

The Application of Total Quality Management (TQM in Not for Profit Organizations (NPOs) – with Special Reference to The AkshayaPatra Foundation in India

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1.1 Background

Production of standardized products began in 2nd World War, wherein standard became essential support in Military organization. During the post 2nd World War period controlling quality during production process was given prime importance for products of defense origin in USA. The textile mill was facing the problem of production of standardized cloths in UK. The necessity of production of standardized product led to the introduction of process control. The aim was to correct the production systematic process level wherein any system problem are attended to, for ensuring at the end a standardized product. The process was termed Statical Process Control wherein X R charts were used effectively. This was followed by product control techniques as enumerated by charts such as defects charts, proportion of defect charts such as no defect, proportion of defect chart and number of defect per unit and the like.

The realization that statistical process control and

product control are only to produce products which appear exactly alike came up a little later. The control chart specialists implied that the process and product control technique meant only control of the process for production of similar products within specification limits. The concept of quality management in its totalitarian sense was discovered by Walter A Deming. Total Quality Management in its sense meant quality as positioned in consumer's mind, would get inducted in the modification of design prototype and commercialization of the product. Total Quality Management ensures a sense of quality complete in all respect. Such an effort would yield rich dividends in terms of increase in product performance and increase in product life. The Japanese efforts in introducing TQM for consumer electronic products have heralded global revolution.

1.2 Review of Reviews

The reviews have been attempted with respect to two dimensions:

(1) Concepts and (2) Application.

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The total quality management as a concept emerged from the industry wherein control of errors, defective items and not meeting standards of specifications was in vogue. The conceptual foundation was to minimize systemic errors and accept errors which happened by chance in a production environment. Quality as a tool was examined in its source of its generation happening at time of design, which leads to production of defective items through a production process. All quality gurus concentrated on formulating a perfect design which they presume would lead to a quality product (Taguchi). The concept of quality is an organizational setting was introduced by Deming, who linked up Vision, Mission, Goals and Objectives of the organization to the production of end products. An induction of quality idea in people across hierarchy is expected to lead to quality products which are consistent, sufficient, and efficient in terms of value of the end product. The clarity in quality came up when customer feedback and its transmission to the top of the organization, which in turn would lead to process flow of quality as a corrective idea of the improvement of the product. Deming positioned quality in an organizational setting in the minds of human resources. Thus quality became a core theme of study wherein, completeness of idea of quality is to be encircled with.

As many as 49 available materials, in published or unpublished form, thesis or reports, books and research papers on application of TQM have been reviewed. The overall review on application orientation on concept of quality is done here. The principles of TQM has found application is automotive industries, construction industry, big and small scale industries in private or public sector, technology transfer, financial services, software companies and in market orientation. Factor analysis of TQM across organizations, in education and in research and development, has been applied. Tools of TQM such as Six Sigma, Kaizen, Pareto analysis, lean management, Just In Time (JIT) have found applications in several industries. The use of TQM in public transportation libraries, education instruction and in universities is becoming common. The relation between TQM and balance score card, TQM and human resources, TQM and learning, TQM and health and medi-care services have been done. Use of TQM in land administration,

firm performance, and effectiveness of strategies are documented. The application of TQM in non for profit organization in terms of making critical insights are found in the papers of guy D. Langvardt (2007), process improvement of NPO in Vikki C. Lasstier (2007) and in the literature support of industry application.

The classic book of Peter F. Drucker (1990) provides strong theoretical foundations on the principles and practices to be followed in managing an NPO. Thus it can be concluded that there is no comprehensive study on application of TQM in an NPO setting.

1.3 Research Gap

Studies for review conducted so far indicate that there are several applications of TQM of the product and service industries. TQM is considered a tool, a practice a system a thought process and a thought revolution in management. The range of studies extends to several product bases, industrial systems, types of organizations and to various governance styles. No study appear to have been done conspicuously on application of TQM principles to a Non-Governmental Organization (NGO) or a not for profit organization. The present study intends to examine application of TQM in an NGO or a Not for Profit Organization (NPO).

1.4 Selection of the Organization

The Global Journal in its 2013 report has short listed 450 NGOs from a list of 10 million organizations. The first three NGOs based on a sector have been ranked on the basis of impact, innovation and performance. TAPF is ranked as best organization that is **number one in children and youth sector**. Hence TAPF is selected for the study.

The Akshaya Patra Foundation (TAPF) - A Profile Origin

The origin of The AkshayaPatra is based on a life time vision of Srila Prabhu Pada – the Founder Acharya of ISKCON movement in the world-on a day when he saw children fighting with street dogs for food. This lead to a lifetime vision which is stated thus, "No child within a radius of 10 miles from our center should go hungry."

Vision

The ISKCON center in Bangalore was visited by

Mr. Mohandas Pai in 2000. The interactions with Mr. Mohandas Pai lead to the seedling of serving food to children in government schools. Mr. Abay Jain inducted similar thoughts from where the idea of doing something that may touch school children came out. The target group to be covered was school children in Government schools. The vision of Srila Prabhupada got contextually adopted as: "To ensure that no child in India is deprived of education because of hunger." Accurate mission statement came out from the adopted vision, the mission statement of AkshayaPatra now is: "To reach out five million children by 2020".

Objectives of The AkshayaPatra Foundation

The objectives of The AkshayaPatra can be stated given the adopted vision and mission statements. The objectives are:

1. To serve nutritious food for children studying in Government school.
2. To facilitate the school children were served with food to learn better and
3. To enable any other activity that will help foster to reach the goals set by the organization.

Goals of TAPF in India:

1. To cover all five million children by 2020.
2. To cover all Indian states (25 Indian States + two union territories) by 2020.
3. To enable take up support activities after class tuitions health care, life skills program and Provision of scholarships for 2020.
4. To make AkshayaPatra model available for emulation in different context.
5. To work towards vertical and horizontal expansion to foster growth.
6. For ensuring the support of corporate donors.
7. To make the organization more transparent and accountable for all its action &
8. To build up social capital for the society.

TAPF has grown from strength to strength since its establishment in 2000 in Bangalore. The program began with feeding 1500 Government school children in the periphery of Bangalore city in year 2000. As on

April 2013, TAPF is serving 1.3 million children across 9 Indian states in 18 locations.

1.5 The Problem Statement

The problem of Total Quality efforts and results therein are of interest to anyone who intends to conduct research in area of total quality. Studies appear to have been done mostly in manufacturing sector across the 1st and 2nd World war and emerging economies.

Studies have been done in the area of service quality. The research studies of Parushuraman and others have assessed service quality in all sectors-product and services included. No study has been done in Total Service Quality. Equally deficient on studies on TQM is in "Not for Profit" organization (NPO). An authenticated assessment of Total quality is the need of the hour for enhancing the application of TQM and to make out characteristic differences the organization under study.

1.6 Objectives of the Study

Given the relevance of TQM across all organizations, the present study applies to an NGO known as The AkshayaPatra Foundation (TAPF). The context of study as applicable to TAPF has the following objectives:

1. To make thorough review of TQM principles and its application;
2. To analyze the organization selected for the study The Akshaya Patra which is a unique NGO in the Indian context;
3. To examine the application of TQM principles by TAPF
4. To suggest how TQM principles could be more effectively applied to TAPF.

1.7 Hypotheses:

The settings so far described of the study have enabled us to float the following hypothesis:

1. Basic principles of TQM are conceptually positioned at the corporate level at TAPF.
2. Application of TQM is done in the food production process at TAPF.
3. The children are getting good quality nutritious food on time from TAPF.
4. Performance of The AkshayaPatra can be termed as excellent.

1.8 Total Quality Management (TQM) – An Appraisal

The quality of a product is reflected by the feedback given by the customer after use. Any organization intends to have continuous feedback to enable product / service improvement. All giant size organizations in the manufacturing sector will have quality in action by efforts in multifarious dimensions. When asked about quality amongst segments of people in the organization, nothing comes out clear. It is here an effort needs to be made to understand TQM in terms of concepts, types, dimensions steps, principles absolutes & tools.

Evolution of the Concept

Quality is defined in several dimensions. Quality is “fit for use”, it is control, it means assurance Quality is defined as “Fitness of use”. Quality is expected to derive greater consumer satisfaction. It will yield higher returns. Quality reflects reliability and effectiveness – i.e., doing right thing right. Quality means consistency. Quality will address customer wants and needs at a lower cost. Quality is addressed by change dimension such as technology society, economic and political dimensions. Quality is sure to help predict customer needs. Quality is a characteristic of a product or service that satisfied customer needs. A quality product is free of deficiencies. Quality is “information to requirement”. This means that no quality leads to non-performance. Hence quality is a customer determination based on Experience of a product or service. Measure against stated or unstated conscious, or sensual, technically operational or entirely subjective and always represents a moving target in a competitive market.

There are different types of quality problems at different stages in production and after completing the production of final product. At first quality problems emerge in the design stage.

An assessment has to be made to examine whether the product has been designed to meet the customer needs – real or perceived or both. The next phase is to examine quality in terms of conformance i.e. whether the product produced has met the requirements set forth by the customer. Further the phase is performance. Customers would examine whether the product/service is performing as intended or identified by customer.

To sum up there are three types of quality issues at design, conformance & performance phases of a product. Quality also has to be assessed as efficiency in operation with minimum of resources. The size or volume, cost and lead time of production of delivery matter here.

2.0 Research Design

2.1 Area of Study and Choice of Organisation

The area of study is an NPO in India which has the distinction of being the best and ranked as number one in child and youth sector in the World as per The Global Journal Feb. 2013. The organization is – The AkshayaPatra Foundation (TAPF – 2000). The selection of the organization is justified on the following grounds:

TAPF delivers mid-day meal to the children who are studying in Government owned Primary and Secondary Schools in India.

The children belong to the most under privileged sections of the society.

No distinction is made by gender, religion or any other ‘narrow domestic wall’.

The organization is recognized by the government – state and central.

TAPF is recognized by donors, corporate, foundations, big and small donors.

TAPF covers 10 states in India in 22 locations.

Quality process is initiated and efforts have been made to install quality in the process as well as product delivery.

TAPF is the only organization which has implemented technology in large scale food production.

The organization is making continuous efforts in the improvement of physical product service delivery and reach of the end users (children).

2.2 Universe of Study

The present study intends to examine the application of TQM principles and contribution in the commercial settings, to a setting of an organization in Non-Governmental format or Not for Profit Organization (NPO). While total quality management aims at

positioning of quality based on the needs of consumers, the same gets transmitted in refinement of product design, the process and the end product. The Not for Profit Organization (NPO) has a similar setting in terms of service product to be positioned and delivered to its target group. The formation of an NPO is legally set as delivering quality service product without profit orientation. Over the years it has been observed that, NPOs decline because of dependency syndrome of the organization i.e. every NPO, which is formally established, will depend on its donors, after a year or two for acquiring funds. The failure of an NPO leads to nonfunctioning of the organization.

Each NPO that is setup is on a social cause for deriving social novelty. This requires continuation and sustenance of the organization for long period of time. The service product to be delivered to the end users is dependent on availability of funds for setting the organization towards delivery. The organization requires more funds for consistent delivery and expansion of the end user base. The recognition of the organization have enthused all donors to support on a large scale and in large numbers. The need for the present study in defining the universe is in the context of reception of the end users, the donors by making the organization deliver the right service product at the right time and ensure continuity. The universe of the present study is to assess the TQM and its practices in an NPO setting to evaluate and assess ramifications of quality service product delivered to users.

2.3 Population

The coverage of the study in terms of geography is India. The six Indian states form the geographies for study: 1. Karnataka, 2. Gujarat, 3. Rajasthan, 4. Odhisha, 5. Uttar Pradesh & 6. Andra Pradesh.

The following variables of the population are covered: a. Number of children, b. Number of schools and c. Type of kitchen. The study entails the coverage of different domains who contribute to the process of total quality diagrammatically are: i. Kitchen supervisors, ii. Schools children and Teachers, iii. Donors & iv. The Government.

The population size of each one of these is given below:

Sl. No.	Particular	No.
1	Suppliers	-
2	Kitchen Supervisors	320
3	Schools	10050
4	Children	1347513
5	Donors	-
	Individuals	140370
	One time donors	106459
	Corporate donors	7977
	Trusts and foundations	1007
	Governments	9

The Selection Process:

The year of establishment of AkshayaPatra kitchen vary from 2000 & 2012. Those units which are serving food for children since last five consecutive years spread across 9 states have been selected. This is based on the assumption that any quality process to get initiated will require a continuous and uninterrupted service of food delivery to children of under privileged schools for 5 years. This criterion is applied across all states to enable selection number of schools and children.

Type of Kitchen:

Two types of kitchen are in operation:

(1) Centralized & (2) Decentralized.

Centralized kitchen serves food for larger number of children per day as compared with decentralized kitchen. The quality initiatives are rigorous implemented and documented in centralized kitchen. The effort is the same in Decentralized kitchen. However decentralized kitchen relatively smaller number of children. Decentralized kitchen located in rural remote areas to facilitate serving a cluster of schools. These are characterized by food culture, prevalent in those areas. These are women empowered operating under self-help groups. The food served will meet the standards of nutrition for young children. All the inputs and training required for preparation of food will be given in decentralization kitchen since they are located in access difficult areas. The study intends to restrict to centralized kitchens.

Centralized Kitchen:

Centralized kitchen normally serves about a lakh children. Amongst the centralized kitchen those which are serving more than 50,000 children are considered as large kitchens & included in study. The list of centralized kitchens across different states and their coverage of schools and children are given below:

Sl. No.	State	Centre	No. of Children	No. of Schools
1	Andhra Pradesh	Hyderabad	54,849	454
2	Gujarat	Gandhinagar	1,21,508	666
3	Karnataka	Bangalore	85,204	487
4	Karnataka	Bellary	1,15,945	575
5	Karnataka	Hubli	1,26,693	789
6	Karnataka	Bangalore Vasanthpura	99,326	568
7	Orissa	Puri	55,835	648
8	Rajasthan	Jaipur	92,763	1081
9	Uttar Pradesh	Vrindavan	1,39,262	1874

Total No. of States = 6 (66%)

Total Kitchens = 9 (45%)

Total No. of Children – 8,91,685 (66.17%)

Total No. of Schools – 7142 (71.06%)

The study thus intends to cover six out of 9 States where AkshayaPatra is in operation. This means covering nine out of 20 kitchens & 66.17% of children & 71.06% of schools for study.

2.4 Sampling Design

The sampling plan has aimed at convergence of centers kitchens children and teachers. The sampling plan has envisaged proportional weights with respect to children and teachers. The sampling plan has envisaged proportional weights with two genders of children covered. The determination of sample size with % error works out to N = 891685 size of population.

The number of teachers will be in proportion with number of children selected. Those teachers belonging to a school whose children have been selected would

be interviewed i.e. selection of Teachers is dependent on the selection of children in that school, where teacher & taught meet. This would enable to capture perceptions and experiences of children & teachers.

Selection of Employees:

The organization of each kitchen is best with the employees who are designated with the job of supervisors. Each Centralized Kitchen consists of Supervisors / Head of Quality, Preproduction & Production, Post Production, Quality, HR, School Relation, Finance and Maintenance. Since the study mainly connected assessing quality, two of supervisors except from Finance & Maintenance would be selected. The employees in each kitchen are rigorously supervised by the corresponding group head. Two functionaries from each of these areas would get selected for enumeration that is out of nine kitchen selected 12 functionaries who are responsible for monitoring activities and quality functions would form the sample. In essence 108 (12 X 9) functionaries would be enumerated. The sample size is 50% of the total number of human resources who perform their activities (108 / 216).

Donors:

Donors form the Finance base for institutional development. They contribute to physical infrastructure, such as land, building, Motor vehicles and other such items connected with capital expenditure. The Donors are of 5 types. They are individual donors, one time donors, corporate donors, trust & foundation and Government Donors. The breakup of Donors by type is given below:

Donors by Type of AkshayaPatra Foundation as on 2012-13.

Sl. No.	Donor Type	No
1	Individuals	1,40,370
2	One time donors	1,06,459
3	Corporate donors	7,977
4	Trusts & Foundations	1,007
5	Governments (8+1)*	9

* 8 State Governments and one Central Government

The donors who are active and who are associated with the organization would be considered. That is one time donors who just contribute funds & who remain functionally not associated with the organization are ignorant or not aware or partly aware of the activities of the organization. The data we intend to collect from them would be scanty or partly true. As such it has been decided to not to interview one time donors.

The selection process of other types is enumerated here:

Individual Donors

Amongst individual donors a list of donors from India was prepared, and 58 Donors were enumerated. The enumeration process was personal interviews.

Corporate Donors

A list of corporate donors was made. Those corporate donors who are contributing to the institution was short listed. The first 24 short listed corporate donors were enumerated through online.

The Government

There are eight state governments and one central government for the AkshayaPatra. The contribution of government by size was listed. That state which is contributing highest was selected. A check list was prepared and appropriate data was collected for assessment.

The overall research plan across all target groups against their population size is briefed below:

Sl. No.	Particulars	Sample Size	Population Size
1	Children	500	12,72,215
2	Teachers (1:5)	100	-
3	Employees	108	216
4	Donors	-	-
	Individuals	50	1,40,370
	Corporates	10	79,777
	Trusts & Foundations	-	1,007
	Governments	1	9
5	TAPF Trustees to be interviewed	1	8
6	No. of states selected	1	9
7	No. of kitchens	9	20
8	No. of years of kitchen served	> 5	-
9	No. of meals prepared per day	> 50,000	-

2.5 Determination of Sample Size

The sample size is spread from the end target group, the determination of children spread across six states in nine kitchens form the size variable. The method of

probability proportional to size (PPS) sampling has been used. The overall size of sample is restricted to 500 numbers which is statistically large. The sampling plan for the entire study is tabled below:

Sl. No.	State	Kitchen	No. of Children	Percentage of Children Total	Sample size	No. of Teachers Covered
1	Andra Pradesh	Hyderabad	54,849	6.15	31	6
2	Gujarat	Gandhinagar	1,21,508	13.63	68	14
3	Karnataka	Bangalore HK Hill	85,204	9.56	48	10
4	Karnataka	Bellary	1,15,945	13.00	65	13
5	Karnataka	Hubli	1,26,693	14.22	71	14
6	Karnataka	Bangalore Vasanthpura	99,326	11.15	56	11
7	Orissa	Puri	55,835	6.26	31	6
8	Rajasthan	Jaipur	92,763	10.40	52	10
9	Uttar Pradesh	Vrindavan	1,39,262	15.63	78	16
		TOTAL	8,91,685	100	500	100

Table: Determined Sample Design and Frame.

The children are selected by equal opportunity to gender. The sample size thus becomes:

$$n=0.00192/.0000038723=496 \text{ at } z=1.96, d=.00000387223.$$

The number children interviewed using PPS method of sampling across kitchen is 593. The distribution of children and other target groups covered are given in the following table:

2.6 Operational Definitions

There are two categories of operational definition envisaged in the study. First is the operational definition of TQM Concept. Secondly, the operational definition of functionaries of TAPF.

TQM Concepts

Quality: The food product which is fit for human consumption.

Total Quality: That food product which is of high quality prepared under established process of hygiene, nutrition value and acceptable taste.

Standard of Quality: That standard set by ISO 22000 for food quality.

Food Safety: That standard set for delivery of "safe, nutritious, tasty food on time, and every time" (compliance of norms of Food Safety Standards Act – FSSAI – 2006).

Kaizen: Continuous improvement made in each phase of the process to ensure overall food safety and standards.

Six-Sigma: Reduction of errors on delivery of mid-day meals in accordance with menu charted.

5S: Those principles of Sort, Segregate, Shine, Standardize and Sustain – which ensure an orderly disposition of housekeeping practices.

Nutrition Value of Food: That composition of nutrition will help improve health of children across special differentiation.

Hygiene: Refers to practices which lead to cleaning, sorting, storing and such other practices in storage production and distribution processes which would lead to a healthy product for consumption.

Personal Hygiene: Refers to individual as well as group hygiene practices which will lead to improvement and sustenance of health.

Menu: That list of items identified and listed as the requirement for the end users.

2.7 Target Groups

The Target Groups are given here: i. Pre-Production Supervisor, ii. Production Supervisor, iii. Post Production Supervisor, iv. Quality Supervisor, v. HR Supervisor, vi. School Relations Supervisor, vii. Teachers, viii. Children, ix. Donors, x. Quality Head & xi. Board of Trustees.

2.8 Instrument Development

Three major instruments are essential as a part of the study: 1. Check list, 2. Schedule & 3. Questionnaire.

Check List:

A detail check list was prepared to study macro level performance of AkshayaPatra. This check list included variables associated with the institutions. Number of meals served, number of children served, number of schools covered, location, number of years of serving, number of employees, no. of donors, types of donors, the government, the trustees and several such details were covered. The check list enabled the researcher to prepare the base for research.

Schedule:

A format needs to be prepared to elicit information in the organization. The performance of production process and the reach of different target group's annual statement of accounts and such other details were formatted to be collected. This schedule enabled the researcher to prepare a sampling plan.

2.8.1 Slicing of Instruments

Questionnaire Development:

Questionnaire was developed with respect to following target groups:

1. Children, 2. Teachers / Head Masters, 3. Donors, 4. Pre-production supervisors, 5. Production supervisors, 6. Post production supervisors, 7. Quality supervisors, 8. HR supervisors & 9. Supervisors for school relations.

Questionnaire Development Process:

Each Questionnaire is divided into two major parts. Part I is Demographics & Part II reflection on statements.

Demographics:

Demographics covered in all instrument age, gender,

school, education qualifications, number of years of services, locations, occupations of parents, religion, status, area of work in AkshayaPatra, qualification, no. of years of contribution, regularity of contribution, presence and absence of Quality department and type of kitchen.

Part II:

The part II in each questionnaire has a set of statements which covers various aspects of quality.

Children Questionnaire:

The end product is the food delivered to children six days in a week, Monday to Saturday. Food prepared in AkshayaPatra kitchen would be delivered in hygienic special stainless steel containers to enable children eat fresh food. The location needs of children in terms of staple and nutritious food is being delivered. The quality aspects with respect to children are encompassed in the characteristics of interest with respect to target group. The attributes or characteristics of interest are: 1. Taste, 2. Sufficiency 3. Variety of menu, 4. Time of intake, 5. Freshness, 6. Preparation for taking food, 7. Serving food, 8. Cleaning plates, 9. Regularity, 10. Personal hygiene, 11. Improvement in performance, 12. Improvement in learning, 13. Happiness and 14. Satisfaction after consuming food, 15. Socialization, 16. Improvement in health, 17. Feedback, 18. Itemized delivery, 19. Purpose of joining school, 20. Nutritional value of food, 21. Flavor/Aroma, 22. Do not waste food, 23. Sweets, 24. Curds, 25. Cleanliness worker.

Some relevant statements were developed using the language of children to enable them to reflect experience. As many as 25 statements were developed and edited with the help for experts in this field. The refined questionnaire was then replicated for pilot testing.

Instrument for Teachers / Head Masters:

Part I is Demographics.

The Part II of this instruments consisted of making an assessment of the food delivered through AkshayaPatra. The first 20 questions are measuring same parameter as that of children's questionnaire, other five questions are mentioned below. The variables concerned in this instrument are: 1. Quality, 2. Sufficiency, 3. On time

delivery, 4. Quality delivery (hot), 5. Improvement in enrollment, 6. Attendance/Punctuality of children, 7. Hygiene habit of children, 8. Socialization, 9. Taste of food, 10. Regularity of feedback, 11. Action on feedback, 12. Variety of food delivered, 13. Improvement in children health, 14. Freshness (hot), 15. Improvement in learning, 16. Nutrition value, 17. Improvement of Feedback, 18. Regularity of food served, 19. Dropout rate reduced.

Instrument of Pre-Production Supervisors

This instrument covers those aspects of inventory control and quality to be ensured. It covers details of vendors, supplier development, food safety, inspection, check list, inventory management, sequence of raw materials used, storage and retrieval, JIT FIFO, care in using raw material, sufficiency of stock, duration of stock, clearing, pest control payment of price to vendors, punishment to erring suppliers, grading of suppliers, list of approved suppliers, follow ERP, Procuring vegetables, hygiene and application of 5S.

Instrument of Production Supervisors

Production Supervisors are expected to follow quality initiatives right from availability of raw materials to caring for food safety. The variables and attributes covered are cleaning and sanitizing, ERP, JIT schedule for cooking availability of food grain material, sterilization before cooking, monitoring critical control points, Standard Operating Procedure (SOP) Automated Technology, level of human intervention Training of cooks and supervisors, taste improvement, assessment of nutrition value, preparation of material for cooking, quality checks, adherence to practices, Quality initiatives, Kaizen, 5S, Six sigma process improvement, food lab, ecofriendly initiatives fuel efficiency, prepared for emergency, traceability, practices of good habits, quality and safety, prevention of wastage and air pollution.

Post Production Supervisors Instruments

Post Production Supervisors are expected to take care of food. Important characteristics of quality covered are Kaizen, Six Sigma, holistic approach, safety, on time delivery, road safety care before loading food & delivery, route optimization for delivery of food,

tampering of food, GPRS tracking, training, ISO 22000. Ideas on reduction of cost & employee care.

Instrument for Quality Initiatives Supervisors

The characteristics of quality covered are food safety standard, FEFO, JIT, FIFO, training, pest control supplier development, grading of suppliers, taste, nutrition, ISO 22000, holistic approach, ISO Audit, Internal quality audit, 5S, Surprise audits, Food lab, biogas, hygiene, on time delivery GPRS, Employees safety, training, route optimization for delivery of food, traceability and team building.

Instruments for Supervisors HR

These supervisors take care of hygiene, training, food safety, quality, customer satisfaction, good practices, emergency preparedness, training of employees, water and air pollution, team building, employee benefits and training of children.

Instruments for Supervisors School Relations

The main concern of supervisor school relation is on time delivery, quality, GPRS, taste, sufficiency, consistency searching for new ideas and team building.

Questionnaire for Donors

The donors are supporters of the institution who take care by contributing their savings. The mindset of a donor in terms of association, contribution, image value, cause, intention, volunteering giving back to society, pride of giving and association are considered. The instrument will examine the characteristics of donor and the relationship of the organization with them. An assessment of traits of a Daani would be examined. The questionnaire also examines the value for money donated. Check list are prepared separately for corporate donors, and the Government, with exclusion is one time donors Trusts & Foundations. Any donor who appreciates the organization by contribution will repeat the exercise when he is convinced of right use of his donation.

The questionnaire also examines the value for money donated in terms of transparency, usage and realization of value.

Translation

All the developed instruments have been translated

into five languages from English: 1. Kannada, 2. Telugu, 3. Hindi, 4. Gujarathi & 5. Oriya.

Statistical Tools Used

The first tool that is used is assessing sampling adequacy. The adequacy of a sample is examined in terms of association of sample values and its closeness to the population values.

Reliability & Validity

The reliability & validity of data sets would be assessed by Cronbach's Alpha and split half method.

Neyman's sphericity ratio was computed to support reliability and validity measures.

Data Editing

Any data set needs editing because of likely presence of outliers. The data set would be normalized by Z statistics to facilitate removal of outliers.

Correlational Analysis was done to examine the degree of association between production and distribution. The values of r and chi square revealed the degree of association between experienced responses of employees, teachers and children.

Multiple regression analysis would be attempted to pin points the significance and the role of people in influencing the overall performance for effectiveness of the organization.

Conjoint analysis would be attempted to analyze the influence of people food target groups & donors.

Quality Head and Board of Trustee's enumeration was by interview with set of questions /check list to cover all parameters.

An **interview with Government** officials of Mid Day Meal scheme was done with a set of questions.

2.9 Limitations of Study

The limitations of the study are:

1. The assessment of application of TQM is with respect to an NPO in child and youth sector.
2. This study area is India and the coverage is with respect to six States of India where the TAPF is in operation.

3. The selected kitchens for the study are those which are continuously supplying food for children for last five years.
4. The study is limited to TAPF in India. There are offices outside India. As such they are not considered.
5. The decentralized kitchens are not studied. Kitchen which are serving 50,000+ children are considered for the study.
6. The extent of local participation in each location is not considered for analysis. TAPF is the center of study.
7. Care has been taken to translate the instruments into six Indian languages. There are some possibilities of translation errors, transcription errors.
8. Each child is expected to reflect on its own. There are, however, some possibilities of peer group influence (the child may get influenced by children next on either side). Efforts have been made to reduce peer group effects.

3.0 Findings & Conclusions:

The analysis of different target groups such as children, teachers, supervisors in pre-production, production, post production, school relation HR quality and donors has reflected many salient findings. These are coded here in a sequence.

3.1 Reflection of Children

As many as 593 children covering six states nine kitchens studying between 5th & 10th standard have an average age of 12.98 (13) years. The father of children is mostly coolie or farming as their occupation. The mothers of these children are mostly home maids or home makers.

The gender ratio of the children is 48.9% boys and 51.1% girls. The children belong to Hindu (88.9%), Muslim (8.1%), Christians (1.7%) and others including Jains is 1.3%. The children have responded positively and have rated 4.5 + out of 5 for the parameters in the instrument. The children are delivered food in accordance with an approved menu for 6 days in a week. The children are getting sufficient food, on time, always, hot and with different taste of sambar every day. They enjoy eating food with friends and have perceived an improvement

in their health. They like sweets and curds wherever served, and very much like the taste of food.

They have picked up learning, healthy living habits such as washing hands before eating food, drinking clean water, washing plates before and after eating food, wear clean clothes and comb hair every day. These are supplemented by food of high nutrition value contained in dhal and vegetables consumed by them. They are scoring well in the examination which indicates an improvement in learning. The aroma and taste of food are liked by children. Having said this there is awareness amongst children that they do not come to school to eat food alone (null hypothesis accepted).

3.2 Reflection of Teachers

The teachers have an average age of 44.28 years with a composition of males (36.3%) and females (63.7%) respectively. As much as 35.5% are under graduates with an average experience of 17.42 years. The average number of years of food served by TAPF to the schools is 6.6 years. The average reflections for all parameters are 4.67 out of 5. The teachers certify that the food served is sufficient, hot and of variety. The teachers confirm that children eat together and are happy with the taste of food served. The sambar served is rich with dhal and vegetables. The teachers certify that quality of food has improved after periodic feedback. The teachers are happy about quality of food which has resulted in increase in enrolment, improvement in attendance and learning and significant reduction in school dropout rate of children.

3.3 Reflection of Production Distribution Supervisor Analysis and Quality Efforts

All the supervisors in the production base have been interviewed whose average age is 31.81 years and vary by gender – males (92.3%) and female (7.7%). The average age of service is 5.41 years. These supervisors are subject to ISO Audits (ISO-22000 for food safety). Standing operating procedures of health and hygiene are in action. The production process is mostly automated. Human intervention is kept at minimum eco-friendly initiatives and cost reduction practices are followed. Although practices are uniform across all kitchens under study, there are differences across

locations. The number of years of service of supervisors will have significant influence on the practices.

There are positive and one to one to one relationship on the production spree from pre-production to school relations. The results indicate organic and cohesive relations between different groups of quality initiatives of value addition across target groups. Huge systems in food delivery need not just co-ordination but concerted efforts in delivering quality food. There is sequencing slicing of activities from the entire spectrum. Quality reflexes are being transmitted through periodic feedback enabling quick corrections.

3.4 Donor

There are several types of donors such as donor trustees, corporate, one time and individual donors. As many as 58 individual donors and 24 corporate donors were studied.

(i) Corporate Donors: Corporate donors covering 9 states numbering 24 have been analyzed. The industry back up of these donors are software manufacturing, consultancy, service industry and others. Of these two thirds are regular donors and one third are one time donors. These donors have supported TAPF by giving cash, vehicles infrastructure and in other forms. The sample covered is donors who are contributing since last seven years. About one third of them are contributing since last 2 years. Donors contribute to demonstrate corporate social responsibility and for deriving tax benefits. The donors are happy to contribute so society.

(ii) Individual Donors: The analysis of individual donors has been done to assess and search for reasons as to why they contribute to TAPF. As many as 58 individual donors have been selected at random and administered the instrument to make an assessment of their characteristics. Age, gender, profession, number of years of contribution to TAPF and their computer savvy habit of visit to AkshayaPatra website has been collected. The responses are assessed on attributes such as happiness, convincing, contribution of TAPF, transparency, image value, society, intension to contribute regularly, pride to contribution donation decision, donation-return, awareness of Government support and updating information have

been documented through the instrument. These are qualitative attributes of a donor to an organization. These reflect the source of strength base to TAPF. The results represented and analyzed here.

3.5 Quality Head and Quality Efforts

The head of quality for TAPF was in-depth interviewed and ascertain on scope, practices, complaints, kaizen, training and ombudsman. It has revealed that the scope of TAPF is not on all development of children but only production and distribution of tasty, hot food on time and every time. Three quality 'Ps' People, Process and Performance are being practiced ISO-22000 and Hazard Analysis Critical Control Point (HACCP) are being practiced. Kaizen is practiced through Akshaya Pragathi Initiatives Production Process Compliance Index (PPCI) and Vehicle Hygiene Index (VHI) is being computed to assess quality at regular intervals. Ombudsman direct email communication and awareness programme are in place to remove fear wherever such situations were to arise.

3.6 Board of Trustee

The telephonic interview was conducted with Vice President who is a member of board of trustee, TAPF. The vision is to reach 5 million children by 2020 and to truncate the programme by 2030. TAPF depends on government funding at 60% and the 40% is raised through donations. TAPF is providing food to 13.5 million children and blue coloured labourers. Requests are being attended to the people of different target groups such as family members of patients of government hospitals, senior citizens and garments workers. Communication with donors is done periodically by e-news letter and updating websites. Quarterly meeting of Trustees is being done in addition to networking and mail communication. The funds flow is from Government, Public and Private sector companies, HNI (High Network Individual). Expansion efforts are being done by involving celebrities and using technology. Special efforts are being made to release the dreams of children by organizing contact programme.

Food safety, taste of food and attention to details are 3 dimensions of quality efforts done by TAPF. Audit and risk management efforts are done by well-known independent organization.

3.7 The Government

The Government – State and Central are supporting Mid Day Meal (MDM) Programme with shares of 25% and 75% respectively. The Government of Karnataka is supporting 70 NPOs covering 9 lakh children including TAPF. The government support is continuous and uninterrupted. The NPOs are provided three months advance in cash and grains in grant. The financial and social audit is done at regular intervals. The government has arrived at a statistics of 90% of children taking food, covering all 70 NGOs. The 10% of total child population is beset with psychological inhibition. This statement corroborates with the statement of children under TAPF, that they don't come to school to each food alone. The second statement of significance is the children in urban area consume less food that prescribed, whereas children in rural area eat food as per prescribed norms. The government provides an annual rise of 7.5% in the consumption cost.

3.8 The Total Quality Index (TQI) – Methodology

The study is holistic in making an effort to assess total quality. The target groups are in several dimensions. Each group is having its own relevance in the context of total quality. The product is to develop food and deliver it on time and every time of taste, hygiene, nutrition suitable to each specific region.

The Total Quality Index is composite in nature and is self weighting. The Total Quality Index (TQI) is defined as

$$TQI = \frac{\sum_{Ci=1}^{12} W_i C_i}{\sum_{Ci=1}^{12} W_i} \times 100$$

Wherein Ci represents component in the holistic system i.e. each Ci is defined thus:

C1 = is the component attributed to children in schools 25 variables and attributed over 593 respondents. C1 calculated is 89.39

C2 = is the component attributed to children in schools 25 variables and attributed over 125 Teachers respondents. C1 calculated is 89.39

C3 = Responses of pre-production supervisors C3 = 92.05

C4 = C4 is responses of production supervisors and calculated value is 86.94

C5 = is responses of post-production supervisors and calculated value is 88.78

C6 = is responses of quality supervisors and value calculates is 91.49

C7 = is response from supervisors working in HR area and calculated C7 = 92.94

C8 = is response from school relation supervisor and calculated value is = 89.10

C9 = is response from quality head of TAPF and value calculated is at 95.745

C10 = is response from trustee and calculated value is equal to 97.87

C11 = is contribution from government and based on interview with government official its value = 90.00

C12 = is contribution from corporate and individual donors = 81.48.

Each component is given a score of 100. The value that is derived is based weighted scores obtained by reflection of respondents for the structured and well validated instrument. Thus primary data is the basis for assessing the performance of each component. Wherever checklist based interviews are done, the interview base results are used for deriving scores. Thus the TQI is a self weighting design based on functions of the organization. The TQI for TAPF gets a weightage of production component 800 out of 1200 and the external activities of donors, government, children and teachers will get 100 each. Thus the TQI index is having a weightage of 75% to production stream of activities including quality functional conceptual and trustee.

TQI = (89.39 + 88.56 + 92.05 + 86.94 + 88.78 + 91.49 + 92.94 + 89.10 + 95.745 + 97.87 + 90 + 81.48)

$$= \frac{1084.345}{1200} \times 100$$

$$= 90.36208$$

$$= 90.36208$$

TQI = 90.36

4.0 Policies

The Total Quality Index of AkshayaPatra is 90.36. This composite index is a self weighted. The component index in the production process across eight dimensions varies between 88.78 and 95.75. These variations suggest us policy prescriptions. They are enumerated below:

1. There is need to sustain the present composite index at 95.
2. The gap between pre-production supervisors, production supervisors and post production supervisors are to be kept at a constant place of 95.
3. The high level of cohesion of HR supervisors need be sustained at 92.94.
4. The school relation activity is at the level of 89.10. This has to be upgraded to 95.
5. Quality heat is conceptually sound at 95.75. This needs to be sustained.
6. Concerted efforts are needed to bring performance level in production at 95.
7. The trustee is almost perfect at 97.87. The policy must be to ensure same level of consistency and to pull up performance up to 95.
8. The performance perception of the government of all 70 NGO in Karnataka is at 90. This level has to be sustained for long time improvisation.
9. The donors corporate and individual are to be perceived differently by TAPF. This difference in perception will enhance funds in flow.

4.2 Strategies

Training of production supervisors at three levels had to be taken up for improving the performance level.

1. The quality supervisors need retraining in quality sustenance initiatives.
2. HR supervisors are to be trained in updated laws, handling grievance and in personal practices.
3. The school relation activity can be further strengthened by high frequency feedback and training of teachers at the school level.

4. The conceptual soundness of quality head must be sustained by implementation of standards and practices. ISO 22000, FSSAI are to be implemented and adopted to location specific requirement.
5. The relationship with government must be sustained at same level. This can be done by short term crash programmes at the headquarters in each state.
6. The donor relations can be maintained by involved attention for better harmony field visits of short term duration can be arranged by TAPF.
4. The cohesive efforts in the production phase which includes quality at the inventory level and at the throughput level must continue with appropriate checks and rechecks.
5. Children and teachers are to be continuously trained on hygiene practices to enable effective supplementation of quality efforts.
6. There is need to continuously retrain people at the production level to back up and sustain quality efforts.

4.2 Suggested Actions

The present study has led to indicative actions based on the findings:

1. The first action should be to make efforts to continuously sustain effective backward, throughput and forward linkages in the long term centers of mass production and delivery of food. The centers are Bengaluru- Rajajinagar, Vasanthpura, Hubballi and Ballari centers in Karnataka. Hyderabad (erstwhile AP), Gandhinagar (Gujarat), Puri (Odisha), Vrindavan (UP) and Jaipur (Rajasthan).
2. Secondly, those centers which are serving relatively less number of children and in the centers served by decentralized kitchens, quality efforts have to be initiated.
3. ISO 22000 should be implemented across all kitchens to ensure standardization of quality.
7. The back office operations are well formatted. The same steps can be replicated with minor adaptations across all centers and in the centers to be established in the near future.
8. The Donors have perceived high image value for AkshayaPatra. This perception is reflected in large one time payments and continued donations each year. TAPF should make efforts to build relationships for its growth.
9. The concept of AkshayaPatra matches well with people in the hierarchy and people across society. The support of the Government will continue with concomitant public opinion. TAPF must make efforts in converting public goodwill to the backup support of the Government.
10. TAPF can extend its centers to whole of India covering all 29 States and Union territories.
11. TAPF must make efforts to acquire corpus funds by regulating channels of expenditure.