Maximum Consumption *Maximum Reorder Period                                     |
| 3      | Minimum Level=Reorder Level-(Normal consumption *Normal Reorder Period)                       |
| 4      | Average Stock Level=Minimum Level +(1/2) of Reorder Quantity                                  |
| 5      | Danger Level=Maximum Delivery Time * Maximum Rate of Consumption                              |

### III. THEORETICAL BACKGROUND OF RESEARCH

Information (hence referred as a material ) may be defined as a"usable but idle resource ". The material turnover ratio is the ratio of Annual Demand to the AveargeMaterial .Although materials could be regarded as the synchronous terms through wider implications .In other words ,material turnover ratio is the INDEX OF THE BUSINESS PERFORMANCE[1]. Materials management deals with the determination of the optimal policies and the procedures which encapsulate the 11 M's namely [Dr.Visweswarayya],

Table-6 11 M's Concept

|           |          |           |                        |            |             |
|-----------|----------|-----------|------------------------|------------|-------------|
| <b>M1</b> | Money    | <b>M5</b> | Motivational Power     | <b>M9</b>  | Momentum    |
| <b>M2</b> | Material | <b>M6</b> | Management             | <b>M10</b> | Methods     |
| <b>M3</b> | Manpower | <b>M7</b> | Machinery              | <b>M11</b> | Measurement |
| <b>M4</b> | Market   | <b>M8</b> | Means of Communication |            |             |

Important Formulae for the Determination of the Stock Levels [4]

Control Through the Ratio Analysis [4]means the Business Ratios concerned directly with the Materials Management which could be applied to the appraisal and the review of the effectiveness of the materials control.

Table-8 Formulae

| SI No. | Formulae   |
|--------|--|
| 1      | Materials to Working Capital Ratios.                   |
| 2      | Turnover to Fixed Assets .                             |
| 3      | Turnover to Total Assets .                             |
| 4      | Cost of the Goods Sold to the Avearge Stock Holdings . |
| 5      | Net Sales to Materials.                                |
| 6      | Net Sales to Stocks and Work-in-Progress .             |

### IV. RESEARCH METHODOLOGY

This paper concentrates on the two aspects of the Professionalism (wherin the profession is an occupation ,especially onerequiring education and special training.-A.S.Hornsby) ,one defined in the Restricted sense and the other one in the Broader sense .

Table-9Restricted Sense Vs Broader Sense

| Restricted Sense   | Broader Sense  |
|--|--|
| Occupation or the Vocation pursued to make a living. This is pursued to serve the some/the other interests of the society. | Occupation or the calling involving the use of the specialized skills and talents acquired through the extensive education and training. This is pursued to serve the larger interests of the society. |

| SI No. | Disadvantage                                      | SI No. | Disadvantage                       |
|--------|---|--------|------------------------------------|
| 1      | Data Redundancy                                   | 8      | Inconsistency                      |
| 2      | No integrity of data                              | 9      | Improper Filing                    |
| 3      | Mishandling                                       | 10     | Uncoded Information                |
| 4      | Lack of Understanding                             | 11     | System Features                    |
| 5      | Security Problems                                 | 12     | Damages due to climatic conditions |
| 6      | Manipulation of Data                              | 13     | Loss due to the accidents          |
| 7      | Lack of the uniformity in Management              | 14     | Lack of Co-ordination              |
| 15     | Changes are not being incorporated simultaneously |        |                                    |

### V. SOLUTION TECHNIQUES

Management is a mixture of Art and Science.(Dean Stanley &F.Jeela).And the criteria for the evaluation of the management as a profession (Kenneth Andrews &D.E.Mefarland) along with the proper training is highly essential [J1] is as mentioned below:

Table-10 Criteria

| SI No. | Criteria                              | SI No. | Criteria                 |
|--------|---------------------------------------|--------|--------------------------|
| 1      | Existence of the knowledge .          | 4      | Ethical standards .      |
| 2      | Facilities for the formal training.   | 5      | Self-Discipline          |
| 3      | Existence of the representative body. | 6      | Reasonable remuneration. |

All the tasks are to be divided into 03 categories namely ABC ,

Table-11 A-B-C Category

| SI No. | A-Category               | B-Category               | C-Category               |
|--------|--------------------------|--------------------------|--------------------------|
| 1      | Very Important           | Important                | Unimportant              |
| 2      | Now/Today                | Later/Day(S) After       | AnyTime /Not Compusorily |
| 3      | 75 Items out of 10 Items | 15 Items out of 15 Items | 10 Items out of 75 Items |

Other Service level categories could be based upon the following [4]:

Table-12 Shown in the Annexure .

### VI. DISCUSSIONS

This paper did not speak about the 5S concept namely ,

Table-13 5S-Concept

| SI No | Keyword  | Meaning                                   |
|-------|----------|---|
| 1     | SERI     | (Discardthe unnecessary/Straightening-up) |
| 2     | Seiton   | (Putting things in the order)             |
| 3     | Seiso    | (Clean-up)                                |
| 4     | Seiketsu | (Personnel Cleanliness)                   |
| 5     | Shitsuke | (Discipline/Procedure)                    |

With the advanced tools and the techniques ,the traditional information processing system which had the below mentioned Disadvantages [B3]:

Table-14 Disadvantages

### VII. CONCLUSIONS

Therefore ,finally this could be concluded that the an automation of the tasks could be done as these pertain to the category of the repeatative jobs and thus a website with the hyperlinks could be very well created with all the tables into consideration and thus this could be easily proved that the modern tools could very well enhance the productivity and the profitability of the service centers as well .

### VIII. FUTURE WORK

Always there should be a constant as a result when the TI & TO are multiplied (Total Investment in Inventories & Total Investment in orders).[B3] If suppose , there is an Operations and Manufacturing Department also , the following tabulation could be drawn for the purpose of disseminating the data to the registered users :

Table-15 [B3] Type of Data and Source Document

| SIN0 . | Type of the Data                      | Source Document               |
|--------|---------------------------------------|-------------------------------|
| 1      | Operations and the Manufacturing Data | Application Form              |
| 2      | Appointment Data                      | Appointment Letters           |
| 3      | Attendance Data                       | Attendance Registers          |
| 4      | Leave Data                            | Leave Registers               |
| 5      | Family Data                           | Resumes ,C.V.                 |
| 6      | Performance Data                      | Appraisal forms               |
| 7      | Productivity Data                     | Operation Reports             |
| 8      | Wage ,Salary Data                     | Pay sheets ,Pay Roll Register |
| 9      | Loans ,Deduction Data                 | Personal File                 |
| 10     | Accidents Data                        | Factory Records               |
| 11     | Benefits Data                         | Personal File                 |
| 12     | Other Data                            | Miscellaneous File            |

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- [4] www.e-surveyspro.com.
- [5] www.datawinners.com.

Journals[J]:

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**Annexure**

Table-12 Service Level Categories

| Categories  | V/E/D                                 | F/S/N                              | S/D/E                                  | H/M/L                   |
|-------------|---------------------------------------|------------------------------------|--|-------------------------|
| Explanation | Vital/Essential /Desirable            | Fast Moving/Slow Moving/Dead Stock | Scarce/Difficult /Easily               | High/Medium /Low        |
| Meaning(S)  | High Costly/Substantial Costly/Costly | Value/Critical /Usuage             | Important/Indigeneous /Local Available | High/Medium /Low costly |