" A Study for Optimization of logistics resources for "PETROTECH"- a biennial global event of The Ministry of Petroleum and Natural Gas, Govt. of India."

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Declaration by the Guide

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Further, I certify that the work is based on the investigation made, data collected and analysed by him and it has not been submitted in any other University or Institution for award of any degree. In my opinion it is fully adequate, in scope and utility, as a dissertation towards partial fulfilment for the award of degree of MBA.

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Abstract

" A Study for Optimization of logistics resources for "PETROTECH"- a biennial global event of The Ministry of Petroleum and Natural Gas, Govt. of India."

The PETROTECH series of International Oil and Gas Conference and Exhibition is a biennial event that attracts many Scientists, Technologists, Policy makers, management experts and entrepreneurs from all over the world to exchange views and share knowledge, expertise and experiences. The PETROTECH-2019, the 13th edition was organized by the Ministry of Petroleum and Natural Gas & Coordinated by M/s ONGC Ltd. at India Expo-mart, Greater Noida from 10th to 12th February, 2019. The three day event attracted over 691 exhibitors, 7000 delegates and 17,000 visitors from 38 Countries.

PETROTECH-2021 is scheduled to happen in February 2021 at same venue and to be coordinated by M/s IOCL Ltd. The objective of the work is to optimize the logistics resources for upcoming event by-

(i) Optimize the number of service providers (Vendor Selection Problem).
(ii) Optimize Project timelines, scheduling and resource leveling
(iii) Optimize the manpower utilization and job assignments
(iv) Identification of revenue/expense streams for the event and maximize return on investment (ROI).Also to breakeven the sales volume of tickets and number of delegates visit.
(v) Propose a marketing plan for the event
(vi) Risk analysis & mitigation and framework for contingency plan.

In this study following methods have been used:

- SERVQUAL Modeling for gap analysis between offered and perceived service quality by the participants. An online survey was carried out among 214 participants, to know their perception about such events on the basis of five dimensions i.e tangible, Reliability, responsiveness, assurance & empathy , modeled on 22 statements developed by Parasuraman et al., (1988).Further analysis done through factor analysis and paired T Test carried out to test the hypothesis.

- Analytical Hierarchical Process (AHP) for Vendor selection problem: There is a list of approved vendors (7 Nos.) available that provide transportation facility for PETROTECH event. The selection of best vendor is to be done by comparing various factors and attributes of vendors using Analytical Hierarchical Process (AHP)- a structured technique for organizing and analyzing complex decision based on mathematics and psychology. For the current study 5

factors are being considered Available Resources (Quantity), Quality of Vehicle, Delivery time, Price and overall Services. Pair wise comparison is made between different factors and based on the results most preferable vendors is chosen.

- Project Management tools such as Gantt Chart, Network diagrams, identification of critical path and resource leveling to identify the critical activities in organizing such events.
- Job assignments and manpower planning through Hungarian Job assignment method
- Projected expenses and Income/revenue streams through Sponsorships /Buyer –Supplier meet/Exhibitions for such events, which is based on information from past events. It will help to draw conclusion for tradeoff between investments to be made and customer satisfaction achieved.
- Timelines for marketing plans (Partner promotion, Social media etc.)

Major findings of this study are:

- Majority of participants seems dissatisfied with different dimensions of service quality offered to them. From paired T test it is concluded that there is no significant difference between the mean of each dimensions.
- Based on AHP methodology Vendor (V1) is most preferred vendor with weight of preference (45.73%).There is a little difference in the weights of the second(V2) and third (V3) ranker vendors, but in case of compromise second ranked vendor can be chosen. Similarly in case of Vendors V4, V5 and V6 one of them can be chosen in state of equal results.
- Based on Network charts and critical path calculations, a total duration of 225.4 days is required to complete all critical activities along the network diagram with four resources required resource leveling on day to day basis.
- Proposed revenue sources for PETROTECH-2021 are grouped into following categories:
  (i) Revenue from Delegate registration Fees (INR 34.44 Crores)
  (ii) Revenue from Sponsorships (INR 22.50 Crores)
  (iii) Revenue from Buyer-Suppliers meet(INR 64.69 Lakhs)
  (iv) Revenue from Exhibition Stand (INR 78.95 Crores)

Total projected revenues from all streams in case are: INR 136.53 Crores, while budgeted cost is INR 10 Crores. Also, breakeven, we need to sell 11905 conference tickets to recover the fixed cost at the unit price of INR 17788.

Keywords: SERVQUAL Modeling, Analytical Hierarchical Process, Gantt Chart, Job assignment

CHAPTER-I

INRODUCTION

1.1 Background of the study

"The market place isn't what it used to be" (Kotler, 2000, pp.14). As Kotler describes, different forces result in market change like, technological advancement, globalization and deregulation and these forces created new behaviors and challenges. Among those behavioral changes, increase in customer expectation for higher quality of service is one of them.

As competition in the services sector is constantly increasing, the ability of companies to understand their customers and ensuring their customer's satisfaction with the services provided is becoming more and more significant (Kavaliauskienėa, Aranskisa, Litvinenkoa, 2014).

Logistics excellence has become a powerful source of competitive differentiation with divers marketing offerings of world-class firms (Mentzer, Flint, & Hult, 2001).

The PETROTECH series of International Oil & Gas Conference and Exhibition is a biennial platform for national and international experts in the oil & gas industry to exchange views and share knowledge, expertise and experiences. Being held for the last over two decades with growing participation, PETROTECH-2021 is the 14^{th} edition of the flagship event.

The event aims to explore areas of growth in petroleum technology, exploration, drilling, production and processing, refining, pipeline transportation, petrochemicals, natural gas, LNG, petroleum trade, economics, legal and human resource development, marketing, research & development, information technology, safety, health and environment management in the oil & gas sector. As the prime showcase of India's hydrocarbon sector, this mega event attracts technologists, scientists, planners and policy makers, management experts, entrepreneurs, service providers and vendors in order to catalyze achievement of global energy security.

PETROTECH-2021 will be organized under the aegis of the Ministry of Petroleum & Natural Gas, Government of India, and coordinated by Indian Oil Corporation Limited (IOCL). Over the years, the PETROTECH series of conferences has gathered momentum and emerged as a movement uniting the upstream, midstream and the downstream sectors.

Expected an over 12000 delegates from 37 + countries and 23000 + visitors during Three days mega event itself requires a yearlong strategic planning of resources, timelines and effort to organize the event efficiently and within a budget. Thus , this study will focus on Optimization of logistics resources for such a global event.

1.2 Statement of the Research Problem

Delivering goods/services to customers is a critical activity in any business (Huang, Kuo and Xu, 2009). And the way of performing this core activity matters for the customer. In now a days, people are seeking for more convenience and comfort in their experience at such mega events, and market strategies are continuously changing to cop up with this customer needs.

The research focuses on the how we can optimize the logistics resources available to an event management organization by implementing 7R's of logistics to achieve customer satisfaction. These 7R's

1.Right Product
2.Right Place
3.Right Price
4.Right Customer
5.Right Condition
6.Right Time
7.Right Quantity

Study also focuses on which logistics service quality dimensions affects the customer satisfaction most. In short , this study research following questions:

(i) To what extent does an agreed theoretical framework exist to guide the management of special events?
(ii)To what extent has this framework been tested across a variety of settings?
(iii) What specific challenges are evident in management of special events?
(iv) What lessons can managers of these events learn from the experience?

1.3 Research Objectives

The research is guided by the following objectives:

1.3.1 General Research objective

The general objective of study is to assess service quality and customer satisfaction using SERVQUAL model.

(i) To determine the overall service quality as perceived by customers at such event.
(ii) To determine service quality dimensions that brings or hinders customer's satisfaction.
(iii) To determine factors that should be employed to improve customer satisfaction.

1.3.2 Specific Research Objectives

The specific research objective was to optimize the logistics resources using different optimization tools.

(i) Optimize the number of service providers (Vendor Selection Problem).

(ii) Optimize Project timelines, scheduling and resource leveling

(iii) Optimize the manpower utilization and job assignments

(iv) Identification of revenue streams for the event and maximize return on investment (ROI) through tradeoff between financial aspect Vs customer satisfaction.

(v) Propose a marketing plan for the event

(v) Risk analysis & mitigation and framework for contingency planning.

1.4 Significance of the study

The study of customer satisfaction is critical for any organization to provide superior service for their customers, especially for mega events in India. This study has both practical and theoretical significance. The findings of the research will help ONGC/IOCL to understand its customers' attitude towards the logistics service provided.

This study was significant in the following regards:

(i) It will help to develop and implement effective service quality improvement initiatives.

(ii) It will essentially uncover dimensions of service quality that are considered important by the customers and any short in these dimensions can be perceived as bad experience.

(iii) Generally in organizations, service providers are chosen based on past experience or preferences, however this study would introduce optimization methods for choosing right service providers based on set criteria.

(iv) This study would also identify different sources of revenues/fundraising activities that are necessary for organizing such events. It will be helpful in making decision of organizing events based on trade off between amount of Investments and outcome from organizing such events.

(v) During staging of such mega events, there is requirement of multitasking and skill set mapping. As such, this study introduces optimization tolls for job assignments in case of shortage of manpower.

(vi) This study will be helpful in drawing a systematic time chart for each planning stage, identification of critical activities and leveling of resources to achieve the set targets.

1.5 Scope of study

The findings of the case analysis in this paper may prove particularly beneficial to service/event firms. Although , this study primarily focuses on organizing an international Oil & Gas event i.e PETROTECH-2021, but the strategic planning and stages of organizing an event is similar to any other mega events. Therefore, the study is not restricted to Oil & Gas sector and can be employed to other event planning exercises as well .

Moreover, firms that have hitherto only intended to apply logistics principles to their operations can employ the broader framework to explore how logistics systems apply to their setting. In addition, the findings from this analysis might ignite a new perspective on managing the firms' operations to achieve greater competitive advantage.

The sample for SERVQUAL modeling survey is drawn from participants from different profile and not restricted to particular participants from Oil & Gas sector or experienced professionals. Hence , it covers the opinion of participants from different demographics.

CHAPTER II

LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Service quality

Different scholars describe service quality in different ways, justifying with different point of views. Wisniewski (2001) stated that service quality is a concept that has aroused considerable interest and debate in the research literature because of the difficulties in both defining it and measuring it with no overall consensus emerging on either. Ghobadian, Speller and Jones (1994) describes that though there are many definitions of "quality", because quality have different meaning for different people, it is possible to classify the definitions of "quality" into five broad categories. The five generic categories are:

1. *Quality as Transcendent:* - here "quality" is defined as innate excellence, meaning "quality" is the relationship between individual salience and the perceived quality.
2. *Quality as Product led*: - here "quality" is defined as the units of goodness packed into a product or service.
3. *Quality as Process or supply led:* - in this approach, "quality" is defined as "conformance to requirements".
4. *Quality as Customer led:* - here the focus is external, "Quality" is defined as "satisfying customer's requirements" or "fitness for purpose"
5. *Quality as value led:* - here "Quality" is defined either as the "cost to the producer and price to the customer" or as "meeting the customer's requirements in terms of quality, price, and availability.

Most of the service quality definitions fall within the "customer-led" category (Ghobadian et al., 1994). And they have defined quality as it is a measure of the extent to which the service delivered meets the customer's expectations. Parasuraman, Zeithaml and Berry (1985) defined service quality as 'a function of the differences between expectation and performance along the quality dimensions' and Cronin and Taylor (1994) viewed service quality as a form of attitude representing a longrun overall evaluation. Ghobadian et al. (1994) have explain that perception of quality is influenced not only by the "service outcome" but also by the "service process". They have presented perceived service quality is the summation of prior customer expectation, actual process quality and actual outcome quality.

2.2 Service quality models

Measuring service quality is difficult because of the unique characteristics of intangibility, heterogeneity, inseparability and perishability (Buttle, 1996) (Ghobadian et al., (1994). Over the years, different service quality determinates and model have been identified and explained, some of them are explained below:

2.2.1 Technical and functional quality model

According to Grönroos (1984), Service quality has three components, namely: technical quality; functional quality; and image:

i. The technical quality: - is the actual outcome of the service encounter. It is the quality of what consumer actually receives as a result of his/her interaction with the service firm and is important to him/her and to his/her evaluation of the quality of service. It answers the questions of what the customer gets.

ii. The functional quality: - is concerned with the interaction between the provider and recipient of a service and is often perceived in a subjective manner. It answers the question of how the customer gets the technical outcome.

iii. The corporate image: - is concerned with consumers' perceptions of the service organization. The image depends on: technical and functional quality; price; external communications; physical location; appearance of the site; and the competence and behavior of service firms' employees.

2.2.2 GAP model

Service quality is a function of the differences between expectation and performance along the quality dimensions (Parasuraman et al. 1985). They mentioned the presence of five gaps that have an influence over the perception of quality:

Gap 1. Consumer expectations vs management perceptions.
Gap 2. Management perceptions vs service quality specifications.
Gap 3. Service quality specifications vs service encounter process.
Gap 4. Service encounter process vs outsider communication.
Gap 5. Expected service vs perceived service

Ghobadian et al. (1994) describes this model as a diagnostic tool. They said, if it is used properly, it will enable the management to identify systematically service quality shortfalls since it facilitates the identification of gaps between a numbers of variables affecting the quality of the offering

2.2.3 SERVQUAL Model

SERVQUAL Model was first introduced by Parasuraman et al. in 1985. The model has been further developed through a series of publications. This service quality model is founded on the view that the customer's assessment of service quality is paramount. This assessment is conceptualized as a gap between what the customer expects from service providers, and their evaluations of the actual performance the service provider.

Ten components of perceived service quality were identified in the first formulation of SERVQUAL model by Parasuraman et al. (1985):

1) Reliability: involves consistency of performance and dependability.
2) Responsiveness: concerns the willingness or readiness of employees to provide service.
3) Competence: means possession of the required skills and knowledge to perform the service.
4) Access: involves approachability and ease of contact.
5) Courtesy: involves politeness, respect, consideration, and friendliness of contact personnel.
6) Communication: means keeping customer informed in language they can understand, and listening to them.
7) Credibility: involves trustworthiness, believability, honesty.
8) Security: is freedom from danger, risk, or doubt.
9) Understanding/Knowing the customer: involves making the effort to understand the customer's needs.
10) Tangibles: includes the physical evidence of the service.

In their 1988 work, they have minimized these components into five dimensions: Tangibility, reliability, responsiveness, assurance, and empathy.

2.2.4 SERVPERF model

Cronin and Taylor (1992) have developed and tested a performance-based alternative for SERVQUAL measure, called SERVPERF. To investigate and validate their claim, they have gather response on the service quality offered by two firms in four industries (banking, pest control, dry cleaning and fast food). Accordingly, they have found that SERVPERF is a better predictor of perceived service quality than SERVQUAL. Their findings support that performance measurement of service quality is better predictor and therefore, no need to assess the expectation measurements as it was suggested on SERVQUAL model.

Finally, Cronin and Taylor (1992) concluded that performance-based scale developed (SERVPERF) is efficient compared to the SERVQUAL scale; since it reduces the number of items by 50% and the empirical finding also supports the theoretical superiority of the SERVPERF scale.

2.3 Logistics service quality

Logistics has traditionally been considered as a necessity for connecting production and consumption (Saura, Frances, Contri, & Blasco, 2008). From this perspective, a company's logistics function was seen only as a generator of costs with no capacity for differentiation (Ballou, 2004; cited in Saura et al. (2008)). This began to change in the mid-1990s as logistics research based on marketing principles began to analyze the capacity of logistics to deliver quality and thus generate greater customer satisfaction and loyalty (Mentzer et al., 2001; Mentzer et al., 2004).

Logistics service quality has been studied from two different perspectives which is objective quality and subjective quality (Chin et al., 2013; Saura et al., 2008).

i. Objective perspective of quality relates quality with adapting the service to service provider defined specifications. This industrial view of service sees quality as an accurate evaluation of all the stages and operations necessary to deliver the service, considering the service as a physical object which can be observed and with attributes that can be evaluated.

ii. Subjective perspective of quality transfers evaluation of quality to the customer. From this perspective, service quality is "a global judgment or attitude, concerning the superior nature of the service" (Chin et al., 2013; Saura et al., 2008).

Bienstock, Mentzer and Bird (1997), contributes for the identification of objective variables for the measurement of customers' perceptions in relation to their expectations as the main components of Logistics Service Quality. More recent study of Mentzer et al., (2001), contribute to this line by considering logistics service quality as the difference between the expected and the perceived service.

Logistics specific measurement models are being developed on the basis of the above models, which is adapted to the special features/attributes of logistics service (Saura et al., 2008). According to Chin et al. (2013), these views of logistics service provide the building blocks to create a customer-based foundation for better definitions and measures of LSQ.

Chin et al. (2013) and Saura et al. (2008), underline two important contributions from Bienstock et al. (1997) and Mentzer et al. (1999). Bienstock et al. (1997) developed a specific model known as physical distribution service quality, based on result, rather than on functional or process dimensions. And Mentzer et al. (1999) carried out a study to confirm the accuracy of the model developed by Bienstock et al. (1997) with an integral logistics focus. This revision and validation provided a new

multidimensional model which they called Logistics Service Quality that have both aspects of physical distribution and customer elements.

2.4 Logistics service quality model

Mentzer et al. (2001) describes that logistics service quality have two components physical distribution service and marketing customer service. Combining these two components they identified 9 dimensions of logistics service quality: personnel contact quality, order release quantities, information quality, ordering procedure, order accuracy, order condition, order quality, order discrepancy handling, and timeliness. They developed a 25 item instrument to measure customers' perceptions of the nine dimensions of logistics service quality.

2.5 Relationship between Logistics Service Quality and Customer satisfaction

Customers are the lifeblood of any business. And "Service quality can win and keep customers" and it can be measured by the extent to which the service provided satisfies the customer's expectations (Ghobadian et al., 1994). Different literature reviewed that service quality impacts customer satisfaction. Keiningham et al. (2006) describes that the ultimate determinant of customer satisfaction/dissatisfaction is the ability of service provider to meet the customer expectation with different aspects of service quality. Cronin & Taylor (1992) also found an empirical support for notion which states "perceived service quality in fact leads to satisfaction".

Providers look for better ways to understand how customers perceive the quality of service and how the perception of service quality translate into customer satisfaction and customer loyalty (Chin, Soh & Wong, 2013). This is because customer satisfaction is the state of mind that customers have about a company when their expectations are met or exceeded over the lifetime of the product or service. Satisfying customers is the way to hold on our customers and attract the new ones.

Ghobadian et al. (1994) states that "Perceived quality" is what the customer's feel for the "quality" of the service. It determines the extent of the customer's satisfaction. The three key possible "quality" outcomes are:

1) Satisfactory quality, where customer's expectations (CE) are exactly met.
2) Ideal quality, where perceived quality is higher than customer's expectations.
3) Unacceptable quality, where perceived quality is lower than customer's expectations.

2.6 Logistics in Manufacturing and Service Industries

Logistics is defined as the management of the flow of goods and information through the value chain from materials acquisition to final consumption. More simply it has been described as getting the right product, in the right quantity, of the right quality, in the right place, at the right time, for the right customer at the right cost. In achieving all of this, logistics takes place in many of the functions of a business including customer relationship management, forecasting, inventory management, purchasing management, warehouse management, information technology and transport management.

The efficient application of logistics has long been viewed as a significant enabler for firms seeking to achieve competitive superiority (Stank and Lackey, 1997). For example, Langley and Holcomb (1992) assume that logistics is capable of creating customer value by enhancing efficiency, effectiveness and differentiation. Novack et al. (1992) argue that logistics contributes to the creation of four types of value: form, time, place and possession utilities. The broader underlying concept of integrated logistics management has also been portrayed in a positive light with its promise to bring higher customer service levels simultaneously with decreasing distribution costs (Manrodt and Davis, 1993). However, the application of logistics by service industries remains relatively limited due to the bias in the literature towards logistics processes of manufacturing industries.

By definition, the logistics process pertains to the flow of goods, services and information related to movements of goods and services, so-called logistics information. Nevertheless, logistics activities differ markedly within organizations. Goods create physical flows within and among organizations. There exists spatial and temporal distance between production and consumption of a product (Marx 1978). Goods can be stored, inventoried and transported from place of supply to place of demand. As a result, managing the flows that circumscribe a product involves activities such as order processing, transportation, inventory, warehousing, materials handling and packaging (Blomberg et al., 2002).

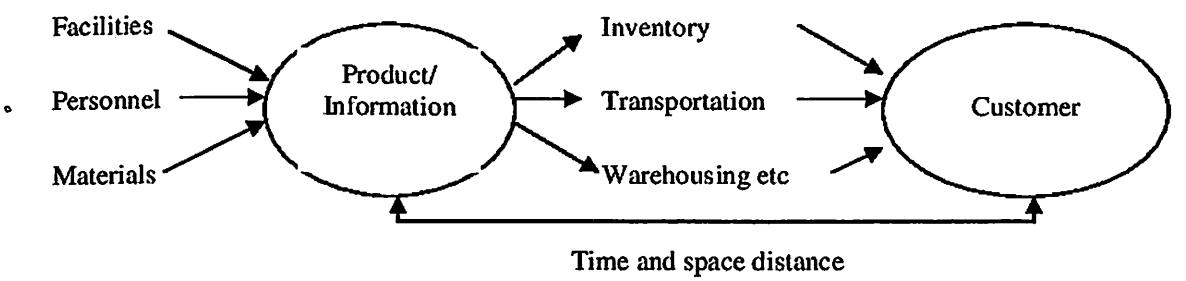


Fig 1. Logistics activities for a physical product

Unlike "products" per se, a service constitutes an intangible benefit. More specifically, in this instance, production and consumption of services happen simultaneously. As soon as production starts, the process of consumption begins. A service is totally consumed whenever production finishes (Marx, 1978). There is no time and space distance between production and consumption for services. As a result no inventory of services is required as would be the case in manufacturing industries. A contrasting conceptualization of service provision is offered in figrure

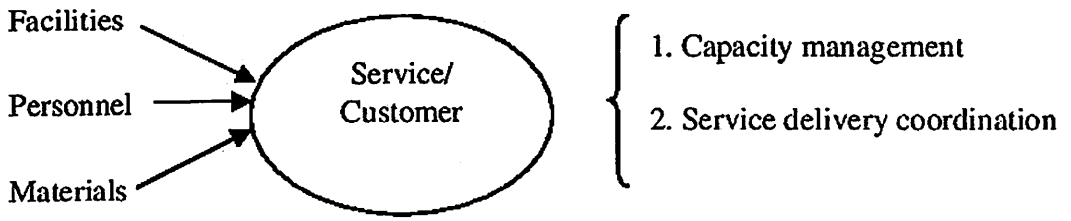


Fig 2 Logistics activities for a service

Clearly, in the context of Figures 1 and 2, management of "flow and storage of services" comprises activities which are quite different from managing physical flows that pertain to goods. No transportation, inventory, warehousing, materials handling or packaging are required when it comes to service logistics. To deliver service benefit to customers, a service provider has to manage their capacity to provide services (Bloomberg et al., 2002) and coordinate service delivery (Davis and Manrodt, 1992). In addition to capacity management, the coordination of service delivery forms one of the core activities for logistics management in service industries. The service delivery encompasses dynamic scheduling, dispatching and feedback. The overarching aim is to ensure that each unit within the organization synchronizes its activities to ensure effective delivery (Davis and Manrodt, 1992).

The scope of the logistics process – "between the point of origin and the point of consumption" – is thus conceptualized as covering a firm's suppliers and its customers (Council of Supply Chain Management Professionals, 2006; Mentzer, 2004). Specifically, the logistics activities involved from suppliers towards customers is called "forward logistics" while logistics flows in the opposite direction constitute the notion of "reverse logistics". Such a broad span of logistics is associated with the fact that logistics is responsible for meeting requirements and desires not only of the firm's customers (external customers) but also of other functional departments within the firm (internal customers) (Morash et al., 1997). For example, while the management of good/service flows from the end of production process out to customers (outbound logistics/service delivery management) is to meet the requirements of external customers and marketing, the management of supplies, materials and services into (inbound logistics) and within (materials/supplies/work-in-progress

management) the production process aims to satisfy the demands of purchasing and operations departments.

The logistics process over its entire span in a manufacturing organization is typically described as involving physical logistics flows, including materials, work-in-progress and finished products.

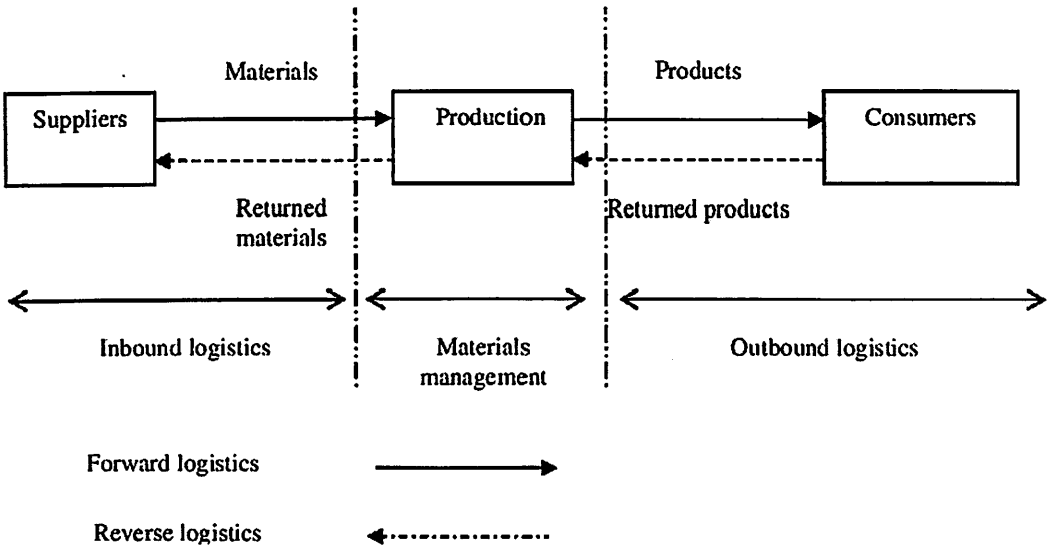


Fig 3 Logistics processes in manufacturing industries

Logistics processes of service providers, however, may comprise both service and product logistics activities. While no physical materials are required to produce a service as found in manufacturing industries, provision of a service may require certain physical supplies, for example, medicines for health care, or spare parts for auto repair services – here the product of interest is merely a means to an end for serving the customer (Manrodt and Davis, 1993). The mixed logistics processes in service industries are illustrated in Figure 5. In addition to logistical flows, an organization's business models/strategies may partially determine the characteristics of logistics processes. In an anticipatory-based model (Bowersox et al., 2002) or full speculation strategy (Pagh and Cooper, 1998), organizations make all decisions about their products/services in advance, based on market forecasts. Then components and materials are purchased, products produced and/or service offerings scheduled.

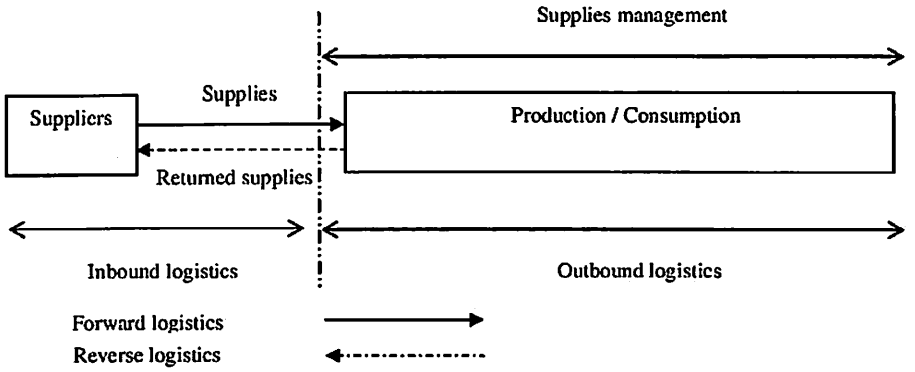


Fig 4 Logistics processes in service industries

Some efforts have been made to clearly distinguish logistics processes within organizations. Little and the Pennsylvania State University (1991) call logistics management of physical and service flows "supply chain logistics" and "service response logistics" correspondingly. Manrodt and Davis (1993), while naming management of physical flow either "supply chain logistics" (in manufacturing settings) or "service logistics" (in service settings), group logistics processes of all responsive organizations under the term "service response logistics".

2.7 7Rs of Logistics

1. *Right Product*: While designing/manufacturing/selecting a product, the organization should look into potential issues that can arise during transportation. Special packaging requirements, for example, can arise from the product's weight or bulk, its shape or its fragility and distance of transportation. Product when designed properly will greatly facilitate logistics if they ensure a certain level of standardization in the product's measurements during the design will make packaging, warehousing, product handling and transport considerably easier.

2. *Right Customer:* The right customer is about finding the customer and creating awareness about our product and services. The greatest challenge involved is to identify the potential customer. The solution to finding the right customer would be to do market research. It would help to give insight into whom we are supposed to target. Then according to budget , organizations decides their market strategies.

3. *Right Quantity*: Right quantity plays a key role in logistics. If we don't meet the demand of the product, we ultimately loose our revenues. Also , if we have excess quantity our warehouse expenses and inventory cost would increase.

4. *Right condition*: The right condition in logistics is about safe delivery of product and services. The quality of the product should be maintained till the tie it reaches to the end user or the

customer. The distribution strategy should be such that it preserves the quality of the product without increasing overhead costs.

5. *Right Place:* The demand for our product may vary depending on geography, demography and other factors. It needs extensive market research the market place that needs to be targeted. After choosing the place, it needs to choose a distribution strategy that would satisfy the demand.

6. *Right Time:* Timing is very essential, even if everything is done very accurately the entire process can fail if timing is not right. It is important to make a schedule and stick to it in order to facilitate a smooth and efficient functioning.

7. *Right Cost:* Product should reach to customer on competitive and affordable price , so that it could reach to wider spectrum of customers.

2.8 Four Pillar approach to event management

Goldblatt (2002) developed a four pillar approach to successful event management plan according to which for a successful event management depends on four pillars namely Time management, Financial Planning, Technology and Human Resource Management

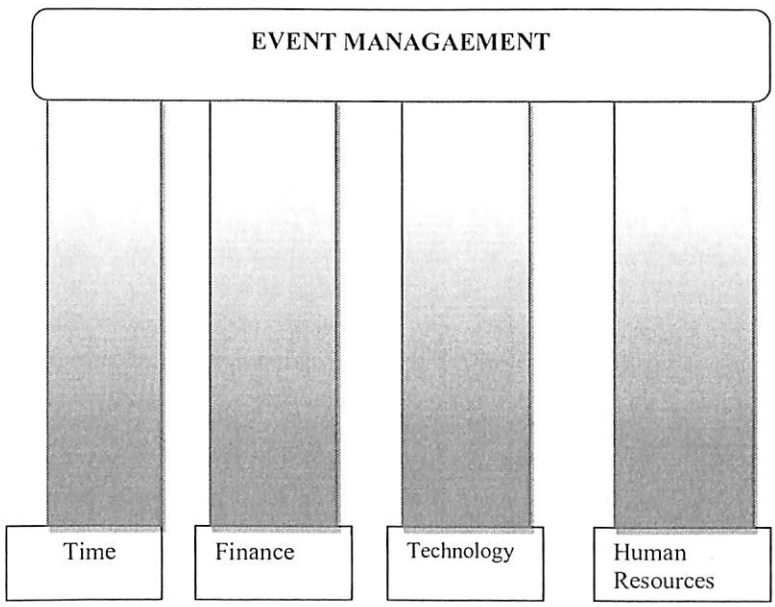


Fig. 5 Goldblatt ,1997,P12

CHAPTER-III

EVENT SERVICE QUALITY AND ITS MEASUREMENT

3.1 Introduction

Service quality is a critical determinant of competitiveness of establishing and sustaining satisfying relationships with customers. Service quality by its nature is an exclusive and abstract concept, which has been defined from different perspective and orientation. Groonroos (1984) has defined service quality as," the outcome of an evaluation process, where the customers compare their expectations with the services they have received".

Persuraman, Zeithaml and Berry (1985) defined service quality as the customer's comparison between service expectation and service performance.

Cronin & Taylor (1992) argued that conceptualization of service quality is a gap between expectations and performance. According to them service quality should be based on customers attitude towards the service. Fogli (2006) define service quality as, "a global judgment or attitude relating to a particular service, the customer's overall impression of the relative inferiority or superiority of the organization and its services. Service quality is a cognitive judgment". Service quality is nothing but the difference between the service expectation & service actually received by the customer.

3.2 SERVQUAL Modeling –Theoretical Perspective

As a way of trying to measure service quality, researchers have developed a methodology known as SERVQUAL – a perceived service quality questionnaire survey methodology. SERVQUAL provides a technology for measuring and managing service quality (SQ) developed by Parsuraman, Zaithaml and Berry in 1985.

Servqual is founded on the view that the customer's assessment of Service Quality is paramount. This assessment has been conceptualized as a gap between what the customers expect by way of SQ from a class of service providers and their own evaluation of the performance of a particular service provider. The model is employed as a generic instrument for measuring Service Quality across different service sectors. It is regarded as the most appropriate tool to measure and assess service quality in industrial & commercial sectors like banking, telecom, hospitals, and healthcare, hotels and fast food chain, travel &tourism, education and hospitality etc. Though not devoid of criticism whether the SERVQUAL dimensions for assessment of service quality are applicable equally well to all sorts of industrial sectors, yet the instrument has been developed for use in various service settings and yields results which are most representative of the factual ascertainment of service quality.

Several academic researchers and practitioners worldwide have extensively adopted the SERVQUAL instrument to measure service quality. Accordingly, the SERVQUAL Model is being made use of by this study to assess and measure the Service Quality offered by the organizers to different stakeholders in an international event.

Dimensions of Service quality :There are five dimensions of quality: tangibles, reliability, responsiveness, assurance and empathy. This scale has been developed for the service sector and has five generic dimensions or factors:

1. Tangibles : Physical facilities, equipment and appearance of personnel;
2. Reliability : Ability to perform the promised service dependably and accurately;
3. Responsiveness : Willingness to help customers and provide prompt service;
4. Assurance : (including competence, courtesy, credibility and security): Knowledge and courtesy of employees and their ability to inspire trust and confidence;
5. Empathy : (including access, communication, understanding the customer): Caring and individualized attention that the firm provides its customers. These five dimensions are found relevant for various business services. Customers will use all or some of the dimensions to determine service quality perceptions.

3.3 Data collection method

Both primary and secondary data sources will be used to answer research questions. Primary data will mainly be obtained through the administering of questionnaires while secondary sources like past studies and archives will be accessed from various databases in order to obtain some reliable literature and empirical findings that can be applied in order to have a better understanding the service quality construct and how the SERVQUAL model can be used to measure it.

3.3.1 Selection of Sample

Our study intends to optimize the resources for a global event in Oil & Gas Industry, therefore it is essential to capture samples working in these sectors. Moreover, an international event also includes different stakeholders such as professionals, college students, Bankers, Suppliers & entrepreneurs etc. therefore we are interested to find out about how different stakeholders perceive the service quality offered at such international event. We are going to sample 214 different stakeholders from this population coming from any nationality around the world. This is because the examination of cases will enable us to identify distinctive features through the exploration of the similarities and contrasts between these cases.

3.3.2 Design of questionnaire

Our questionnaire for the survey comprised of three parts; The first and the second part of the questions are the main parts of the questionnaire that comprises of 22 questions each aimed at finding the respondents' opinions pertaining to the expectations and perceptions of service quality in international event.

The first part is aimed at measuring the expectations of the visitors. These are statements that seek to describe how the state of services at event venue should look like. The statements are coined in such a way that they express a desire of the respondents for a particular attribute of service quality.

The second part seeks to measure perceptions. These are also statements that are a description of particular service attributes at an international event venue for which respondents are expected to rank these statements according to how far they think these statements apply to the service from their experience.

These statements were developed by Parasuraman et al., (1988). We have not changed the original SERVQUAL instrument but we have however rephrased the statements to be context relevant so as to maintain validity as elaborated below. Statements 1 to 4 seeks to measure the tangibility aspect of the event. The reliability dimension is measured in statements 5 to 8, while the responsiveness dimension is measured in statement 9 to 12. The assurance and empathy dimensions are measured in statements 13 to 17 and 18 to 22 respectively. The last part of the questionnaire seeks to measure demographic variables.
All the questions are multiple-choice and close-ended questions. Because of being closed- ended and multiple-choice in nature the results of the questions are easy to compare, tabulate and analyze easier. They are certainly easier to analyze and are usually quicker to administer and ask.

In the questions we used 5-point Likert-scale where the respondents are asked to select the most appropriate number that correspondents to extent to which they agree with a statement. The scales in our survey questions is 1 to 5 with "1" denoting "strongly disagree" and "5" denoting "strongly agree".
The third part of the questionnaire is the demographic part where the respondents are asked about their gender, age, level of education, Country of origin, ethnicity, frequency of visit and experience of attending such international event.

3.3.3 Testing of the questionnaire

The questionnaire is tested to identify whether the questionnaire is able to capture the required data as expected by the researchers. The test was conducted mainly to find out whether our questionnaire was easily-understandable as well as whether there were any vague and confusing questions in the questionnaire. Five co-workers were approached to answer the questionnaire in the presence of the

researchers. All the respondents reported that they had no difficulty in answering the questions. However, we received one general comment from two colleagues that some of the questions were a bit wordy and long. Accordingly, the authors made necessary changes.

3.3.4 Administering of questionnaires

As mentioned earlier in this study, we are using a convenience sampling technique. We had 222 questionnaires to administer online and it took us 25 days to administer these 222 questionnaires but unfortunately we only received 214 questionnaires that were complete. This is because some people (02 Nos.) partially filled the questionnaires and others (6 Nos.) did not respond, so we considered them invalid.

3.4 Data analysis method

We are carrying out a quantitative research and this will involve some quantitative analyses with the use of statistical tools (descriptive and inferential). There are several software packages for the analysis of quantitative data some of which are broader in scope and user friendly like the SPSS. SPSS being user friendly nature and the mastery is our choice for the analysis.
We use descriptive statistics mainly involving the mean, standard deviation, skewness and kurtosis in the data analysis. We are also going to try to verify if there are some variables in the SERVQUAL model that are related using factor analysis. This factor analysis will enable us find out if the SERVQUAL model is good to assess service quality offered at an event. Factor analysis will regroup similar items under the same dimension and in case items under the same dimension according to original SERVQUAL instrument regroup under same factor, then it is appropriate to use in measuring service quality.

3.4.1 Coding

The SERVQUAL dimensions/items are main variables used in this study and we coded these dimensions/items in order to ease our analysis of data collected. Also, demographic information was collected from respondents and these variables have to be coded as well for analysis.

3.5.0 Empirical results and analysis

The objective of the analysis of primary data collected from survey as presented to answer our research questions which include finding out how consumers perceive service quality in event venue and whether they are satisfied with service quality offered. This will enable us attain the objectives of our study which are mainly describing empirical phenomena which are service quality and customer satisfaction.
Data analysis for this study was done in two steps, the preliminary analysis and the main analysis. For preliminary analysis which involves mainly descriptive statistics to summarize data, the

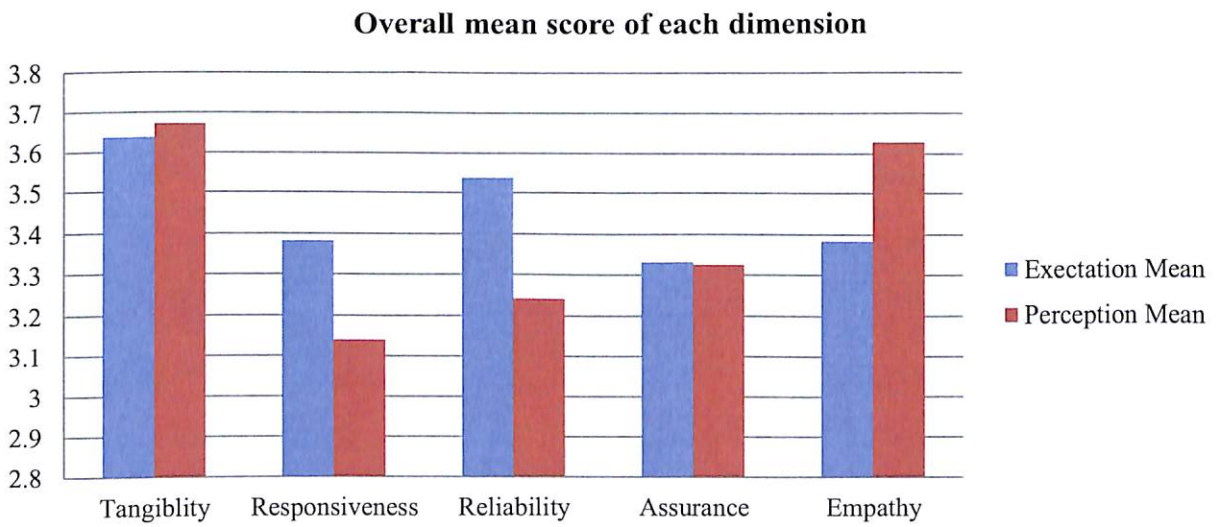
demographic characteristics of the respondents were outlined in order to simplify the understanding of the data.

Checking the reliability and validity of the modified SERVQUAL model made up of five dimensions, Cronbach's alpha was computed for each dimension of the SERVQUAL model and factor analysis carried out to test validity. The Cronbach's alpha ranges between 0 (denoting no internal reliability) and 1 (denoting perfect internal reliability).

The first part of the data analysis was to check the internal reliability of results in order to determine the credibility of findings results from the study since we are dealing with multiple-item measure that is the modified SERVQUAL model made up of 5 dimensions measuring service quality. In other words reliability checks whether or not respondents' scores on any one indicator tend to be related to their scores on the other indicators

Mean score of each dimension		
Dimensions	**Expectation Mean**	**Perception Mean**
Tangibility	3.638	3.672
Responsiveness	3.382	3.14
Reliability	3.537	3.242
Assurance	3.331	3.325
Empathy	3.383	3.628

Table 1 Mean score of each service quality dimensions



Bar chart showing mean score of each service quality dimensions

3.5.1 Reliability analysis

In order to test the reliability of the SERVQUAL scale and the internal consistency of the five dimensions as suggested by Parasuraman et al. (1988), Cronbach' s coefficient alpha was computed

for each of the five dimensions using data on perceptions, expectations, and gap (the differences between the perceptions and expectations) scores. The results show that the internal consistency of the perceptions (P) & Expectation (E) scale in all dimensions is quite higher than the gap (P-E) scale. All the five dimensions have internal consistency measures equal to or more than the cutoff value of 0.70 suggested in the literature (e.g. Nunnally and Bernstein, 1994; Hair et al., 2010). Therefore, Expectation scale demonstrated high reliability.
This indicates that the customers showed a better understanding of the questions, which resulted in the higher consistency of the answers. However, the reliability coefficients for the Perception (P) scores were slightly lower. Two of the tangible dimensions under perception scale namely P1 and P3 measured reliability coefficients of below 0.60, which is the minimum satisfactory value (Malhotra, 2007, p 700), even for exploratory research (Zhao et al., 2002). This indicates that customers have failed to understand rightly the questions related to these dimensions or some items under each dimension seemed too similar.. Therefore to calculate overall reliability coefficient Question No. E1/P1 and E3/P3 deleted under the dimension of tangible.

Table 2 below shows the reliability scale for all five dimensions and also, the reliability scale for each dimension calculated when each item is deleted from the dimension in order to see if the deleted item is genuine or not. In case cronbach's alpha for a dimension increases when an item is deleted it shows that item is not genuine in that dimension.
As dimension E12 , E22 & P17 showing reliability coefficient increased when item is deleted, it indicates that these dimensions are not true, hence not considered during calculation of overall cronbach Alpha. However, item no. P12 also shows an increase in value of cronbach Alpha (0.721), but since other vales are <0.70, therefore, we are considering this statement for calculation of cronbach Alpha under the dimension of Tangible.

Table 2 Cronbach Alpha for each dimension of expectation scale

Dimension	No. of items	Cronbach alpha for the dimension	Cronbach alpha it item is deleted	Item
TANGIBLE	4	0.909	0.892	E1
			0.885	E2
			0.879	E3
			0.872	E4
RELAIBILITY	4	0.937	0.919	E5
			0.912	E6
			0.918	E7
			0.919	E8

RESPONSIVENESS	4	0.950	0.923	E9
			0.926	E10
			0.930	E11
			0.959	E12
ASSURANCE	5	0.951	0.942	E13
			0.934	E14
			0.930	E15
			0.938	E16
			0.948	E17
EMPATHY	5	0.955	0.938	E18
			0.944	E19
			0.945	E20
			0.939	E21
			0.956	E22

Calculation of Cronbach Alpha under each dimensions for Perception Scale is shown in Table 3 below:

Table 3 Cronbach Alpha for each dimension of perception scale

Dimension	**No. of items**	**Cronbach alpha for the dimension**	**Cronbach alpha it item is deleted**	**Item**
TANGIBLE	4	0.642	0.446	P1
			0.721	P2
			0.520	P3
			0.545	P4
RELAIBILITY	4	0.890	0.887	P5
			0.839	P6
			0.834	P7
			0.875	P8
RESPONSIVENESS	4	0.930	0.896	P9
			0.902	P10
			0.907	P11

			0.932	P12
ASSURANCE	5	0.916	0.883	P13
			0.889	P14
			0.879	P15
			0.887	P16
			0.940	P17
EMPATHY	5	0.882	0.869	P18
			0.857	P19
			0.851	P20
			0.853	P21
			0.855	P22

Table 4 Reliability Coefficients (alpha) of SERVQUAL Scale for respondents (n=214)

Dimensions	**Total No. of items**	**Perception (P)**	**Expectation (E)**	**Gap (P-E)**
Tangible (E2,E4)*	2	0.845	0.831	0.557
Reliability(E5,E6,E7,E8)*	4	0.890	0.937	0.668
Responsiveness(E9,E10,E11)*	3	0.932	0.959	0.799
Assurance(E13,E14,E15,E16)*	4	0.949	0.940	0.801
Empathy(E18,E19,E20,E21)*	4	0.855	0.956	0.861
Overall (17 Items)		0.964	0.983	**0.891**
Deleting item (E2,E4) for cronbach alpha <0.70 in gap score (overall 15 items)		0.966	0.982	**0.896**

*Note: * The symbols in parentheses indicate the questions included in the dimension under each Expectation & Perception scale.*

The internal consistency of the modified SERVQUAL items was assessed by computing the total reliability scale. The total reliability scale for the study is 0.896, indicating an overall reliability factor slightly lower to that of Parasuraman et al., (1988) study which was 0.92. This reliability value for our study is substantial considering the fact that the highest reliability that can be obtained is 1.0 and this is an indication that the items of the five dimensions of SERVQUAL model are accepted for analysis.

3.5.2 Factor analysis

Factor analysis is used mostly for data reduction reasons and is performed by examining the pattern of correlations between the observed measures. Measures that are highly correlated, either positively or negatively are likely influenced by the same factors, while those that are relatively uncorrelated are likely influenced by different factors.

Factor analysis are of two forms; Exploratory factor analysis which tries to find the nature of the constructs influencing a set of responses and Confirmatory factor analysis which tests whether a specified set of constructs is influencing responses in a predicted way. In our study, we are using the confirmatory factor analysis because we know already the number of dimensions.

3.5.2.1 Data suitability for factor analysis

Kaiser-Meyer-Olkin (KMO) Test is a measure of how suited your data is for Factor Analysis. The test measures sampling adequacy for each variable in the model and for the complete model. The statistic is a measure of the proportion of variance among variables that might be common variance. The lower the proportion, the more suited your data is to Factor Analysis.
KMO returns values between 0 and 1. A rule of thumb for interpreting the statistic:

- KMO values between 0.8 and 1 indicate the sampling is adequate.
- KMO values less than 0.6 indicate the sampling is not adequate and that remedial action should be taken. Some authors put this value at 0.5, so use your own judgment for values between 0.5 and 0.6.
- KMO Values close to zero means that there are large partial correlations compared to the sum of correlations. In other words, there are widespread correlations which are a large problem for factor analysis.

3.6 Results

In order to examine the dimensionality of SERVQUAL instrument, an exploratory factor analysis using the principal component method with varimax rotation on the perceptions, expectations, and the gap scores for the customers was performed. The test was performed separately on perceptions, expectations, and gap scores for checking the applicability of gap analysis for the factor structure as proposed by Parasuraman et al. (1988). Only few studies (Parikh, 2006; Zhao et al., 2002; Zhou et al., 2002) had applied an exploratory factor analysis separately on the perceptions, expectations and the gap scores to assess the dimensionality of SERVQUAL instrument.

Importantly, before conducting the exploratory factor analysis, the adequacy or appropriateness of data for factor analysis was examined with the help of Kaiser-Meyer-Oklin (KMO) Measure of Sampling Adequacy (MSA) and Bartlett's test of sphericity. In this study, value of KMO was

excellent because it exceeded the recommended value of 0.6 as suggested by Hair et al. (2010). Moreover, the Bartlett's Test of Sphericity was also significant (0.000). The results thus indicated that the sample taken was appropriate to proceed with a factor analysis procedure.

Further, for defining the factors clearly, two criteria have been employed. First, it was decided to delete any variable which did not load at least (±) 0.50. Second, it was decided that a factor must be defined by at least two variables. This criterion is consonant with the observations made by Rahtz et al. (1988). With this criterion in mind, a series of factor analysis was performed on the data. Following each analysis, items, which did not meet the criteria, were deleted from the analysis.Table 5,6 , and 7 explain the extracted factors along with the loadings for all items, eigen values, Cronbach alpha, and the percentage of variance explained by each factor.

Table 5 Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	12.819	58.270	58.270	12.594	57.246	57.246	9.520	43.275	43.275
2	3.103	14.105	72.375	2.854	12.973	70.219	5.271	23.960	67.235
3	1.533	6.970	79.345	1.308	5.946	76.165	1.965	8.930	76.165
4	.811	3.685	83.029						
5	.555	2.524	85.554						
6	.442	2.007	87.561						
7	.392	1.782	89.343						
8	.350	1.592	90.935						
9	.327	1.487	92.422						
10	.253	1.149	93.571						
11	.223	1.013	94.584						
12	.206	.935	95.519						
13	.176	.802	96.321						
14	.136	.620	96.941						
15	.118	.535	97.476						
16	.113	.513	97.989						
17	.100	.456	98.445						
18	.086	.390	98.835						
19	.075	.343	99.178						
20	.071	.324	99.502						
21	.058	.264	99.766						
22	.051	.234	100.000						

Extraction Method: Principal Axis Factoring.

Table 6 : Results of Factor Analysis of Perception (P) Scores by Customers (Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization)

Factor Label	Dimension	Item No.	No. of Item	Factor Loading	Eigen Value	Variance	Cronbach Alpha
F1	Tangible	P2	9	.681	9.52	43.27%	0.931
	Tangible	P3		.308			
	Tangible	P4		.802			
	Reliability	P7		.772			
	Reliability	P8		.844			
	Responsiveness	P9		.856			
	Responsiveness	P10		.753			
	Responsiveness	P11		.727			
	Responsiveness	P12		.831			
F2	Assurance	P13	10	.507	5.271	23.96%	0.946
	Assurance	P14		.421			
	Assurance	P15		.495			
	Assurance	P16		.511			
	Assurance	P17		.786			
	Empathy	P18		.477			
	Empathy	P19		.534			
	Empathy	P20		.831			
	Empathy	P21		.867			
	Empathy	P22		.805			
F3	Reliability	P5	2	.805	1.965	8.93%	0.792
	Reliability	P6		.743			

KMO = 0.917, Bartlett's Test: $\chi 2$ =5921.092, d.f. 231 (p < . 001) Note: Factor loadings below 0.30 are not shown in this table.

The exploratory factor analysis on Perception scores (P) result in Table 6. Overall, the analysis of perception scores yielded Three-factor solution instead of five factor. Even within these factors, the items were not found loaded according to the proposed factor structure of Parasuraman et al. (1988). For example, the third question on tangible does not load on the same factor as the other two questions on tangible. In addition, the responsiveness , reliability and tangible items merged into a single factor (i.e. F1). evidently indicates that one item (tangible) did not load to any factor while other items merged into a single factor.

Four factors generated have Eigen value from 1.965 to 9.52 and cumulative variance as 76.16% with F1,F2 & F3 explaining 43.27%,23.96%,8.93% and 5.76% variance respectively. Reliability Coefficient for F1, F2 & F3 are very high indicating that there is a good understanding of these questions.

Rotated Factor Matrix[a]

	Factor		
	1	2	3
P1		.339	.894
P2	.681		
P3	.308		.680
P4	.802		
P5	.805		.340
P6	.743		.373
P7	.772	.307	
P8	.844	.303	
P9	.856	.395	
P10	.753	.515	
P11	.727	.417	
P12	.831		
P13	.715	.507	
P14	.746	.421	
P15	.740	.495	
P16	.727	.511	
P17		.786	
P18	.737	.477	
P19	.697	.534	
P20		.831	.371
P21		.867	
P22		.805	

Items clustered into three factors defined by highest loading

Table 7 Rotated factor Matrix

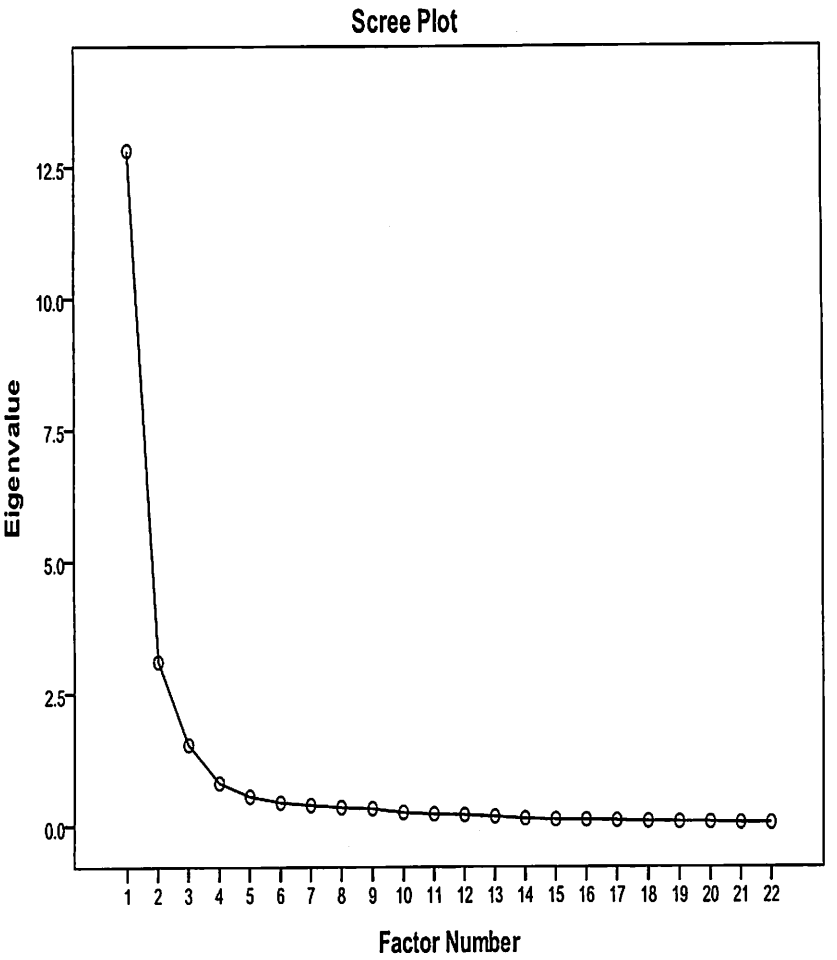


Fig 6 Scree Plot

Expectation dimensions Factor analysis

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.924
Bartlett's Test of Sphericity	Approx. Chi-Square	8185.359
	Df	231
	Sig.	.000

The Kaiser-Meyer-OIkin (KMO) measure For our case, the value is 0.924, which indicates that factor analysis is relevant for our study.

The Bartlett test is significant (i.e., a significance value of less than .05); this means that the variables are correlated highly enough to provide a reasonable basis for factor analysis.

Table 8 Factor loading of expectation scale

Factor Label	Dimension	Item No.	No. of items	Factor Loading	Eigen Value	Variance	Cronbach Alpha
F1	Assurance	E13	10	.788	9.43	48.26%	0.974
	Assurance	E14		.845			
	Assurance	E15		.797			
	Assurance	E16		.656			
	Assurance	E17		.740			
	Empathy	E18		.608			
	Empathy	E19		.468			
	Empathy	E20		.434			
	Empathy	E21		.726			
	Empathy	E22		.708			
F2	Tangible	E1	12	.619	8.159	37.08%	0.973
	Tangible	E2		.474			
	Tangible	E3		.785			
	Tangible	E4		.671			
	Reliability	E5		.686			
	Reliability	E6		.807			
	Reliability	E7		.733			
	Reliability	E8		.622			
	Responsiveness	E9		.506			
	Responsiveness	E10		.508			
	Responsiveness	E11		.475			
	Responsiveness	E12		.529			

KMO = 0.924, Bartlett's Test: $\chi 2$ =8185.39, d.f. 231 (p < . 001). Note: Factor loadings below 0.40 are not shown in this table.

The factor loading of five dimensions in case of expectation score is shown in table above. As it can be seen all dimensions are loaded under two factors namely F1 & F2. Where, dimensions namely Empathy, Assurance are loaded under F1 Factor and Tangible, Reliability & responsiveness is loaded under Factor F2. As factors are highly loaded , it means that respondents were satisfied with the statement. Apparently, this result does not support the five-factor structure as proposed by Parasuraman et al. (1988). It is worth mentioning here that the findings are in conformity with Tsoukatos et al. (2004) who employed factor analysis to examine the dimensionality of gap scale and found two factor solution viz., non-tangibles & tangibles.

Two factors generated have Eigen value from 8.15 to 9.43 and cumulative variance as 85.34% with F1 & F2 explaining 48.26% and 37.08% variance respectively. Reliability Coefficient for both these factor is very high indicating that there is a good understanding of these questions.

Perception (P)-Expectation (E) Gap factor Analysis

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.800
Bartlett's Test of Sphericity	Approx. Chi-Square	3905.038
	Df	231
	Sig.	.000

Table 9 Factor loading of Perception -Expectation scale

Factor Label	Dimension	Item No.	No. of items	Factor Loading	Eigen Value	Variance	Cronbach Alpha
F4	Tangible	P1-E1	3	.593	2.757	12.53%	0.545
	Tangible	P2-E2		-.394			
	Tangible	P3-E3		.583			
F5	Reliability	P7-E7	2	.404	1.268	5.76%	0.556
	Reliability	P8-E8		.760			
F1	Responsiveness	P9-E9	7	.618	4.693	21.33%	0.871
	Responsiveness	P10-E10		.650			

	Responsiveness	P11-E11		.681			
	Responsiveness	P12-E12		.450			
	Assurance	P13-E13		.737			
	Assurance	P14-E14		.691			
	Assurance	P15-E15		.592			
.F3	Empathy	P18-E18	4	.816	2.947	13.39%	0.861
	Empathy	P19-E19		.735			
	Empathy	P20-E20		.511			
	Empathy	P21-E21		.489			

1) KMO = 0.80, Bartlett's Test: $\chi 2$ =3905.03, d.f. 231 (p < . 001) Note: Factor loadings below 0.40 are not shown in this table,

2) A negative loading just means that the question needs to be interpreted in the opposite direction from the way it is written for that factor

The exploratory factor analysis on gap scores (P-E) result in Table 9. Overall, the analysis of gap scores yielded Four-factor solution instead of five factor. Even within these factors, the items were not found loaded according to the proposed factor structure of Parasuraman et al. (1988). For example, the second question on tangible does not load on the same factor as the other three questions on tangible. In addition, the responsiveness and assurance items merged into a single factor (i.e. F1). evidently indicates that some items did not load to any factor while other items merged into a single factor.

Four factors generated have Eigen value from 1.26 to 4.69 and cumulative variance as 53.1% with F1, F3 , F4 & F5 explaining 21.33%,13.39%,12.53% and 5.76% variance respectively. Reliability Coefficient for F1 & F3 are very high indicating that there is a good understanding of these questions while it is low for F4 & F5 means there is a misunderstanding of these questions.

3.7 Gap Analysis

The present study instead of dimension level (due to the inapplicability of the same factor structure) the gap scores for individual items were analyzed using the Weighted Average Scores (WAS) for all the 22 items to identify areas where quality improvement by organizers is needed the most.

As expected (Parasuraman et al., 1985, 1988), the results (shown in Table 10) revealed that in few dimensions the attributes of service quality of an event, the gap scores are negative. Levy and

Weitz (2005) posit that customers are satisfied when the perceived service meets or exceeds their expectations. They are dissatisfied when they feel the service falls below their expectations.

Table 10 Gap between Perceptions and Expectations (P-E) for Customers (n=214)

Question	Statement	Expectation mean	Perception mean	Mean GAP (PM-EM)
TANGIBLE DIMENSIONS				
E1	Event venue should have modern equipment complying to highest international standards & features.	3.603	3.944	**0.341**
E2	The Physical facilities should be visually appealing with clean ambiance.	3.640	3.360	**-0.280**
E3	Management staff should be well dressed with a neat appearance and should possess adequate knowledge/skills to support International visitors.	3.738	3.883	**0.145**
E4	Running orders (a brief schedule and outline of the event's proceedings), Briefing notes for Provost/Minister/Speakers & teleprompters should be well placed in order.	3.570	3.500	**-0.070**
RELIABILITY DIMENSIONS				
E5	Event timelines and sequences should be strictly followed.	3.435	3.262	**-0.173**
E6	All kinds of services should be performed with right deliverable at the first time	3.383	3.322	**-0.061**
E7	All the timelines for set services should be strictly followed as promised	3.678	3.192	**-0.486**
E8	All the relevant facts/records should be updated and presented accurately.	3.650	3.192	**-0.458**
RESPONSIVE DIMENSIONS				
E9	Event Staff should be polite, courteous and willing to help visitors.	3.463	2.995	**-0.468**
E10	Important announcements/changes in scheduled programme should be immediately informed to	3.252	3.173	**-0.079**

	the participants/speakers.			
E11	Assistance staff should never be too busy to respond to visitor's requests and provide individual attention.	3.065	3.252	**0.187**
E12	Visitor's issues should be sincerely resolved at priority by the management staff	3.748	3.140	**-0.608**
ASSURANCE DIMENSIONS				
E13	Eminent speakers/Intellectuals should be invited with a good quality researched work, Journals & path-breaking innovations in their field.	3.285	3.271	**-0.014**
E14	Non formal discussions/debates around new technology , issues and practices should be included in the event programme	3.439	3.252	**-0.187**
E15	There should be an arrangement for free consultation and discussion around business strategies/expansion plans/development of an overseas prospective client base	3.107	3.150	**0.043**
E16	Moderator, facilitator and centralized help-desk should voluntarily help the visitors and instill trust/confidence.	3.318	3.383	**0.065**
E17	Conference reading material should be of the highest standard with good quality of books, journals, and e-storage devices.	3.421	3.570	**0.149**
EMPATHY DIMENSIONS				
E18	Event venue should have fair connectivity to city hotels with advanced charting out of traffic route/festivals seasons scenarios.	3.505	3.299	**-0.276**
E19	Event timings should be convenient to the visitors of all age groups/genders/cultures.	3.262	3.364	**0.102**
E20	Visitors with special needs should be accommodated with parking/drop off areas, approaches, entrance, elevators/lifts ,rest rooms, BSL interpreter, Braille, note taker etc. that effectively guarantee their fair access to the conference venue	3.285	3.832	**0.547**
E21	All overseas visitors should be treated with a cordial & in deference manner, which should be appropriate to their culture, food preferences and	3.360	3.977	**0.637**

	linguistic salutation/Valediction gesture etc.			
E22	Overall perception of participants should be measured through post event survey at the time of conclusion or latter through emails/otherwise.	3.505	3.668	**0.163**

From Table above, it is clear that negative gaps were found in all 12 items indicating that customers' expectations were in excess of their perceptions. This can be interpreted as a gap between what was expected and perceived, thus, representing a failure in service delivery and service quality at all the levels. By analyzing the 'gaps', the organizer has the opportunity to take the appropriate actions to improve the quality of their services, giving priority to items with the largest gap scores. List of summary of these gaps is:

Table 11 Summary of Gaps

Dimension	Item No.	Brief Description/Area of improvement
Tangible	E2,E4	Physical facilities, flow of event
Reliability	E5,E6,E7,E8	Timelines, Records, Service Delivery
Responsiveness	E9, E10,E12	Staff behavior , assistance to visitors
Assurance	E13,E14	Lack of informal discussion, Path-breaking innovations
Empathy	E18	Venue city connectivity

3.8 Paired T TEST

Paired T -Test is used here to investigate whether there is any significant differences between the overall means of six quality dimensions.

Hypothesis:

$H_{01} = \mu_D = 0$

$H_{11} = \mu_D \neq 0$

The result of the test in Table 12 and evaluated at 5% significance level. P- values in the table 12 are more than the significant level (p-value=α>0.05): H_{01} is accepted, there is not a significant difference between expectation and perception means for all dimensions.

SERVQUAL Score for each dimension

Table 12 Paired sample T Test

Factors	Perception Mean	Expectation Mean	Gap Mean	T –Test	P –Value
Tangible	3.430	3.605	-0.1750	-1.667	0.344
Reliability	3.244	3.556	-0.2945	-2.801	0.068
Responsiveness	3.140	3.260	-0.1200	-0.631	0.593
Assurance	3.264	3.287	-0.0232	-0.407	0.711
Empathy	3.618	3.353	0.2650	1.366	0.265

Mean of perception & expectation scores have been calculated based on only those statement for which Cronbach alpha given in table 4

3.9 Part two: Demographic features of respondents

The total number of respondents who participated in our survey was 214.

Table 13 Demographic details of respondents (n=214)

S.No.	**Gender**	**Total response**	**Response rate**
1	Male	154	71.96%
2	Female	52	24.3%
3	Transgender	1	0.47%
4	Don't want to disclose	7	3.27%
S.No.	**Age**	**Total response**	**Response rate**
1	12 yrs or under	3	1.40%
2	13 -19 yrs	22	10.28%
3	20 -29 yrs	64	29.91%
4	30-39 yrs	87	40.65%
5	40-49 yrs	14	6.54%
6	50-59 yrs	23	10.75%
7	60-69 yrs	0	0.00%
8	70 yrs or over	1	0.47%
9	Prefer not to say	0	0.00%

S.No.	Education	Total response	Response rate
1	No formal education	18	8.41%
2	Vocational Training	3	1.40%
3	High School	9	4.21%
4	Diploma	36	16.82%
5	Undergraduate Bachelor Degree/University	88	41.12%
6	Master degree	24	11.21%
7	Professional Qualification	21	9.81%
8	Doctorate/ PhD/FPM	12	5.61%
9	Others	3	1.40%
S.No.	**Continents**	**Countries total response (in bracket)**	**Response rate**
1	Asia	India (194), Bangladesh(1), China (1), Japan(1), Singapore(1)=198	92.5%
2	Africa	Angola(1)=1	0.4%
3	North America	United States(3)=3	1.4%
4	South America	Brazil (7), Panama(1)=8	3.7%
5	Antarctica	-	
6	Europe	Spain (1),Italy(1), Germany(1)=3	1.4%
7	Australia	Australia(1)=1	0.4%
S.No.	**Frequency of visit**	**Total response**	**Response rate**
1	1-3 times	95	44.39%
2	4-6 times	37	17.29%
3	7+ times	12	5.61%
4	Never	70	32.71%
S.No.	**Stakeholder position/Category**	**Total response**	**Response rate**
1	Owners, Stockholders & Investors	5	2.34%
2	Government & regulators: Local, National, International	13	6.07%
3	Plenary/Sectional Speaker, Paper presenter etc.	16	7.48%
4	Academician, subject matter expert(SME's)	11	5.14%
5	Bankers & Creditors	2	0.93%
6	Buyers, customer, Prospects	15	7.01%
7	Partners & suppliers	12	5.61%
8	Professional & Industries association	29	13.55%
9	Management/Organizer	5	2.34%
10	Employees, union & work councils	11	5.14%
11	College student	22	10.28%
12	Media: Local, national, international ,trade, financial	1	0.47%

13	NGO	-	-
14	Communities & Interest groups	-	-
15	Not applicable	70	32.71%
16	Others(pls specify	2	0.93%
S.No.	**Experience of Oil & Gas event**	**Total response**	**Response rate**
1	Yes	96	45%
2	No	95	44%
3	Can't say	23	11%
4	Others (pl specify)	-	
S.No.	**Preferred Communication**	**Total response**	**Response rate**
1	Internet	132	61.68%
2	E-newsletter	21	9.81%
3	Newspaper	20	9.35%
4	Magazine	20	9.35%
5	Radio	13	6.07%
6	Bill board/Street signage	3	1.40%
7	Word of mouth	4	1.87%
8	Other (please specify):	1	0.47%

CHAPTER IV

STRATEGIC EVENT PLANNING

4. 1 Introduction

Event planning can include budgeting, establishing dates and alternate dates, selecting and reserving the event site, acquiring permits, coordinating transportation and parking, developing a theme or motif for the event, arranging for speakers and alternate speakers, coordinating location support and arranging decor, event support and security, catering, emergency plans, aid stations and clean-up.

Event management is the process by which an event is planned, prepared, and produced. As with any other form of management, it encompasses the assessment, definition, acquisition, allocation, direction, control, and analysis of time, finances, people, products, services and other resources to achieve objectives. Essentially, event management is the application of project management to the events planning process.

An event management cycle consists of following stages:

i. Concept planning-Event brief proposals, stakeholders, dates, venue costs
ii. Research -Market competitors
iii. Strategic planning-Budget, marketing , Logistics Operations
iv. Implementation-Operations, running of event.
v. Evaluation- Event evaluation, feedback

4.2 Event management Plan

Planning is the most important part of running a successful event. Event management planning includes all activities and issues associated with the event and how you are going to plan for them. Event management plan must include the following important documents:

- Key objectives and measures;
- Project plan/ critical path/ and/ or task list listing all the tasks required to deliver the event
- Project budget;
- Program schedule or run sheet (including contact list);
- Site plan and other details about the venue;
- Traffic management plan;
- Security brief;
- Contracts with suppliers and entertainers;
- Event promotion/ marketing;
- Waste management plan;
- Emergency management plan, including map of evacuation;
- Risk management plan;
- Public liability insurance;

- Wet weather/ contingency plan;
- First aid; and
- Infrastructure and equipment list.

4.3 Framework for PETROTECH -2021 event strategy

Plans	PETROTECH'-2021
Why this event must be held? Why stakeholders want to participate?	As part of International Energy Outlook 2013, EIA projects India and China will account for about half of global energy demand growth through 2040, with India's energy demand growing at 3% per year. To meet this growing demand, there is an emphasized need for wider and more intensive exploration for new finds, as well as more efficient and effective recovery.
	India is 4th Largest consumer of Oil & 12th largest 12th largest consumer of gas, and its consumption rate is still growing rapidly. With the economy projected to grow at a steady rate in the range of 7-9 per cent in the near term, per capita energy consumption is bound to increase, and so will the demand for energy.
	Highly volatile market and decline crude oil prices, High dependency of India on Oil import
	New projects such as Shale gas, CBM etc
	The event aims to explore areas of growth in petroleum technology, exploration, drilling, production and processing, refining, pipeline transportation, petrochemicals, natural gas, LNG, petroleum trade, economics, legal and human resource development, marketing, research & development, information technology, safety, health and environment management in the oil & gas sector.
Who are expected to part of this conference?-Target Group	Technologists, scientists, planners and policy makers, management experts, entrepreneurs, service providers, Bankers/Creditors
What are expectations of stakeholders?	Knowledge sharing, Buyer-suppliers meet, entrepreneurs business expansion, policies framework discussion, New Technology and path breaking innovations, networking with other experts.
When is the best time to hold this conference?	Feburary2021, no event of Oil and Gas Industries worldwide, weather and city events consideration.
Where will the event held?	Capital, good Air/train connectivity, infrastructure, accommodation etc.
How many attendees?	Based on PETROTECH-2019 figures, over 12500 delegates from 37+ countries ,23000+ Visitors and 818 exhibitors expected,

CHAPTER-V

FINANCIAL PLANNING OF EVENTS

5.1 Introduction

An event budget is a financial plan which sets out an estimate of proposed expenditure for a given event and the proposed means of financing the event.

A budget for all events has the following advantages:
- A thoroughly planned and approved budget will insure your event is financially viable
- A budget translates plans into specific costs
- A budget facilitates coordination and cooperation between the various aspects of the programme
- Routine comparison between the budget and the actual financial performance can highlight possible trouble and allow time for an appropriate response

From the Event team's perspective, budgeting is a key element for
1. Planning – The best laid plans are pointless if there is no agreed budget in place to deliver on these plans. Planning for the event, costing the plan and agreeing the budget must go hand-in-hand.
2. Management & Control - By putting a budget in place, the Event Management Team will be very clear on how much or how little they can spend in different aspects of the Event.
3. Priorities – With a clearly defined budget, it is much easier to establish where cut backs may be made if required - Identifying Income Requirements – by identifying the finances to run the event, the Event Team may need to charge an entry fee, source sponsorship or Value In Kind (VIK) services or supplies

When balancing our budget, our total income should be equal to or greater than our total expenditure. If our total expenditure is more than our total income then we have overspent, and we need to look at cutting some of our costs, or finding additional sources of income

5.2 Budgeting process

Table 14 indicates the steps to be followed in budgeting process:

Table 14 Budgeting Process

Process	Activities
STEP-1 Set goals	Initiate planning
STEP-2 Establish objectives	Identify Event activities to accomplish goals
STEP-3 Design plans	Describe method of reaching the goals
STEP-4 Budget preparation and approval	Quantify income and expenditures based upon forecasts and agree same with Area Committee

	and/or Region
STEP-5 Seek Quotations	Source at least three quotations for the supply of the required goods or services. This provides a firm basis for deciding the appropriate supplier. Best estimates may be used in situations where numbers or quantities have not been confirmed.
STEP-6 Monitor progress	Monitor income and expenditure against the budget.

5.3 Expenses

It is important to account for all costs associated with our event's activities. Be sure that we do not overspend on this amount, unless we have income to cover the expense. To obtain the best possible price, contact several suppliers with our event requirements and arrange a quote. Various entries under the head "Expenses " shall include but not limited to:

- Location/Venue
- Travel and Stay arrangements of key speakers/personnel of the event
- Conference proceedings and properties
- Public Relations (Advertisements, handouts, posters/stickers and other allied expenses) Meals for the attendees and speakers
- Entertainments (if being hired)
- Coffee/Tea supply during the event
- Expenses related to creating and maintaining the event website
- Printing (conference tickets/booklets/attendee speaker and team badges etc
- Stage decor (flex prints, floral decorations etc)
- Vigilance (security, emergency arrangements, etc.)
- Hardware and Stationery (Computers, phones, printers, copier, papers etc)
- Personnel and Volunteers (food, conveyance etc)
- Insurance costs
- Bank costs (money transfer fees, online ticket sales fee)
- Miscellaneous expenses Govt Taxes if applicable

5.4 Financing/sources of income

List below provides common sources of event revenue. Some differences exist between organizations that run events for profit motives and those that are not-for-profit oriented.

Government Grants

Sponsorship

Merchandising Sales

Participant/Spectator Fees

Raffles

5.5 Projected number of visitors in PETROTECH 2021

For calculation of expected/projected expenditure and revenue from the event, it is essential to draw a projected figures from past PETROTECH events. Therefore, table 15 below indicates a snapshots of number of visitors to these events in the past .

Table 15 Projected number of visitors in PETROTECH 2021

Categories	**Nationality**	**PETROTECH 2016 (38 Countries)**	**PETROTECH 2019 (36+ Countries)**	**PETROTECH 2021 (Projected*37+ countries)**
Exhibitors	National	310	382	471
	International	275	309	347
	Total Exhibitors	585	691	818
Delegates	National	3455	6238	11263
	International	545	862	1363
	Total Delegates	4000	7100	12626
Total Visitors	National/ International combined	17341	20245	. 23635

Source: PETROTECH- 2019 organized by M/sONGC & MoPNG India
**Projected/Expected figures calculated based on average increase of participants between 2016-2019.*

5.6 Proposed expense Sheet under different heads for PETROTECH-2021

Event: PETROTECH-2021
Timelines: February 2021
Expected number of delegates: 12626 from over 37+ Countries
Expected number of visitors: 23635 from over 37 + Countries
Number of Exhibitors: Total 818 (471 Indian + 347 Overseas exhibitors)
Assumption: Total Budgeted Cost 100 Crores

Table 16 Different categories of expense head and allocations

S.No.	Head	Allocation	Amount (INR)
1	Venue Rental* including services	25.78%	25.78 Crores
2	Government Taxes	18%	18 Crores
3	Marketing/Social media/Advertising	17%	17 Crores
4	Logistics /Hotels/ Transportation/ guest services	10.0%	10 Crores
5	Staff/Volunteers	8%	8 Crores
6	Security/Vigilance	8%	8 Crores
7	Contingency (8% of budgeted cost)	8%	8 Crores
8	Food & Beverages	5%	5 Crores
9	Public relation	0.08%	0.8 Crores
10	Sponsors acquisition/communication	0.07%	0.7 Crores
11	Event Programming	0.05%	0.5 Crores
12	Event documentation	0.05%	0.5 Crores
13	Bank Transaction cost	0.01%	0.1 Crores
	Total Budgeted cost for the event		**100 Crores**

i. Estimated venue rental(INR 25.78 Crores) is already calculated based on information available on India Expo , Greater Noida website for Conference and on Pragati Maidan, New Delhi website for exhibition of 818 delegates (approx). Calculations are shown in Table

ii. Contingency fund equal to 8% of total budgeted cost is kept for any emergencies.

iii. Only Government Tax -GST @18% considered for the calculation purpose

Calculations for venue rental & Services

Calculations for venue rental and services are shown in table 17 .The reference data has been taken from the websites of India Expo, Greater Noida, where the event is proposed to happen for the Conference part. In addition , there will be an exhibition by 818 Nos. Delegates across 37+ countries for which data is taken from ITPO , Pragati Maidan websites. Here, we have assumed few missing data to reach to a tentative figures for our expenses.

Calculation for expenses on Logistics

Assumptions :

Total Delegates expected in the event: 12656

Indian Delegates:11263
Foreign Delgates:1363
Since majority of delegates belongs to Oil & Gas companies, Research Institutes, Governing bodies etc, Therefore, we assume that they have been provided with required logistics facilities from their parent companies. However, considering a conservative approach, we are assuming that 60% of total population needs logistic facilities for 5 days (One day before and after event included)
(here, we are not considering the seniority levels of the delegates)

One day room tariff for Hotel: INR 9000/- (including F&B)
Total 5 days room tariff for 7593 persons (60% of 12656)- INR 6.83 Crores
To & Fro Airport/Railway Station transfer charges-INR 700/- each side
Total To & Fro Airport/Railway Station Transfer for 7593 persons- INR 1.06 Lakhs
To & Fro Transfer for other visitors (lumpsum for 3 days)- INR 30 Lakhs
Supply of orders (Lumpsum): INR 2 Crore

Total expected logistics charges – INR 10.19 Crores

Calculation for other heads

Since, data on remaining budgets heads is not available in public domain, therefore we have assumed a suitable allocation under each head. A contingency fund equal to 8% of total the budgeted cost is also kept to meet any emergency. Here, it is worth to mention, that the objective of this study is to develop an approach towards financial planning of such an event. Financial figures may or may not be exactly same and subject to changes due to developments happen during the actual event.

Table 17 Space rental expenses for conference and exhibition stands

PETROTECH-2021 Conference at Expo Mart Greater Noida (February-2021)

SPACE & RENTALS			
Particular	**Detail**	**Rates in INR**	**Total amount (INR)**
Halls-total area 64888 Sq m	During event days(3 Days)	242 /Sqm /day	4.76 Crores
	During set up & dismantling(4 days)	121/Sqm /day	3.14 Crore
Central function Building (3220 Sq m)	All days (3 days)	150/Sqm /day	1.44 Crores
Open Lawn(33611 Sq. m)	During event days(3 Days)	1,50,000/day	4.5 Lakhs
Open Lawn(33611 Sq. m)	During set up & dismantling(4 days)	75,000/day	3 Lakhs
Outdoor area(1,09,042 Sq m)	All days (3 days)	50 /Sq. m/day	1.63 Crores
Board Room (110 Sq.m-50 Seaters)	All days (3 days)	40,000/day	1.20 Lakhs
VIP Lounge(108 Sq. m)	All days (3 days)	20,000/day	0.60 Lakhs
Media Lounge(62 Sq .m)	All days (3 days)	25,000/day	0.75 Lakhs
Mini Borad room(20 Sq . M)	All days (3 days)	5000/day	0.15 Lakhs
Buyers/Business Lounge(358 Sq m)	All days (3 days)	1,25,000/day	3.75 Lakhs
Cafeteria (470 Sq .m)	All days (3 days)+ During set up & dismantling(4 days)	50,000/day	3.50 Lakhs
Fine Dinning (294 Sq . M)	All days (3 days)	50,000/day	1.50 Lakhs
Restaurant	All days (3 days)	50,000/day	1.50 Lakhs
Display area (615 Sq. m)	All days (3 days)	42,000/day	1.26 Lakhs
Glass Cubicle (Exhibitors office) average	All days (3 days)+ During set up & dismantling(4 days)	20,000/day	1.40 Lakhs
		TOTAL SPACE & FACILITIES CHARGES	**11.20 Crores**
BRAND & SIGNAGE			
Parking Stand alone (10' x 3.5')	Applicable rates for 4 Days, 100 Nos.	1200/piece/event	1.20 Lakhs
Bunting (20' x 3')	Applicable rates for 4 Days, 100 Nos.	2400/piece/event	2.40 Lakhs
Banners (10' x 3.5')	Applicable rates for 4 Days, 100 Nos.	1200/piece/event	1.20 Lakhs

Pole Bunting (8' x 4')	Applicable rates for 4 Days, 100 Nos.	2400/piece/event	2.40 lakhs
Foyer Bunting (45' x 7')	Applicable rates for 4 Days, 100 Nos.	30,000/piece/event	30 Lakhs
Central Fascia Main building(23' x 16')	Applicable rates for 4 Days, 100 Nos.	36,000/piece/event	36 lakhs
Mart Terrace wall (140' x 10')	Applicable rates for 4 Days, 35 Nos.	1,20,000/piece/event	42 lakhs
Fascica Gate	Applicable rates for 4 Days, 8 Nos.	24000/Gate/event	1.92 Lakhs
		TOTAL BRAND & SIGNAGE	**1.17 Crores****
Exhibition at Pragati Maidan Expo, New Delhi (February-2021)			
SPACE RENTAL			
Pragati Auditorium (12 Sq m each, expected 820 Stands)	All days (3 days)	13300/sqm/day	13.08 Crores
Lounge (Hall 7) (60 Sq m)	All days (3 days)	47000/sqm/day	84.6 Lakhs
Information Booths on Road (15 Sq m each-10 Booths)	All days (3 days)	1340/sqm/day	6.03 Lakhs
Information Booths in Foyer of Hall 7 (15 Sq m each-25 Booths)	All days (3 days)	2000/sqm/day	22.50 Lakhs
Protocol Room (50 Sq m)	All days (3 days)	33000/sqm/day	49.5 Lakhs
V.I.P. Pragati Lounge (Hall No. 1, 100 Sq m)	All days (3 days)	9300/sqm/day	27.9 Lakhs
Basement of Hall 18* (5000 Sq M)	All days (3 days)	19400/sqm/day	2.91 Crores
Registration Counter at Gate No. 5 (15 Sq m), 10 Nos.	All days (3 days)	7500/sqm/day	33.75 Lakhs
Registration Counter at Gate No. 7 (15 Sq m), 10 Nos.	All days (3 days)	7500/sqm/day	33.75 Lakhs
TOTAL RENTAL EXHIBITION STANDS AT PRAGATI MAIDAN EXPO			**18.57 Crores****

* *Source: India Expo Mart, Greater Noida 2019 rate list*

** *Source: http://indiatradefair.com/knowledge/details/rental18-19/rental_sidebar*

5.7 Sponsorship , fundraising & other revenue sources

Once the event manager and organizing committee have a clear understanding of the finances and budget, they may wish to secure sponsorship for the event. Sponsorship is largely seen within events and festivals and is considered a promotional medium. Corporate organizations commonly give event organizations funds or services to fulfill what has been set out to do. Corporate organizations use sponsorship for building corporate image, targeting audiences, or product trial.

5.8 Projected revenue from delegate fees

The registered delegates will be entitled to participate in the technical sessions, exhibitions, luncheons and social programmes, including dinners. The Conference material & abstracts will also be made available in the soft copy.

To calculate projected revenues from Delegate Fees , we have taken data from PETROTECH-2019, however, a 10% increase assumed over last charged delegate fees shown by asterisk(*) mark in table below:

Table 18 Past delegate fees (PETROTECH 2019)

Categories	**Overseas (USD)**	**Indian (INR)**
Delegates	1,760*	17,600*
Accompanying Spouse	800	8,000
Discounts		
Less than 10 Delegates	Nil	Nil
10 or more Delegates	100 off each	1,000 off each
25 or more Delegates	300 off each	1,250 off each
50 or more Delegates	350 off each	1,500 off each
Early Bird (up to 30/09/2018)	10%	10%

Source: PETROTECH- 2019 organized by M/sONGC & MoPNG India

**10% increase assumed in delegates fees*

Table 19 Projected revenues from Delegate fees

Delegates	No.of Delegates (Indian)	No.of Delegates (Overseas)	Total Fees for Indian Delegates	Total Fees for overseas Delegates
Fees	11263	1363	198228800	155927200
Accompanied with Spouse (20% each)	2252.6	272.6	18020800	14175200
Total Delegate fees			216249600	170102400
10 or more delegates(25% each)	2815.75	340.75	2815750	2214875
25 or more delegates(15% each)	1689.45	204.45	2111812.5	3986775
50 or more delegates(5% each)	563.15	68.15	844725	1550412.5
Early Bird discount	9010.4	1090.4	15858304	12474176
Revenue from each category of Delegates Fees			INR 19.46 Crores	INR 14.98 Crores
Total Revenues from Delegates fees			INR 34.44 Crores	

Conversion rate taken as 1 USD=70 INR

Assumptions:

1. There is 25% discount offered for more than 10 delegates in each group ,15% discount for 25 or more delegates and 5% discount for so or more delegates category.
2. 20% each Indian & Foreign delegates accompanied with spouse.
3. Early bird discount offered to 80% of total participants in each category, registered before 30th September, 2020

5.9 Projected revenues from sponsorships

We have calculated a projected revenue from Sponsors based on PETROTECH -2019 organized by M/s ONGC & MoPNG. Here, we have assumed an increase of 10 % over the total amount of sponsorship received in PETROTECH -2019

Table 20 Sponsorship categories in PETROTECH 2019

Categories	Amount
Platinum	INR 2 Crores
Diamond	INR1.5 Crores
Gold	INR 1.2 Crores
Silver	INR 75 Lakhs
Emerald	INR 50 Lakhs
Crystal	INR 30 Lakhs
Sapphire	INR 20 Lakhs

Table 21 below shows the projected sponsorship each category for PETROTECH-2021

Table 21 Projected revenues from Sponsorship

Category	Nos. of Sponsors in each category	Total Amount
Diamond	5 Nos.	INR 7.5 Crores
Gold	5 Nos.	INR 6 Crores
Silver	3 Nos.	INR 2.25 Crores
Emerald	2 Nos.	INR 1 Crores
Crystal	5 Nos.	INR 1.5 Crores
Sapphire	11 Nos.	INR 2.2 Crores
Total revenue from Sponsorships in PETROTECH-2019 (including taxes)		INR 20.45 Crore
Projected Revenues from Sponsorship **(Considering 10 % increase in sponsorship amount/Sponsors in PETROTECH 2021)**		INR 22.50 Crore

Source: Numbers of sponsors taken from PETROTECH 2019

Table 22 Proposed Sponsorship Categories for PETROTECH-2021 event

Opportunities	**Platinum**	**Diamond**	**Gold**	**Silver**	**Emerald**	**Crystal**	**Sapphire**
Display at conference & Exhibition venues.	✔	✔	✔	✔	✔	✔	✔
Video clip between sessions break	60 sec	30 sec	20 sec	15 sec	10 sec		
Company logo on printed material & web.	✔	✔	✔	✔	✔	✔	
Company logo at all events - conference, lunches & dinners venue, awards ceremony venue and exhibition, energy club etc.	✔	✔	✔	✔	✔	✔	
Electronic display at podiums - conference & exhibition.	✔	✔	✔	✔			
Speaking opportunity in session	2 nos.	1 no.	1 no.				
Branding on invitation cards.	✔	✔	✔				
Complementary delegates	30 nos.	20 nos.	15 nos.	10 nos.	10 nos.	10 nos.	5 nos.
Exclusive invites to select events - CEOs conclave, life time excellence awards, dinner.	10 nos.	8 nos.	5 nos.	3 nos.	2 nos.	1 no.	1 no.
Exclusive entry to Energy club - CH/ CMD & Board members only.	✔	✔	✔	✔	✔	✔	✔

5.10 Proposed revenues from buyer-supplier meet

Purpose:
To provide a common platform to Oil & Gas Companies (both upstream and downstream), Technology Providers, Non-Conventional Energy Companies, Project Management & Engineering Consultants, EPC Contractors and Equipment / Systems Manufacturers to discuss the issues of mutual interest and share the latest developments in the field.

Venue & Schedule:
India Expo Mart,Greater Noida, Tentatively February,2021

Proposed registration fees:
The registration fee (inclusive of applicable taxes & duties) per Delegate for participating in the Buyers-sellers Meet is INR 17600 for an Indian organization and USD 1760 for an overseas organization. However, each participating organization must nominate minimum two representatives to the Buyers–Sellers Meet who will be considered as Petrotech-2021 Delegates.

Proposed registration for Co-Sponsorship
The amount for co-sponsorship of Buyers-Sellers Meet by an organization shall be INR 7,00,000 excluding GST and USD 9,500 excluding tax and other applicable Taxes for an overseas organization. The amount of service tax payable on the sponsorship should be borne by the Sponsor in India and the sponsorship amount shall be remitted to PETROTECH 2021 net of GST. Sponsors from outside India should add GST @ 18% payable in India on the sponsorship amount. Any taxes payable outside India shall be borne by the foreign remitter.
Organizations registering for co-sponsorship of Buyers-Sellers Meet shall be entitled for following benefits:

- Slot for presentation as a speaker in one of the sessions (20-25 minutes).
- Free registration of 4 Delegates in Buyers–Sellers Meet.
- Display of organization's name & logo at prominent location of Buyers–Sellers Meet venue.

Calculation of Revenue from Buyer-Supplier meet:

No. of Buyer-Suppliers Organizations attended meet in PETROTECH -2019
National:15 Nos.
International:2 Nos.
Nos. of Co-sponsors-5 Nos.(Indian)

Total expected revenue from registration in PETROTECH-2021

Table 23 Projected revenues from Buyer-supplier meet

No. of Buyer-Suppliers expected	**PETROTECH -2019**	**PETROTECH 2021*(Expected considering 10% increase)**
National	15	17
International	2	4
	17	21
Registration Fees		
National	INR 16000	INR 17600
International (conversion rate IUSD=65 INR)	USD 1600	USD 1760/INR 114400
Total revenue considering minimum 2 nos. of delegates from each organization	=2(17*17600 + 4*114400) =INR 15,13,600	
Number of Sponsorship for meet	5	6
Total revenue from Sponsorship (including GST@18%)	=6 (7,00,000+0.18*7,00,000) =INR 49,56,000	
Total revenue expected from Buyer-Supplier meet	= INR 15,13,600 + INR 49,56,000 =INR 64,69,600	

5.11 Proposed revenue from exhibition stand

Table 24 Past Tariff plan for exhibition stand in PETROTECH 2019

Stand Type	Unit charges	Domestic Exhibitors	Overseas Exhibitors
Space charges			
Raw Space (Min. 50 Sq.M)	per Sq.m	INR 16,500	USD 550
Shell Space (Min. 12 Sq.M)	per Sq.m	INR 18,000	USD 650
Electricity charges			
Raw Space (Min. 50 Sq.M)	per kw	INR 7,500	USD 175
Shell Space (Min. 12 Sq.M)	Per Sq m	INR 750	USD 25

Source: PETROTECH- 2019 organized by M/s ONGC & MoPNG India

Proposed space booking details

- Exhibition inauguration and visiting time
  Exhibition Inauguration (Feb. 2021)- 1600 hrs
  Visiting Hours (Feb, 2021) - 1000 hrs - 1700 hrs
  Visiting Hours (last day) - 1000 hrs - 1500 hrs

- Assuming 10% increase in rates , the proposed rates for stand shall be:
  Raw Space: INR 18150/USD 605 per Sq m
  Shell Space: INR 19800/USD 715 per Sq m
  Proposed electricity Charges:
  Raw Space: INR 8250/USD 193 per kw
  Shell Space: INR 825/USD 27.5 per Sq m

Table 25 shows the calculations for projected revenues from Exhibition stands.

Cost Heads	Details	Charges for Indian Exhibitors (471 Nos. expected)	Charges for an Overseas Exhibitors (347 Nos. expected)
Space type/Rent	Built-up Space:.....sqm @ INR 19800/USD 715 per Sq m (Min 12 sqm) - Air Conditioned Hall	INR 11.19 Crores	INR 19.35 Crores
	Raw Space:.....sqm @ INR 18150/USD 605 per Sq m (Min 50 sqm) - Air Conditioned Hall	INR 8.54 Crores	INR 13.64 Crores
	Mezzanine Floor can be constructed subject to max. 25% of total booth space @ INR 4000 per sqm	INR 56.12 Lakhs	INR 41.64 Lakhs
	Outdoor Space:.....sqm @ INR 10000 per sqm (Min 50 sqm)	INR 4.71 Crores	INR 3.47 Crores
Electricity Charges	Built-up Space:.....sqm @ INR 825/USD 27.5 per sq m for stand lighting.	INR 46 Lakhs	INR 74.43 Lakhs
	Raw Space.....sqm @ INR 8250/USD 193 per kw for stand lighting. (Minimum Chargeable load 1kw/10 sqm raw space booked)	INR 1.94 Crores *(considering min. 50 sq m of space)*	INR 2.17 Crores *(considering min. 50 sq m of space)*
	For Demonstration of machineries/equipments @7500/- per kw.	INR 70.65 Lakhs	INR 52.05 Lakhs
	For Temporary power @INR 2000/-/USD 25 per kw per day .	INR 28.26 Lakhs	INR 16.91 Lakhs
Advertisement Show Catalogue	a) Back Cover -INR 250000 (Size A4 (20cmx28cm) b) Inside Front Cover –INR 200000 (Size A4 (20cmx28cm) c) Inside Back Cover -INR 175000 (Size A4 (20cmx28cm) d) Bookmark – INR 130000 (Size 7cmx10cm) e) Full Page Color – INR 40000/Per Page. (Size A4 (20cmx28cm)	INR 5.81 Crores	INR 4.27 Crores
	Total Charges	INR 34.20 Crores	INR 44.75Crores
	GST@18% to be included	INR 6.15Crores	INR 8.05 Crores
	Grand total	INR 40.35 Crores	INR 52.80 Crores
	Total revenue from exhibitions	**INR 93.15 Crores (with GST) / INR 78.95 Crores (without GST)**	

Note:

1.Calculations based on minimum space requirement/average power requirement by two equipment (1kw each), not continuous operation

2. Assuming only 20% exhibitors opted for raw space in each category (Indian & overseas exhibitors)

3. Assuming only 20% exhibitors opted for outdoor space in each category (Indian & overseas exhibitors)

3. Temporary connections assumed to be constant 1 kw/day/stand

4. Assuming all stands are equipped built up Mezzanine floor space.

5.Assuming for each category of exhibitors: 10% stands opt for all types of advertisement catalogues (with 2 full page color each)-Total INR 8.35 Lakhs and 50% opt for only two page advertisement in catalogue-Total INR 40,000 each .Conversion rate 1USD=INR70.00

5.12 Breakeven price and sales volume for Conference

According to Paige (1997:168-169), all event managers must be aware of what level of turnover is necessary to cover all costs and at what point profit will start. Event projects have one of three possible profit motives: to make a profit, to break even, or to operate at a deficit as a hosted event. Typically social events (e.g., weddings and reunions) and many corporate events (e.g., training programs and retail events) are hosted events that do not expect a direct financial return, although the return might be measured indirectly. Many conferences or recreation events have break-even expectations, with the revenues covering all the expenses incurred. Most other events have an expectation of revenues exceeding expenses. In some organizations these profits are referred to as retained earnings, but the bottom line objective is the same – money left over.

Table 26 fixed and variable direct costs for an event

Fixed	**Variable**
Audiovisual equipment and personnel	Badges and ribbons
Awards	Conference program books
Communications equipment	Food and beverage
Decorations	Gifts and amenities
Entertainment	Gratuities
Insurance	Labor
Licensing fees	Speaker fees, travel and lodging
Office equipment and supplies	Taxes
Photographer	Temporary staffing
Postage	
Promotional materials	
Registration equipment and personnel	Note: some fixed cost categories might
Meeting room rentals	become variable should attendance volume
Security	exceed a certain level.
Shipping	
Signs	
Staff travel and lodging	
Storage	

Assumptions:

Delegates expected to visit conference-12626 (Based on PETROTECH -2019 projected calculation)

Fixed Cost:
Space & rental for conference: INR 11.20
Brand & Signage-INR 1.17
Staff Salary (No Commission)-INR 2 Crores
(For simplicity of problem , we have considered only two components of Fixed cost , which are calculated earlier)
Total Fixed Cost :approx INR 14.37 Crores

Variable Cost per delegates
Food & Beverage: INR 1500
Reading material : INR 3000
Ribbon & Badges: INR 500
To & Fro Airport/Railway Station transfer charges-INR 700/- each side=INR 1400
Bank transaction cost-INR 10 per transaction
Total variable cost per delegate: approx INR 6400

Break even unit volume

Assume Delegate Fees- INR 17600 for Indian delegates
USD 1760 for Overseas delegates
Assuming 80% Indian and 20% overseas delegates visit the conference , then
Average delegate fees= $\frac{0.8 \times 17600 + 0.2 \times 1760 \times 65}{2} = \frac{14080 + 22880}{2}$ = INR18480
Taken conversion rate 1 USD=70 INR

Delegate fees=INR 18480

Delegate Fees- INR 18480
Per person variable cost-INR 6410
Contribution margin- INR 12070

Attendees needed to breakeven

= Fixed Cost/Contribution margin
= INR 14.37 Crores/12070 =**11905 Delegates**

Break even price

Assumption 12626 Delegates are visiting
Total fixed Cost: INR 14.37 Crores
Total variable costs: INR 8.09 Crores (INR 6410 X 12626)
Toatl Cost: INR 22.46 Crores

Registration fee to Break even:
=INR 22.46 Crores/12626
= **INR 17788**

So , we need to sell 11905 Conference tickets to recover our fixed cost.

Table 27 Breakeven Table

Tickets Sold	Sales Revenues	Variable Costs	Fixed Costs	Operating Profit
0	INR 0	INR 0	INR 143,700,000	INR -143,700,000
2976	55,003,645	19,078,645	143,700,000	-107,775,000
5952	110,007,291	38,157,291	143,700,000	-71,850,000
8929	165,010,936	57,235,936	143,700,000	-35,925,000
11905	220,014,582	76,314,582	143,700,000	0
14881	275,018,227	95,393,227	143,700,000	35,925,000
17858	330,021,872	114,471,872	143,700,000	71,850,000
20834	385,025,518	133,550,518	143,700,000	107,775,000
23811	440,029,163	152,629,163	143,700,000	143,700,000
26787	495,032,809	171,707,809	143,700,000	179,625,000

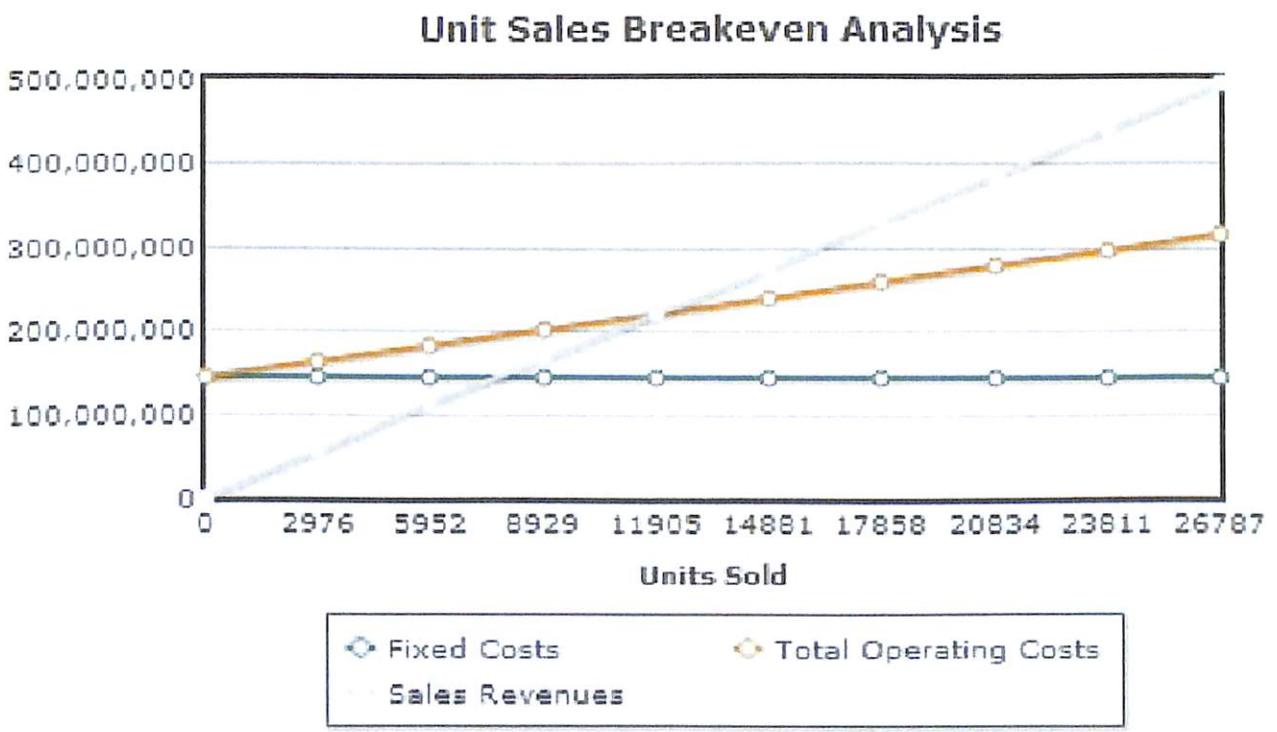


Fig 7 Breakeven chart

5.13 Conclusion

Proposed revenue sources for PETROTECH-2021 are grouped into following categories:

(i) Revenue from Delegate registration Fees (INR 34.44 Crores)
(ii) Revenue from Sponsorships (INR 22.50 Crores)
(iii) Revenue from Buyer-Suppliers meet(INR 64.69 Lakhs)
(iv) Revenue from Exhibition Stand (INR 78.95 Crores)

Total projected revenues from all streams in our case is : INR 136.53 Crores

Since , our budgeted cost (INR 100 Crores) is less than the expected revenues (INR 136 .53 Crores) from different streams , therefore is financially it is profitable to organize the event.

CHAPTER –VI

HUMAN RESOURCE PLANNING- JOB ANALYSIS AND ASSIGNMENT

6. 1 Introduction

One of the most challenging tasks for the event or human resource manager is managing the people designing and staging the event, whether a festival, exhibition, street parade or competition. This is no ordinary business environment. Most organizations hold onto their employees for months or even years, giving them time to socialize and develop their skills and knowledge in the context of the particular business. In the event environment, on the other hand, there is generally only a handful of individuals on the planning team and a mass of paid, voluntary and contractor employees working on a temporary site for anything from a few hours to a few days. Developing a vision or purpose for the event, conducting a detailed job analysis, responding to constant changes in operational planning and meeting the communication needs of all involved are just some of the tasks of the human resource manager. Indeed, most events do not have a human resource manager, and this function is undertaken by senior staff from the event manager down to the team leader. It is thus vitally important that each person in a management or supervisory role understands the human resource function and their contribution to managing the people in their temporary workforce.
Given below are the different roles of those involved in staging an event. In some cases, their interests differ, commonly when the budget allocated to safety and security is not seen as sufficient. Conflict is commonplace. For example, there may be a difference of opinion about the choice of entertainment – the committee members may agree but the sponsor may not approve or endorse their choice.

Event committee
The role of the committee is to formally identify the primary purpose and goals of the event and to monitor progress towards those goals. The committee members generally take on responsibilities for production, marketing, staffing, operations and finance.

Event staff
The paid staff of an event organization share responsibility for designing and staging the event. Paid staff are usually experienced and qualified, if not in the events business, then in a related field. This group may be quite small until close to the event. In some cases, the paid workforce includes staff on secondment from, for example, government agencies.

Stakeholders

Multiple stakeholders from different disciplines have an impact on event planning. Stakeholders may include local government, emergency services, roads and transport, environment protection authority, police and sponsors. The owner/manager of the venue is one of the primary stakeholders.

Contractors

Few events run without the extensive use of contracting organizations to provide goods and services. These include suppliers of temporary fencing and facilities, lighting, sound, stage management, entertainment, catering and waste management.

Volunteers

Many community events involve volunteers, sometimes from the committee down. The number of volunteers varies depending on the type and scale of the event. For many sporting events, the volunteers are specialists in their areas of scoring etc. Commercial events such as exhibitions seldom require volunteers.

6.2 Job Analysis

Job analysis is the process of collecting information in order to develop a comprehensive awareness about specific jobs, including job descriptions and person specifications. While some small event organizations are cavalier about their lack of human resource planning and have no written job descriptions, those event organizations that operate in professional and complex environments find that job descriptions are an invaluable part of planning. A job description can form the basis for recruitment of the most appropriate staff, provide guidelines to the individual accepting the position, form the basis for training plans and provide a foundation for performance management. For most individuals and organizations, job descriptions are invaluable – in the event business, job descriptions (like checklists) are part of the micro level planning that contributes to flawless performance.

Job analysis is the process of discovering the nature of jobs (Brannick and Levine, 2002) and for this to occur a systematic process is necessary. The outcomes of job analysis are primarily the job description and person specification for each role, including volunteers.

A *job description* is an outline of reporting relationships, tasks to be performed, job outcomes expected and working conditions. A *person specification* (also referred to as 'job requirements') provides details of the ideal candidate, including knowledge,skills and other attributes required to perform the above tasks.

In conjunction with project planning, the following questions might be asked as the job analysis process evolves:

- What is the primary purpose of the job?
- Is this job going to be performed by a paid staff member, a volunteer or a contractor?
- What are the tasks that need to be performed?
- What are the skills, knowledge and other attributes required?
- Are there any legislative considerations, such as requisite licenses?
- When and where are the tasks performed?
- What are the reporting relationships?
- Which environmental factors need to be considered?
- Are specific job outcomes expected?
- Is the job likely to change during the course of the project?

6.3 Competency/Skill Mapping

According to Boyatzis(1982) "A capacity that exists in a person that leads to behaviour that meets the job demands within parameters of organizational environment, and that, in turn brings about desired results".Using the results of the job analysis, a competency based job description is developed. It is developed after carefully analyzing the input from the represented group of incumbents and converting it to standard competencies. With a competency based job description, mapping the competencies can be done. The competencies of the respective job description become factors for assessment on the performance evaluation. Using competencies will help to perform more objective evaluations based on displayed or not displayed behaviors.

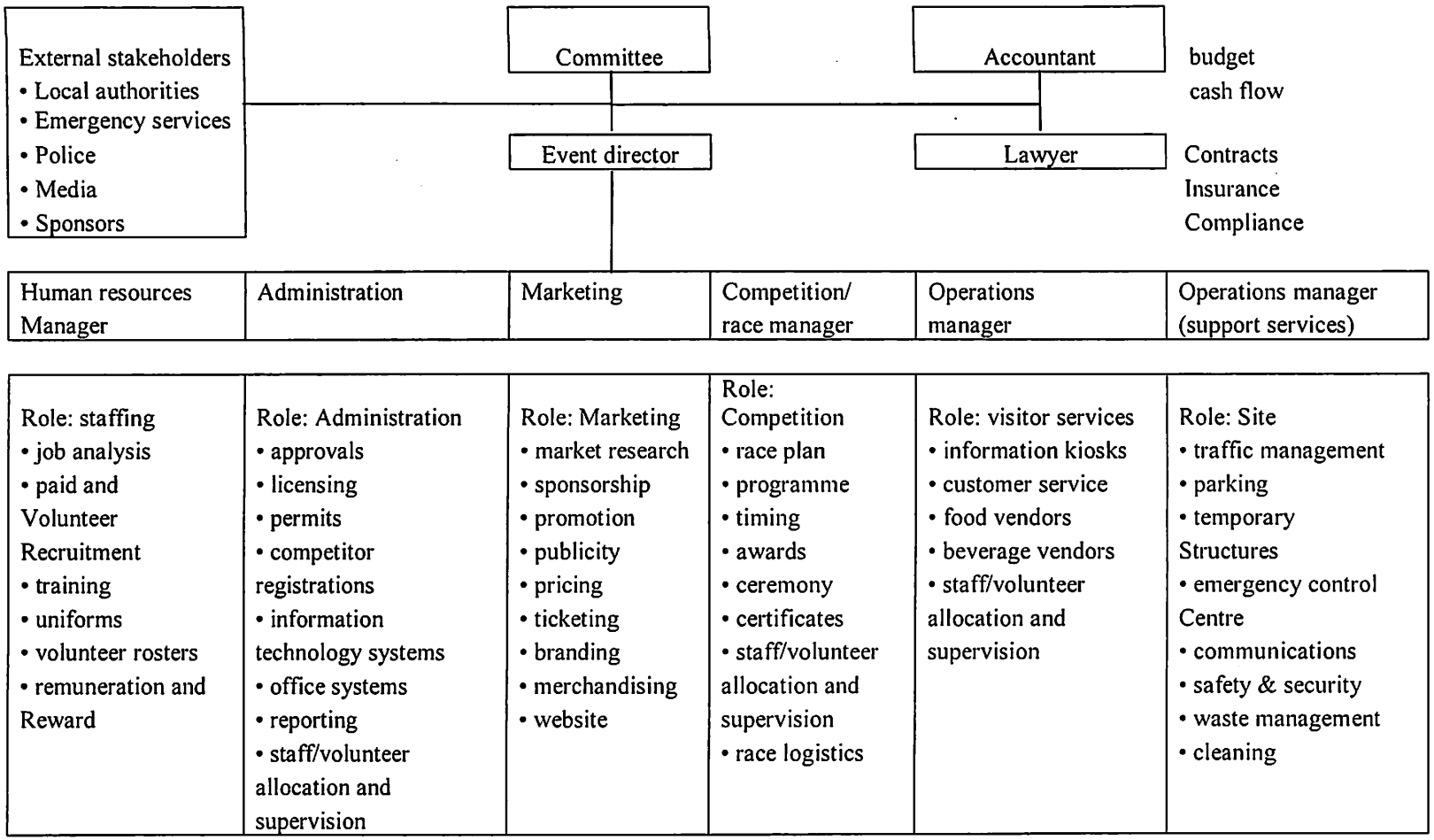


Fig 8 Organization Chart during pre- event planning phase

6.4 Job Assignment

The objective of assignment problems is to assign a number of origins (jobs) to the equal number of destinations (person) at a minimum cost or maximum profit.

Definition

Suppose there are n jobs to be performed and persons are available for doing these jobs. Assume that each person can do job at a time though with varying degrees of efficiency. Let Cij be the cost if the ith person is assigned to the jth job. The problem is to find an assignment (which job should be assigned to which person, on a one to one basis) so that the total cost of performing all the jobs is minimum. Problems of this kind are known as assignment problems. An assignment problem can be stated in the form of n x n cost matrix [Cij] of real numbers as given in the following table.

6.4.1 Hungarian Method Procedure

Solution of an assignment problem can be arrived at, by using Hungarian method.
The step involving in this method are as follows:

Step 1-prepare a cost matrix. If the cost matrix is not a square matrix then add a dummy row (column) with zero cost element.

Step 2-substract the minimum element in each row from all the respective rows.

Step 3-Further modify the resulting matrix by subtracting the minimum element of each column from all the elements of the respective columns. Thus, obtain the modified matrix.

Step 4-then, draw the minimum number of horizontal and vertical lines to cover all zeros in the resulting matrix. Let the minimum number of lines be N. now there are two possible cases. Case I - If N=n, where n is the order of matrix, then an optimal assignment can be made. So make the assignment to get the required solution. Case II-If N<n, then proceed to step 5.

Step 5-Determine the smallest uncovered element in the matrix (element not covered by N lines). Subtract the minimum element from all uncovered elements and add the same element at the intersection of horizontal and vertical lines. Thus, the second modified matrix is obtained.

Step 6-Repeat steps 3 and 4 until we get the case I of step 4.

Step 7-(To make zero assignment) Examine the rows successively until a row-wise exactly single zero is found. Circle (O) this zero to make the assignment. Then mark a cross (x) over all zeros if lying in the column of the circle zero, showing that they cannot be considered for further assignment. Continue in this manner until all the zeros have been examined. Repeat the same procedure for column also.

During PETROTECH -2021 following committees needs to be set up

(i) Programme Committee (PC)
(ii) Organizing Committee (OC)
(iii) Sponsorship Committee (SC)
(iv) Finance & Audit Committee (FAC)
(v) Exhibition Committee (EC)
(vi) Delegate Committee (DC)
(vii) Technical Committee (TC)

Since, these committees are to lead by a Project leader from event planner company, who shall directly report to the Convener, therefore , we need to minimize the per hour cost associated with these persons. In such case, we shall use Hungarian method of Job assignments.

6.4.2 Formulation of the problem

In table below each cell shows the per hour cost associated with Project leaders to lead each committee. Project leaders are in first column and committees are shown on top row.. Here , we have codified the Project Leaders and committee as under for easy understanding. It is to be noted that it is an unbalanced problem, means Project leaders are less than the committee to be formed. This will simulate to the real life problem with complexities , where manpower is generally inadequate and need proper allocation to the job.W7 is dummy Project leader added to balace the problem, it is explained later in the solution.

All the per hours costs are taken arbitrarily to explain the methodology for the purpose of study.

Event Planner Project leader	Project Leader code	Committee Leader	Job
Cherain	A	Finance & Audit Committee	J4
RamaKumar	W2	Programme Committee	I
Canth	W3	Exhibition committee	J5
Agarwal	W4	Sponsorship commitee	J3
Roy	W5	Delegate Committee	J6
Mittal	W6	Organizing committee	J2
	W7	---------	J7

The number of rows = 6 and columns = 7

	I	*J2*	*J3*	*J4*	*J5*	*J6*	*J7*
A	250	420	680	210	225	440	340
W2	230	624	525	270	330	310	290
W3	510	450	600	510	450	650	555
W4	450	620	350	480	370	700	630
W5	360	580	200	340	220	245	290
W6	325	230	550	520	460	680	320

Here given problem is unbalanced and add 1 new row to convert it into a balance.

	I	*J2*	*J3*	*J4*	*J5*	*J6*	*J7*
A	250	420	680	210	225	440	340
W2	230	624	525	270	330	310	290
W3	510	450	600	510	450	650	555
W4	450	620	350	480	370	700	630
W5	360	580	200	340	220	245	290
W6	325	230	550	520	460	680	320
W7	0	0	0	0	0	0	0

Step-1: Find out the each row minimum element and subtract it from that row

	I	*J2*	*J3*	*J4*	*J5*	*J6*	*J7*	
A	40	210	470	0 0	15	230	130	(-210)
W2	0 0	394	295	40	100	80	60	(-230)
W3	60	0 0	150	60	0 0	200	105	(-450)
W4	100	270	0 0	130	20	350	280	(-350)
W5	160	380	0 0	140	20	45	90	(-200)
W6	95	0 0	320	290	230	450	90	(-230)
W7	0 0	0 0	0 0	0 0	0 0	0 0	00	(-0)

Step-2: Find out the each column minimum element and subtract it from that column.

	I	*J2*	*J3*	*J4*	*J5*	*J6*	*J7*
A	40	210	470	0 0	15	230	130
W2	0 0	394	295	40	100	80	60
W3	60	0 0	150	60	0 0	200	105
W4	100	270	0 0	130	20	350	280
W5	160	380	0 0	140	20	45	90
W6	95	0 0	320	290	230	450	90
W7	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	(-0)	(-0)	(-0)	(-0)	(-0)	(-0)	(-0)

Step-3: Make assignment in the opportunity cost table

(1) Row wise cell (*A*,*J4*) is assigned, so column wise cell (*W7*,*J4*) crossed off.
(2) Row wise cell (*W2*,*I*) is assigned, so column wise cell (*W7*,*I*) crossed off.
(3) Row wise cell (*W4*,*J3*) is assigned, so column wise cell (*W5*,*J3*),(*W7*,*J3*) crossed off.
(4) Row wise cell (*W6*,*J2*) is assigned, so column wise cell (*W3*,*J2*),(*W7*,*J2*) crossed off.
(5) Column wise cell (*W7*,*J6*) is assigned, so row wise cell (*W7*,*J5*),(*W7*,*J7*) crossed off.
(6) Row wise cell (*W3*,*J5*) is assigned

Row wise & column wise assignment shown in table

	I	*J2*	*J3*	*J4*	*J5*	*J6*	*J7*
A	40	210	470	**[0]**	15	230	130
W2	**[0]**	394	295	40	100	80	60
W3	60	⊗	150	60	**[0]**	200	105
W4	100	270	**[0]**	130	20	350	280
W5	160	380	⊗	140	20	45	90
W6	95	**[0]**	320	290	230	450	90
W7	⊗	⊗	⊗	⊗	⊗	**[0]**	⊗

Step-4: Number of assignments = 6, number of rows = 7 Which is not equal, so solution is not optimal.

Step-5: Cover the zeros with minimum number of lines

(1) Mark(✓) row *W*5 since it has no assignment

(2) Mark(✓) column *J*3 since row *W*5 has zero in this column

(3) Mark(✓) row *W*4 since column *J*3 has an assignment in this row *W*4.

(4) Since no other rows or columns can be marked, therefore draw straight lines through the unmarked rows *A*,*W*2,*W*3,*W*6,*W*7 and marked columns *J*3

	I	*J*2	*J*3	*J*4	*J*5	*J*6	*J*7	
A	~~40~~	~~210~~	~~470~~	~~[0]~~	~~15~~	~~230~~	~~130~~	
*W*2	~~[0]~~	~~394~~	~~295~~	~~40~~	~~100~~	~~80~~	~~60~~	
*W*3	~~60~~	⊗	~~150~~	~~60~~	~~[0]~~	~~200~~	~~105~~	
*W*4	100	270	[0]	130	20	350	280	✓(3)
*W*5	160	380	⊗	140	20	45	90	✓(1)
*W*6	~~95~~	~~[0]~~	~~320~~	~~290~~	~~230~~	~~450~~	~~90~~	
*W*7	⊗	⊗	⊗	⊗	⊗	~~[0]~~	⊗	
			✓(2)					

Step-6: Develop the new revised table by selecting the smallest element, among the cells not covered by any line (say k = 20).Subtract k = 20 from every element in the cell not covered by a line.Add k = 20 to every element in the intersection cell of two lines.

	I	*J*2	*J*3	*J*4	*J*5	*J*6	*J*7
A	40	210	490	0	15	230	130
*W*2	0	394	315	40	100	80	60
*W*3	60	0	170	60	0	200	105
*W*4	80	250	0	110	0	330	260
*W*5	140	360	0	120	0	25	70
*W*6	95	0	320	290	230	450	90
*W*7	0	0	20	0	0	0	0

Repeat steps 3 to 6 until an optimal solution is obtained.

Step-3: Make assignment in the opportunity cost table

(1) Row wise cell (*A*,*J*4) is assigned, so column wise cell (*W*7,*J*4) crossed off.

(2) Row wise cell (*W*2,*I*) is assigned, so column wise cell (*W*7,*I*) crossed off.

(3) Row wise cell (*W*6,*J*2) is assigned, so column wise cell (*W*3,*J*2),(*W*7,*J*2) crossed off.

(4) Column wise cell (*W*7,*J*6) is assigned, so row wise cell (*W*7,*J*5),(*W*7,*J*7) crossed off.

(5) Row wise cell (*W*3,*J*5) is assigned, so column wise cell (*W*4,*J*5),(*W*5,*J*5) crossed off.

(6) Row wise cell (*W*4,*J*3) is assigned, so column wise cell (*W*5,*J*3) crossed off.

	I	*J*2	*J*3	*J*4	*J*5	*J*6	*J*7
A	40	210	490	**[0]**	15	230	130
*W*2	**[0]**	394	315	40	100	80	60
*W*3	60	⊗	170	60	**[0]**	200	105
*W*4	80	250	**[0]**	110	⊗	330	260
*W*5	140	360	⊗	120	⊗	25	70
*W*6	95	**[0]**	320	290	230	450	90
*W*7	⊗	⊗	20	⊗	⊗	**[0]**	⊗

Step-4: Number of assignments = 6, number of rows = 7 Which is not equal, so solution is not optimal.

Step-5: Cover the zeros with minimum number of lines

(1) Mark(✓) row *W*5 since it has no assignment

(2) Mark(✓) column *J*3 since row *W*5 has zero in this column

(3) Mark(✓) column *J*5 since row *W*5 has zero in this column

(4) Mark(✓) row *W*4 since column *J*3 has an assignment in this row *W*4.

(5) Mark(✓) row *W*3 since column *J*5 has an assignment in this row *W*3.

(6) Mark(✓) column *J*2 since row *W*3 has zero in this column

(7) Mark(✓) row *W*6 since column *J*2 has an assignment in this row *W*6.

(8) Since no other rows or columns can be marked, therefore draw straight lines through the unmarked rows *A*,*W*2,*W*7 and marked columns *J*2,*J*3,*J*5

	I	*J2*	*J3*	*J4*	*J5*	*J6*	*J7*	
A	40	210	490	[0]	15	230	130	
W2	[0]	394	315	40	100	80	60	
W3	60	⊗	170	60	[0]	200	105	✓(5)
W4	80	250	[0]	110	⊗	330	260	✓(4)
W5	140	360	⊗	120	⊗	25	70	✓(1)
W6	95	[0]	320	290	230	450	90	✓(7)
W7	⊗	⊗	20	⊗	⊗	[0]	⊗	
		✓(6)	✓(2)		✓(3)			

Step-6: Develop the new revised table by selecting the smallest element, among the cells not covered by any line (say k = 25)
Subtract k = 25 from every element in the cell not covered by a line.
Add k = 25 to every element in the intersection cell of two lines.

	I	*J2*	*J3*	*J4*	*J5*	*J6*	*J7*
A	40	235	515	0	40	230	130
W2	0	419	340	40	125	80	60
W3	35	0	170	35	0	175	80
W4	55	250	0	85	0	305	235
W5	115	360	0	95	0	0	45
W6	70	0	340	265	230	425	65
W7	0	25	45	0	25	0	0

Repeat steps 3 to 6 until an optimal solution is obtained

Step-3: Make assignment in the opportunity cost table
(1) Row wise cell (*A*,*J4*) is assigned, so column wise cell (*W7*,*J4*) crossed off.

(2) Row wise cell (*W2*,*I*) is assigned, so column wise cell (*W7*,*I*) crossed off.
(3) Row wise cell (*W6*,*J2*) is assigned, so column wise cell (*W3*,*J2*) crossed off.
(4) Column wise cell (*W7*,*J7*) is assigned, so row wise cell (*W7*,*J6*) crossed off.
(5) Row wise cell (*W3*,*J5*) is assigned, so column wise cell (*W4*,*J5*),(*W5*,*J5*) crossed off.
(6) Row wise cell (*W4*,*J3*) is assigned, so column wise cell (*W5*,*J3*) crossed off.
(7) Row wise cell (*W5*,*J6*) is assigned

Row wise & column wise assignment shown in table

	I	*J2*	*J3*	*J4*	*J5*	*J6*	*J7*
A	40	235	515	**[0]**	40	230	130
W2	**[0]**	419	340	40	125	80	60
W3	35	⊗	170	35	[0]	175	80
W4	55	250	**[0]**	85	⊗	305	235
W5	115	360	⊗	95	⊗	[0]	45
W6	70	**[0]**	340	265	230	425	65
W7	⊗	25	45	⊗	25	⊗	**[0]**

Step-4: Number of assignments = 7, number of rows = 7
Which is equal, so solution is optimal

Optimal assignments are

	I	*J2*	*J3*	*J4*	*J5*	*J6*	*J7*
A	40	235	515	**[0]**	40	230	130
W2	**[0]**	419	340	40	125	80	60
W3	35	⊗	170	35	[0]	175	80
W4	55	250	**[0]**	85	⊗	305	235
W5	115	360	⊗	95	⊗	[0]	45
W6	70	**[0]**	340	265	230	425	65
W7	⊗	25	45	⊗	25	⊗	**[0]**

6.4.3 Result

Optimal solution is

	Project Leader code	Committee Leader	Job	Cost/Hour
Cherain	A	Finance & Audit Committee	J4	210
RamaKumar	W2	Programme Committee	I	230
Canth	W3	Exhibition committee	J5	450
Agarwal	W4	Sponsorship commitee	J3	350
Roy	W5	Delegate Committee	J6	245
Mittal	W6	Organizing committee	J2	230
	W7	---------	J7	0
			Total	INR 1715

According to the optimal solution obtained from Hungarian's Method, the total minimum cost for all project leaders (combined) is INR 1715 /hr .W7 is dummy row for project leader, which was added to balance the problem, hence no cost is associated with W7.

CHAPTER-VII

EVENT MARKETING & COMMUNICATIONS

7.1 Introduction -Event marketing

Marketing should integrate all of the management decisions so that they focus on the goals and objectives of the event as well as those of the sponsoring organization itself. This integration may take many forms. It may be a subtle campaign to convince corporate shareholders or association leaders of the importance of their attendance and their personal vote on an issue. It may be employed to conduct research to assist in the event's site selection process. Marketing can play a vital role in the "search and discover" effort to identify new markets in which to promote an event. And, of course, it should include the other classic elements of marketing, such as advertising, telemarketing, and promotional campaigns, to bring all of the event goals to life.
Event products generally include a combination of goods and services, and so provide a challenge for those involved in event marketing. Some industries market products without a service component, for example, soft drinks where the focus would be on the product. In marketing computer equipment, however, there would be goods and services aspects of the product that might include hardware and backup service.

The fired feature of services marketing that makes it challenging, then, is its intangibility. Another feature of service marketing is that there is a higher degree of variability in the service provided, as well as in the response to the service provided. The service and the service provider are also distinguished by their inseparability. In other words, as an event organizer, we are very reliant on staff, performers, and athletes to meet the needs of the audience. In summary, the three features of services marketing are the following:

- Intangibility (such as fun, entertainment, information)
- Inseparability (such as the usher's service approach to the customer when product and provider are inseparable)
- Variability (such as different levels of service provided by different ushers or different responses from two or more customers to the same experience.

7.2 Promotion

A multifaceted approach to marketing, promotion could be defined as the stirring up of interest in ourr enterprise. The promotional campaign may include a wide range of marketing tools, or as few as one, depending on our products and our needs. Promotional techniques for event marketing may include advertising, public relations, cross-promotions (partnership marketing), street promotions, stunts, and public service "cause-related" events, among others.

Many aspects should be considered under promotion: image, logo, advertising, media, public relations, selling, souvenirs, presentation, merchandising and publicity. It is a common misconception to treat promotion as a synonym for marketing; it is not. By addressing consumers with a purpose-designed promotional scheme, the aim is to achieve **AIDA** (Attention, Interest, Desire and Action)

7.2.1 Logo

An appropriate logo can be a crucial part of any public image. It is important to give it careful thought and to consult relevant agencies and authorities before finalizing the design. Its impact on merchandising and souvenirs can have a sizeable effect on income. It used to be common to look for relatively simple logos using a single colour, but now multi-coloured and often multi-image logos are used for international manifestations. This is to maximize colour combinations and possibilities, so maximizing sales. For larger events this can be a gold mine, but smaller events should be wary of buying in too much stock of items they may not sell.

7.2.2 Mascot

Also related to image, any event of any size should have its own mascot, as long as it can afford one. A mascot can help to promote the event in various ways, especially with certain target groups. The mascot must be closely identified with the event; it should be appropriate, relevant and attractive; it should portray the project image and it should be saleable.

7.3 Paid Promotion /Advertising

Advertising is the second element of the promotional strategy. It may take many forms, the following being some of the options:

1. *Banner & Display:* These types of ads appear on a website and can be effective at driving new names to register for and attend our event. We can either place our ads on sites that we think our target audiences visit frequently, or we can sign up for a retargeting campaign where our ads are targeted based on our audience's internet preferences.

2. *Search engine marketing* – People search for the events that they want to attend. We should make sure to put ads on Google, Yahoo, and Bing to maximize our exposure. When someone searches for an event or a webinar having to do with our expertise, we should catch their attention with search ads.

3. *Sponsored newsletter and emails* –By using sponsored emails, we have access to a target audience that might not otherwise be reached.

4. *Guerilla marketing* – This is a form of marketing that tries to generate brand awareness at a low cost by using a typical methods like graffiti, flash mobs, and poster campaigning.

5. *TV & radio advertising* –We can use radio or TV to deliver a scripted message to attract new clients. Just keep in mind that this form of advertising is less targeted.

6. *Outdoor advertising* – This is advertising that appears when someone is in transit, or at an activity outside of their home or office, in order to drive awareness or encourage a specific call-to-action. Billboards are a prime example of this, as are ads targeted to commuters on buses or in subways. These ads are also less targeted so they are best for brand awareness.

- *Print advertising*-From flyers to newspapers and magazine ads, print advertising includes all advertising found in printed media. We should put up an ad for our event in an industry-specific magazine or print fliers to give out at smaller networking events There are a number of mechanisms by which a website earns money by displaying advertising, they include:
  - Cost per click (CPC) - the advertiser pays when the web page visitor clicks on their add
  - Pay per 1000 impressions (CPM) - the advertiser pays a fee based on how many 1000's of times their add is seen by website visitors
  - Cost per action (CPA) - the advertiser pays when a defined action occurs e.g. often the action is a sale made
  - Pay per lead generated (CPL) - the advertiser pays when a lead is generated by the website as a visitor fills in a contact form giving their name, email address and possibly other contact details
  - Pay per sale (CPS) - the advertiser pays when a sale is made to the website visitor

7.3.1 Direct Mail

Fun and creative Direct Mail Ideas to promote Events includes:

1. *Calendars*: We can send out a magnetic or sticker calendar that can be posted on a desk or cubicle.
2. *Unique Gifts:* We can send key prospects a gift unique to the area, like hat or poker chips, with a note from their sales rep who will be attending the event as well.
3. *Reminder Postcards* –We can send a series of postcards, one each week before the event starts, with fun and creative reasons why they should attend the event.
4. *Keep it Simple:* Sending a simple postcard promoting the event to thousands of people can keep our direct mail campaign cost effective and easy to implement.

7.3.2 Tele-Sales Outreach

Getting key prospects to register for the event is half the battle. Getting them to actually attend is the other. We can provide our sales and sales development team with a report of registrants for the event so that they can use this to secure meetings or demos at the event. Great content and awesome prizes can get prospects registered – but securing their time to meet is not only a definite indicator they will show up, but it also affords a chance to create opportunities.

7.3.3 Partner Promotion

Leveraging our partners is also a great way to promote an event. Whether it is a virtual event, webinar, or live event, our partners are probably participating in some way. we should work together and encourage them to promote the event as well. They can send emails to their database and promote through their social media channels. We can also do list swaps, which adds more value than just doing joint promotion alone. After the webinar or event, we can share our lead list to get even more value and add new names to our database. However, we should provide them with guidelines so they are familiar with our event messaging and can work from clear directives.

7.4 Social Media

Since events are in real time, attendees often use social networks to get updates and to engage with other participants in a live environment. During an event, social networks offer a unique opportunity to interact directly with our audience and have them share our message.

1. **Twitter**

Twitter is a powerful tool for not only marketing and promoting our events, but also engaging and connecting with the audience and attendees in real time. Use Twitter to live tweet, interact with partners and influencers, and drive traffic to our event page. The first step is to make sure we set up a hashtag for our event to use on Twitter, and make sure this is well publicized. If we are giving a webinar, the hashtag should be announced by the moderator and listed on the slides. If we are attending a live event, make sure we tweet the hashtag beforehand and include it on promotional materials.

Before the Event

Before the event, take the following steps:

- Schedule out a series of Tweets about our event.
- Promote our presence at an event and get our network to register through social shares
- Encourage our partners and influencers to promote our event.

Build Twitter Lists

Build event lists to include speakers, sponsors and people who are already mentioning our event. Tweet and retweet these folks within our timeline. This is a great way to introduce our speakers and sponsors to our followers while adding value to the event participants. Additionally, we might also want to build a competitor list to see what our competitors are doing during your event.

Set up Promoted Tweets

Use a combination of paid and non-paid tweets. Tweet 2-3 variations of event information and special offers. Then run these tweets in a Twitter timeline ads and be sure to bid on our company name and our event hashtag.

Social Sharing

Be sure to include social-sharing buttons across all our event marketing assets. Make sure our email invites, updates, and landing pages include social-sharing buttons that enable easy and effortless sharing. By making sure this functionality is front and center, we can drive additional registrants through social sharing.

During the event

Whether it is a webinar, virtual event, or a tradeshow, having someone manning our Twitter presence will ensure that we engage with attendees and can reply to anyone who might have a question or comment.

- Use a social monitoring tool such as HootSuite to look for mentions around the event.
- Retweet and reply back to interesting points and questions from attendees.
- Encourage employees who are attending to engage by posting updates, photos, and re-tweeting as well. This can go a very long way and really spread the conversation across the social sphere in real time.
- Tweet out approved speaker presentations at the start of their session so those in attendance can follow along and not be worried about taking notes. Ask presenters if we can tweet out their presentations. Collect all of our speakers' presentations early and upload them to an unlisted Slideshare link to keep our attendees from frantically trying to take notes.

After the Event

Once the event is over, we can measure buzz with www.hashtracking.com and sum up the best tweets with www.storify.com. Also make sure we post contest results, submitted photos, and thank your attendees for taking time to come to our event.

2. Facebook

Because Facebook is so visual, it is an ideal place to promote our event with an eye-catching graphics. Begin posting on Facebook 2-3 weeks ahead of our event and then post once per week to continue the momentum. We can use a variety of visual tactics on Facebook to promote registration and create engagement opportunities during our event. Before every event, create a graphic that we will use on our social networks. Our graphic should not only be eye catching, but it should also include relevant information about the event like name, time, date, hashtag, and a registration link. We can also embed a landing page within a tab and create a sponsored story from it.Facebook is also a great place to compile and post event photos. We can post photos throughout an event and then post them in an album for attendees to browse through after the event has ended.

3. Google+

The Google+ Events feature allows Google+ users to send out customized invitations to anyone regardless of whether they are Google+ users. It syncs beautifully with Google calendar and shows up automatically when a user confirms for an event. In addition to sending out invites to webinars, tradeshows, work functions, parties, etc., Google Events can also send out invites for Google+ Hangouts.

4. LinkedIn

LinkedIn provides some basic functionality for promoting events. Before our event, promote registration with our visual image and landing page. We can also post our event on relevant LinkedIn groups to get some additional traction. Employees are also a great avenue for event promotion via LinkedIn. Make sure that we have socialized your event and encourage them to share our registration page on their LinkedIn pages as well

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7.5 Visual content to promote Event

Visual content is an important part of creating engagement across social channels. It stands out from all the text, helps tell a story, and gives event attendees all the information they need in a short amount of time. Visual content for events can be a valuable tactic before, during, and afterwards, becoming a cornerstone of our event strategy.

Event Graphics: we can make a graphic for every webinar and event that we promote.

Visual note taking: Hiring a graphic facilitator to capture visual recordings from an event is a fun and innovative way to keep our audience engaged. Having a talented artist on hand sketching notes in real time creates a memorable record. Here are three benefits from using a graphic facilitator to illustrate online and offline events.

- Extends conversations and builds buzz.
- Enables better understanding of key takeaways
- Gets attendees to look up from their devices.

Infographics: Creating an infographic about your event or series of events is a fantastic way to get someone excited about attending. Not only is it a fun and unique visual take on events, but it also provides your audience with important logistical information in a way that is easy to understand.

7.6 Social promotion

Social Marketing to engage our audience in a new way and have them share and amplify your message with their friends and colleagues, making our event even more of a success.

Referral Offers
Give our followers an incentive to share our event information by determining a sharing goal and rewarding them for their efforts. The outcome of these referral campaigns is that our message is shared by our audience and not by a brand.

Group Offers
Another sharing campaign we can run is group offers. Only open our promotional offer up after which we get a certain amount of people to sign up. For an event this could be a percentage off, an exclusive piece of content, or a prize such as an iPad.

Polls and Voting
Everyone has an opinion and is usually happy to share it. Creating a campaign that engages our audience and compels them to share their opinions is a great way to build relationships and get valuable information about our target audience's likes and dislikes. Make our questions event related, such as what speaker should receive the keynote slot.

Flash Deals
This is a concept similar to a Groupon. Many social-sharing applications offer functionality for us to create a time sensitive deal. Use this to create a fun and viral campaign that will increase sharing. Give a registration discount or access to a special exclusive session. Keep in mind the following when creating our flash deal:
- Offer time period
- Maximum number of deals sold
- Allow users to track deal progress
- Publish our offer on all social networks and oour website

7.7 Influencer outreach

It's essential to identify and connect with influential folks in our industry to make sure our business and initiatives are on the right people's radar. This could be a list of bloggers or experts in a particular space. Write a personal email to them or reach out via LinkedIn with a personal invitation to the event.

7.8 Live blogging

Events are happening in-the-moment, so engage our readers by writing about what is top-of-mind for them. Additionally, live blogging is great for promoting what we are doing at the event and driving traffic to our sessions or booth.

7.9 Media Relations and Publicity

The role of public relations is to manage the organization's and event's image in the mind of the audience and the public. This undertaking is mainly done through press releases as described in the precious section. These up-to-date information sources, together with photographs, provide the media with the background information they need to develop stories about the event. Media briefings can also be conducted before and during the event, particularly if there are high-profile people.

Once of the most critical public relations role is to inform the media whether there is a negative incident of any descriptions. For this reason, an incident-reporting system needs to be in place so that senior members of the event management team are fully informed, including the public relations manager, if this is a separate role. It may be necessary to write a press release or to appear in an interview if such an incident occurs.

The public relations role can be a highly sensitive one, and in some situations, words need to be chosen carefully. A simple expression of regret, for example, would be more tactful than suggesting the cause of an accident. Particularly with overseas guests or guests of event sponsors, we need to know in advance who they are (official titles, correct names, and correct pronunciation) and where they come from.

7.10 Marketing plans for PETROTECH-2021

Table 28 Marketing plans for PETROTECH-2021

Marketing Plans	PETROTECH'2021
Market Analysis	As part of International Energy Outlook 2013, EIA projects India and China will account for about half of global energy demand growth through 2040, with India's energy demand growing at 3% per year. To meet this growing demand, there is an emphasized need for wider and more intensive exploration for new finds, as well as more efficient and effective recovery.
	India is 4th Largest consumer of Oil & 12th largest 12th largest consumer of gas, and its consumption rate is still growing rapidly. With the economy projected to grow at a steady rate in the range of 7-9 per cent in the near term, per capita energy consumption is bound to increase, and so will the demand for energy.
	Highly volatile market and decline crude oil prices, High dependency of India on Oil import
	New projects such as Shale gas, CBM etc
Event Branding	Global Hydrocarbon market: Future & Challenges (Tentative)

	The event aims to explore areas of growth in petroleum technology, exploration, drilling, production and processing, refining, pipeline transportation, petrochemicals, natural gas, LNG, petroleum trade, economics, legal and human resource development, marketing, research & development, information technology, safety, health and environment management in the oil & gas sector.
Target Group	Technologists, scientists, planners and policy makers, management experts, entrepreneurs, service providers, Bankers/Creditors
Conference Logo/Liveries/Promotional items	Engaged with competent designer to create conference style sheet, bags, stationary, customized a conference identity.
website	Website with Content Management System (CMS) ,Enabled Analytics to gauge where delegates are coming from and use this data to help target relevant markets. Used tools such as Search Engine Optimization (SEO) and Adwords to improve the site rankings.
Print Collateral,	Brochures, newsletters, fact sheets, press releases, and other electronic and printed promotional materials
Email promotion	Create conference domain name, emailed to ministries, O&G SME, professionals from SPE, Indian PSU & Pvt O&G Companies
Promotion at other event	Engage with delegates by setting up a display booth at a kindred association conference.
Social media	using Facebook, YouTube and Twitter ,blogging
Mobile Apps	To be hosted by: M/s IOCL No. of Installs:1000-5000 splash screen and main logo •option to view newsletter • "PetroBot" - our live assistant for the Petrotech event • Icon for Linkedin • conference related information • speaker related information • what's new section • conference layout • Bug fixes and performance upgrades
Advertisement	Low costs advertisements and diary dates in relevant journals and publications.
Telemarketing/ Social Marketing	Volunteer committee to contact 10 - 20 associates and ask them in turn to contact another 10 -20; inverted pyramid style. A message coming from a trusted referrer will be highly effective
Media relation	high profile speakers to the media during the conference and leverage any press coverage after the conference
Sponsors and trade partners	Leverage sponsors and partners by encouraging them to contact their clients

Time path	The overall conference time path included; • promotional opportunities/deadlines (e.g. cross promotion at similar conferences; through journals) • Printed material deadlines (e.g. first announcement; call for papers; registration brochure; handbook; abstracts volume) • Scientific program and speaker deadlines (e.g. dead line for abstract submission; review procedures; deadline for full papers; audiovisual requirements etc) • Registration requirements/deadlines (e.g. early bird deadline) • Sponsorship/trade deadlines (e.g. deadlines for confirming sponsors)

CHAPTER VIII

EVENT TECHNOLOGY AND INNOVATIONS

8.1 Introduction

Technology is increasingly important in event management as more and more events adopt technologies which have more and more impact on different aspects of the event. The aspect of an event that technology can impact are innumerable. Basically every step in the process of setting up and running an event can be helped by technology.

Project management:

- Site selection and RFP management
- Project task management
- Budget tracking
- Seating management
- Floor plan management
- Logistics management

People management:

- Customer relationship management
- Attendee registration
- Badge design
- Audience polling and surveys
- Lead management
- People tracking (RFID, geolocation)

Scheduling:

- Agenda management
- Digital signage

Content management:

- Abstract collection and review
- Presentation management
- Content capture and distribution
- Kiosk display and entertainment

Communications and marketing:

- Mass emailing
- Mass SMS texting
- Social media and networking
- Web conferencing
- Mobile application
- Online marketing

Infrastructure:

- Payment transaction management
- Audio-visual, sound, lighting and mood management
- Internet and network management

8.2 Conference management software

Today Effective conference management includes marketing and campaigning, secure online payment options, and constant monitoring and reporting. Conference management software assists with the preparation of conferences.
Software for academic conferences can provide some or all of the following functions:

- Paper submission
- Assignment of papers to reviewers
- Email notifications to submitters and reviewers
- Registration management (for the whole conference plus extras)
- Schedule management
- Publication support (slides and talks before and after the conference)

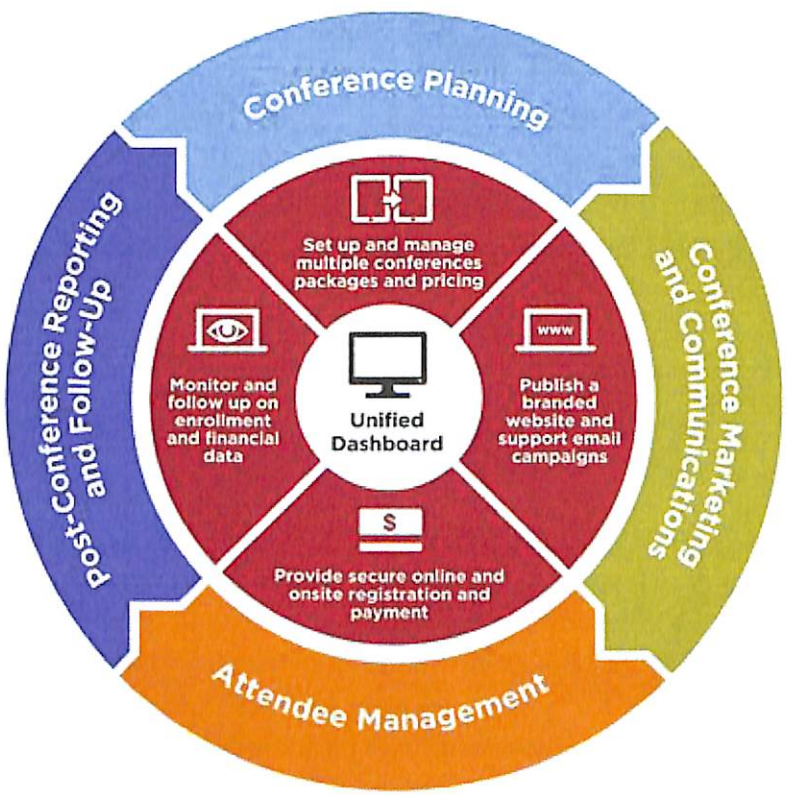


Fig 9 Framework of Conference Management Software

Some of Conferences Management software are EasyChair, OpenConf, Open Conference System (OCS) and COMS (Technical Conference)

8.3 Radio-frequency identification (RFID) at event venue

Fig 10 Use of RFID wristband

One of the most innovative and creative applications is the event management automation solution. by introduction of variety of products to carry the RFID tags, such as different kinds of RFID wristbands, RFID key tags, smart RFID cards etc.

This application includes multiple RFID readers installed at multiple locations at the event venue and RFID tags are carried by each visitor. Identification of unlimited no of visitors can be done from a distance of multiple meters by sophisticated HF/ UHF long- range RFID readers with a completely non line of sight communication and with no manual intervention. Real time updates will be displayed instantly at the venue and also they reach a wide audience outside through social media.

The major tasks carried out by event automation solution are: Identification, authentication, access control, traffic flow monitoring, social media integration, event analysis etc. The E- purse feature of this application enables the visitors to do monitory transactions using the RFID tags issued to them making the event completely cash- free.

RFID provides proven options to record attendance information, track seminar attendance, and monitor traffic flow within event & exhibition environments. Attendees can freely walk in and out of sessions without worried of being stopped by room monitors. RFID smart gates record the attendees. All scans are stamped with date, time, location and direction.
RFID can help exhibitors to track stall activity and measure additional revenue opportunities and automatically analyze individual attendee stall visits. Innovative, esthetic and slim antennas can be deployed to be invisible to users or to blend in with stall decorations without providing any distractions to the stall design. The small and thin RFID antennas, mounted close to the posters or LCDs, are ideally suited as an information request point for exhibit booths visitors as well as organizing competitions and appraisals for visitors.

RFID Benefits

1. Accurately measuring attendance tracking of events, session, training, conference
2. Attendee behavior, analysis and reporting
3. Providing Return on Attendance (ROA)

4. Innovative non-invasive attendance tracking & reporting
5. Accurate session attendance reporting

RFID Capabilities & Limitations

Please be aware that people tracking requires correct expectations setting with regards to technology capabilities and limitations. Human body or crowded areas can significantly influence the application design and thus potential risk factors shall be minimized and considered when designing the application.

Potential risks of passive RFID close to the human body can be eliminated by:

1. People will wear the tags visibly on their body
2. People actively showing the cards/tags
3. Using RFID portals or several portal units next to each other
4. Using ground mat antennas or RFID tunnel with antennas on floor, side and overhead
5. Using high power readers and appropriate tags

8.4 Event Apps

Mobile event apps have changed organizations' perspective towards event management. By facilitating seamless interactions with the audience, these applications have made organizing meetings and conferences easy. Though event apps are admittedly helpful, they now have a new hurdle to face. Producing an application to be used for one event is costly, time consuming, and inefficient, as users must learn how to interact with the app for each new event attended. Phone storage space is very important to consumers. Many are hesitant to download an application that they will only use once. Thus, event apps that can continue to deliver value to customers beyond the date of the event itself, are going to become a huge trend. Figure is showing mobile app of PETROTECH-2019.

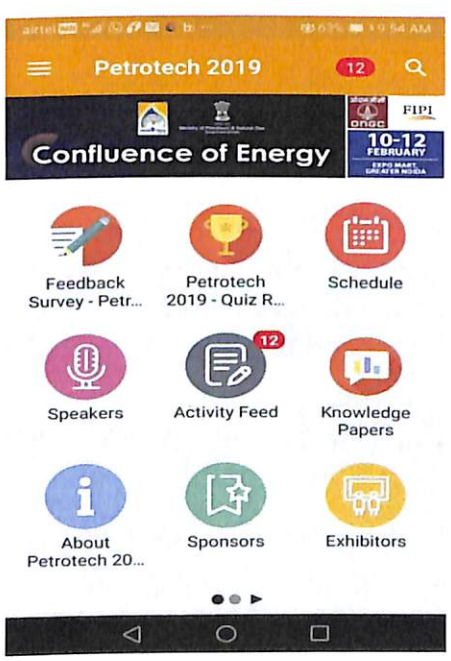


Fig 11 Mobile APP of PETROTECH'19

8.5 Virtual Reality

Virtual reality (VR) is a computer technology that uses virtual reality headsets, sometimes in combination with physical spaces or multi-projected environments, to generate realistic images, sounds and other sensations that simulate a user's physical presence in a virtual or imaginary environment.

A person using virtual reality equipment is able to "look around" the artificial world, and with high quality VR move around in it and interact with virtual features or items. The effect is commonly created by VR headsets consisting of head-mounted goggles with a screen in front of the eyes, but can also through specially designed spaces with multiple large screens. VR systems that include transmission of vibrations and other sensations to the user through a game controller or other devices are known as haptic systems.

Virtual communication for meetings, presentations, or training can all be made more lifelike, immersive, and impactful by using VR. For example, a company can create a simulation of a conference room with furniture, art, and fixtures so all the participants feel as though they are sitting in the same room. Training sessions can also be enhanced, particularly in learning new skills or procedures that require a high level of hands-on detail and experience.

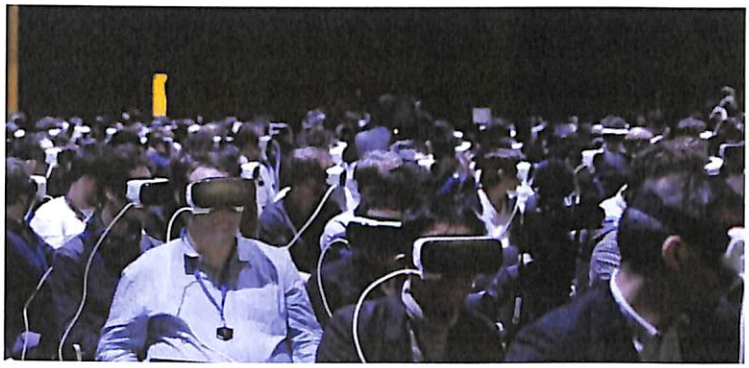


Fig 12 Virtual Reality enabled conference

Companies can also use VR to make compelling presentations in the sales or tradeshow environment. Potential leads or clients can slip on a headset, and be transported into a real-life simulation right from the show floor. This technology can help make sales demos much more convincing through lifelike interaction. It is truly the essence of immersing clients within your vision.

8. 6 Audience response system

An audience response system allows groups of people (event attendees, students, or a remote user group) to use technology to communicate with a central hub in real-time. This communication usually takes the form of 'poll questions', feedback, or, increasingly, live Q&A or chat functionality. Glisser is one of such audience engagement system that makes presentations instantly interactive and shareable.

CHAPTER-IX

PROCUREMENT AND SUPPLIER SELECTION

9.1 Introduction

Strategic procurement and sourcing is one of the most decisive functions within the organization and those who can optimize these two functions will be able to manage cost effectively and contribute to revenue. It consists of varied function and one of these function is supplier's selection. Supplier selection is the process by which firms identify, evaluate, and contract with suppliers. The supplier selection process deploys a tremendous amount of a firm's financial resources. In return, firms expect significant benefits from contracting with suppliers offering high value.

9.2 Optimization of the number of service providers

One of the most important strategic decision in ONGC for its PETROTECH event is to select the best vendor for providing different kind of vehicles from its potential vendors. The identifications, evaluation and motivation of the right vendor ensure that ONGC will receive proper quality , quantity , time and price from its vendors. Therefore selecting right vendor becomes a critical activity within ONGC and subsequently affects its profitability and efficiency.
For solving such kind of multi criteria decision making problem we can use the most efficient and well known algorithm named as **ANALYTICAL HEIRACHIAL PROCESS.**

9.3 Analytical Hierarchical process

The **Analytical Hierarchy Process(AHP)** is a structured technique for organizing and analyzing the complex decision based on mathematics and psychology. It was developed by Thomas L. Satty (born 1926, Mosuul, Iraq) is a professor at the University of Pittsburgh, where he teaches in the Joseph M. Katz Graduate School of Business. He is the inventor , architect and primary theoretician of the AHP , a decision making framework used in large scale , multiparty , multi criteria decision analysis. and of the Analytic Network Process (ANP), its generalization to decision with dependence and feedback.

Rather than prescribing a "correct decision", the AHP helps decision maker find one that is best solution(a solution which is near to optimal according to the given information) suits their goal and their understanding of the problem. It provides , a comprehensive and rational framework for structuring a decision problem for representing and quantifying its elements, for relating to those elements to overall goals and for evaluating the alternate solutions.
Here in AHP, problem is decomposed into hierarchy of criteria and alternatives which composes of following steps:-

1. Statement of Objectives
2. Definition of the criteria
3. Picking of the alternatives
4. Arrangement of the information into hierarchy tree
5. Synthesis of the criteria to determine the relative rankings of the alternatives by using Satty's Scale.
6. Determination of the relative ranking of the alternatives under each criteria by computing principle Eigen Vector and checking for the consistency of the matrices (here we have taken max. 12% error in consistency as the acceptable case).
7. Final matrix calculations to find out the actual weights or priorities.
8. Final results.

Major advantages of using AHP technique is:

a) It allows consistency and cross checking between different the different pair wise comparison.
b) AHP uses ratio scale contrary to the methods using interval scales and hence require no units in the comparison.
c) The decision maker does not require to provide numerical judgment instead relative verbal appreciation more familiar in our daily lives suffice.
d) It can measure the qualitative as well as quantitative criteria and alternatives on the same preference scale of nine levels.
e) Very Mature and accepted as Industry standard method.

For selecting the vest vendor from the list of the potential vendors we had taken some criteria namely:

- **Available Resources(Quantity)** i.e quantity of no. of vehicles available with a vendor. Higher the no. of available vehicles , greater is the chance of selecting that vendor for the purpose because there is a huge requirement of vehicles during the event.
- **Quality of Vehicles** : Whenever we take decision to select some product then we expect a very good quality of that product so here in case of vendors we will prefer to choose that vendor who can provide good quality of vehicles with advancement of services.
- **Delivery Time:** As in the case of PETROTECH event , we have to provide vehicles to the delegates on the basis of their requirement and convenience, so here is delivery time of the vehicle plays an important role, so here we will prefer to choose the vendor who usually takes minimum time in the delivery of vehicles.
- **Price :**As we know whenever we take any decision to buy something price is one of the main factors that come into human mind , so here for the optimization purpose we will choose that vendor who can provide best vehicles in the reasonable prices.
- **Services:** Here we will choose that vendor who usually provides all over good services.

List of Potential Vendors(alternatives):

1 M/s AVM Travels
2 M/s Kuldeep Tourist Taxi Service
3 M/S Ajay Travels Pvt. Ltd.

4 M/s Bakshi Transport Company
5 M/s ITDC (Ashok Travels & Tours)
6 M/s Balmer Laurie & Co.
7 M/s Punjab Sahib Tours & Travels
8 M/s Mann Tourist Transport Services Pvt Ltd.
9 M/s Asian travel Company Pvt Ltd.

Here first two vendors namely M/s AVM Travels and M/s Kuldeep Tourist Taxi Service are already confirmed by the ONGC on the basis of the past experience so we have to rank the rest of 7 Vendors .We can assign the name to the provided vendors as V, V2,V3,V4,V5,V6 and V7 starting with the no. 3,4,5,.....10 respectively for minimizing the complexity of the variables in algorithm as follows:
V1- M/S Ajay Travels Pvt. Ltd.
V2- M/s Bakshi Transport Company
V3- M/s ITDC (Ashok Travels & Tours)
V4- M/s Balmer Laurie & Co.
V5- M/s Punjab Sahib Tours & Travels
V6- M/s Mann Tourist Transport Services Pvt Ltd.
V7- M/s Asian travel Company Pvt Ltd.

STEP 1: Structuring of the decision problem into a hieratical model
STEP 2: Making Pair wise comparison of the various criteria and making judgment matrix

AHP uses a rating scale for the pair wise comparison given as follows:

Table 29 Rating Scale

Degree of Importance	Definition
1	Equal importance
3	Weak importance of one over other
5	Essential or strong importance
7	Demonstrated Important
9	Absolute Important
2,4,6,8	Intermediate values between two adjacent values

and for checking the consistency of the weights or random index:

N	1	2	3	4	5	6	7	8	9	10
Random Index (R.I)	0	0	0.58	0.9	1.12	1.24	1.32	1.41	1.45	1.49

Table 31 Comparison of Criteria

Comparison of Criteria					
CTQ'S	**Price**	**Quality**	**Delivery Time**	**Available Resources**	**Services**
Price	**1**	**3**	**5**	**7**	**9**
Quality	0.33	**1**	**3**	**5**	**7**
Delivery Time	0.2	0.333	**1**	**3**	**5**
Available Resources	0.143	0.2	0.33	**1**	**3**
Services	0.11	0.143	0.200	0.33	**1**
COL. TOTAL	1.787	4.676	9.53333	16.333	**25**

Table 32 Normalized weighted Matrix

Normalized Weighted Matrix							
CTQ'S	**Price**	**Quality**	**Delivery Time**	**Available Resources**	**Services**	**Row Sum**	**Normalized Percentage**
Price	0.560	0.642	0.524	0.429	0.360	2.514	0.503
Quality	0.187	0.214	0.315	0.306	0.280	1.301	0.260
Delivery Time	0.112	0.071	0.105	0.184	0.200	0.672	0.134
Available Resources	0.080	0.043	0.035	0.061	0.120	0.339	0.068
Services	0.062	0.031	0.021	0.020	0.040	0.174	0.035
COL. TOTAL	1	1	1	1	1	5	

STEP-III The next stage is to calculate a Consistency Ratio (C.R) to measure how consistent the judgments have been relative to large sample of purely random judgments. As AHP evaluation are based on the assumptions that decision maker is rational and if C.R is greater than 0.1 , then the judgments are untrustworthy because they are too close for comfort to randomness and the exercise is values less and must be repeated. Saaty argues that a CR > 0.1 indicate that the ugh CR accepted sometimes. In this instance, we are on safe ground. A CR as high as, say, 0.9 would mean that the pair wise judgments are just about random and are completely untrustworthy also $\lambda_{max} \geq n$

$[Ax = \lambda_{max}. x]$, where X is the Eigen Vector and λ_{max} is the maximal Eigen Vector

A **x** **Ax**

2.74
1.41
0.70
0.34

$$\begin{pmatrix} 1 & 3 & 5 & 7 & 9 \\ 0.33 & 1 & 3 & 5 & 7 \\ 0.2 & 0.333 & 1 & 3 & 5 \\ 0.143 & 0.2 & 0.33 & 1 & 3 \\ 0.11 & 0.143 & 0.200 & 0.33 & 1 \end{pmatrix} * \begin{pmatrix} 0.503 \\ 0.260 \\ 0.134 \\ 0.068 \\ 0.35 \end{pmatrix} = \lambda_{max} \cdot \begin{pmatrix} 0.17 \\ 0.503 \\ 0.260 \\ 0.134 \end{pmatrix}$$

0.035

$= \lambda_{max} =$ Average $[(Ax)/(x)]$

Principle Eigen Vector $(\lambda_{max}) = 5.23$

Consistency Index $=(\lambda_{max} - n/(n-1) = (5.23- 5) /4 = 0.0575$

Consistency Ratio (C.R)= C.I/ R.I =
Where R.I is Random Index developed by Satty

= 0.0575/1.12= 0.004792

Since C.R$\leq$ 0.01 indicating sufficient consistency for decision.

Explanation:

Here we are finding the principle Eigen Vector for the above criteria matrix which shows the relative weight among the criteria that are to be compared, in the case of selection of the best vendors. From the table it is clear that Price is the most important criteria for selecting a Vendor with a weight age of 50.28% and all over services is the least important criteria out of the rest three criteria with a weight age of 3.48% .

So, the order of criteria (with respect to relative percentage weight age) for the selection of a vendor is:

Price	Quality	Delivery time	Available Resources	Services
50.28%	26.02%	13.43%	6.77%	3.48%
Most Important Criteria	Less Important criteria than price	Moderately important Criteria	Second Last Important criteria	Least Important criteria

So, whenever we will make our decision on selecting a best vendor we will consider above 5 factors in the assigned weight of them using comparative analysis of the criteria.

Table 33 Comparison of available resources

Comparison on the basis of available resources							
	V1	**V2**	**V3**	**V4**	**V5**	**V6**	**V7**
V1	1.00	9.00	9.00	9.00	9.00	6.00	5.00
V2	0.11	1.00	1.00	1.00	1.00	0.33	0.20
V3	0.11	1.00	1.00	1.00	1.00	0.25	0.25
V4	0.11	1.00	1.00	1.00	1.00	0.25	0.20
V5	0.11	1.00	1.00	1.00	1.00	0.25	0.25
V6	0.17	3.03	4.00	4.00	4.00	1.00	0.50
V7	0.20	5.00	4.00	5.00	4.00	2.00	1.00
Sum	**1.81**	**21.03**	**21.00**	**22.00**	**21.00**	**10.08**	**7.40**

Normalized weighted Matrix								
	V1	**V2**	**V3**	**V4**	**V5**	**V6**	**V7**	**Average**
V1	0.5521	0.4280	0.4286	0.4091	0.4286	0.5952	0.6757	0.5025
V2	0.0613	0.0476	0.0476	0.0455	0.0476	0.0327	0.0270	0.0442
V3	0.0613	0.0476	0.0476	0.0455	0.0476	0.0248	0.0338	0.0440
V4	0.0613	0.0476	0.0476	0.0455	0.0476	0.0248	0.0270	0.0431
V5	0.0613	0.0476	0.0476	0.0455	0.0476	0.0248	0.0338	0.0440
V6	0.0920	0.1441	0.1905	0.1818	0.1905	0.0992	0.0676	0.1380
V7	0.1104	0.2378	0.1905	0.2273	0.1905	0.1984	0.1351	0.1843

Principle Eigen Vector (λ_{max}) = 7.175
Consistency Index = 0.029
Consistency Ratio = 0.0219

Explanation: On comparing the 7 possible alternatives on the basis of available resources

From the table it is clear that on the basis of available resources Vendor V1 has the higher relative percentage of 50.25% among all the Vendors and Vendor V4 has the least relative percentage weight age of 4.31% among all of the Vendors .
So on the basis of available resources the order of priority of vendors (w.r.t to the relative percentage weight age) is:

Vendor V1	Vendor V7	Vendor V6	Vendor V2	Vendor V5	Vendor V3	Vendor V4
50.25%	18.43%	13.80%	4.42%	4.40%	4.40%	4.31%
Most important Vendor	Second Most important Vendor	Third Most important Vendor	Fourth Most important Vendor	Fifth Most important Vendor	Second least important vendors	Least important Vendors

So, whenever we will make over decision on selecting a best vendor on the basis of available resources we will consider the above orders on the vendors the assigned percentage weight age of them.

Table 34 Comparison on the basis of Prices

On the basis of Price							
	V1	**V2**	**V3**	**V4**	**V5**	**V6**	**V7**
V1	1.00	5.00	8.00	8.00	6.00	6.00	6.00
V2	0.20	1.00	3.00	3.00	1.00	1.00	1.00
V3	0.13	0.33	1.00	1.00	0.50	0.50	0.50
V4	0.13	0.33	1.00	1.00	0.50	0.50	0.50
V5	0.17	1.00	2.00	2.00	1.00	1.00	1.00
V6	0.17	1.00	2.00	2.00	1.00	1.00	1.00
V7	0.17	1.00	2.00	2.00	1.00	1.00	1.00
Sum	**1.95**	**9.67**	**19.00**	**19.00**	**11.00**	**11.00**	**11.00**

Normalized weighted Matrix								
	V1	**V2**	**V3**	**V4**	**V5**	**V6**	**V7**	**Average**
V1	0.51	0.52	0.42	0.42	0.55	0.55	0.55	0.50
V2	0.10	0.10	0.16	0.16	0.09	0.09	0.09	0.11
V3	0.06	0.03	0.05	0.05	0.05	0.05	0.05	0.05
V4	0.06	0.03	0.05	0.05	0.05	0.05	0.05	0.05
V5	0.09	0.10	0.11	0.11	0.09	0.09	0.09	0.10
V6	0.09	0.10	0.11	0.11	0.09	0.09	0.09	0.10
V7	0.09	0.10	0.11	0.11	0.09	0.09	0.09	0.10

Principle Eigen Vector (λ_{max}) = 7.06
Consistency Index = 0.01
Consistency Ratio = 0.0075

Explanation : On Comparing the 7 possible alternatives on the basis of Price

Vendor V1 has the higher relative percentage weight age of 50% among all the Vendors and Vendors V3 and V4 has the least relative percentage weight age 5% among all the Vendors.

So on the basis of Price the order of priority (with respect to the relative percentage weight age) is:

Vendor V1	**Vendor V2**	**Vendor V6**	**Vendor V5**	**Vendor V7**	**Vendor V3**	**Vendor V4**
50%	11%	10%	10%	10%	5%	5%
Most important Vendor	Second Most important Vendor	Third Most important Vendor	Fourth Most important Vendor	Fifth Most important Vendor	Second least important vendors	Least important Vendors

Table 35 Comparison on the basis of quality

On the basis of Quality							
	V1	**V2**	**V3**	**V4**	**V5**	**V6**	**V7**
V1	1.00	9.00	9.00	9.00	9.00	6.00	5.00
V2	0.11	1.00	1.00	0.33	1.00	0.33	0.33
V3	0.11	1.00	1.00	0.33	1.00	0.33	0.33
V4	0.11	3.00	3.00	1.00	3.00	1.00	1.00
V5	0.11	1.00	1.00	0.33	1.00	0.50	0.33
V6	0.17	3.00	3.00	1.00	2.00	1.00	1.00
V7	0.20	3.00	3.00	1.00	3.00	1.00	1.00
Sum	**1.81**	**21.00**	**21.01**	**13.00**	**20.00**	**10.17**	**9.00**

Normalized weighted Matrix								
	V1	**V2**	**V3**	**V4**	**V5**	**V6**	**V7**	**Average**
V1	0.55	0.43	0.43	0.69	0.45	0.59	0.56	0.5282
V2	0.06	0.05	0.05	0.03	0.05	0.03	0.04	0.0431
V3	0.06	0.05	0.05	0.03	0.05	0.03	0.04	0.0431
V4	0.06	0.14	0.14	0.08	0.15	0.10	0.11	0.1119
V5	0.06	0.05	0.05	0.03	0.05	0.05	0.04	0.0455
V6	0.09	0.14	0.14	0.08	0.10	0.10	0.11	0.1092
V7	0.11	0.14	0.14	0.08	0.15	0.10	0.11	0.1190

Principle Eigen Vector (λ_{max}) = 7.138
Consistency Index = 0.023
Consistency Ratio = 0.017

Explanation: On comparing the 7 possible alternatives on the basis of Quality

From the table it is clear that on the basis of quality Vendor V1 has the higher relative percentage weight age of 52.82% among all the Vendors and Vendors V2 and V3 has the least relative percentage weight age 4.3% among all the Vendors.

So on the basis of quality the order of priority (with respect to the relative percentage weight age) is:

Vendor V1	**Vendor V7**	**Vendor V4**	**Vendor V6**	**Vendor V5**	**Vendor V2**	**Vendor V3**
52.82%	11.9%	11.19%	10.92%	4.5%	4.3%	4.3%
Most important Vendor	Second Most important Vendor	Third Most important Vendor	Fourth Most important Vendor	Fifth Most important Vendor	Second least important vendors	Least important Vendors

Table 36 Comparison on the basis of Services

On the basis of Services							
	V1	**V2**	**V3**	**V4**	**V5**	**V6**	**V7**
V1	1.00	6.00	4.00	4.00	5.00	3.00	3.00
V2	0.17	1.00	0.33	0.33	0.50	0.25	0.25
V3	0.25	3.00	1.00	1.00	2.00	0.33	0.33
V4	0.25	3.00	1.00	1.00	2.00	0.50	0.50
V5	0.20	2.00	0.50	0.50	1.00	0.33	0.33
V6	0.33	4.00	3.00	2.00	3.00	1.00	1.00
V7	0.33	4.00	3.00	2.00	3.00	1.00	1.00
Sum	**2.53**	**23.00**	**12.84**	**10.83**	**16.51**	**6.42**	**6.42**

Normalized weighted Matrix								
	V1	**V2**	**V3**	**V4**	**V5**	**V6**	**V7**	**Average**
V1	0.39	0.26	0.31	0.37	0.30	0.47	0.47	0.3678
V2	0.07	0.04	0.03	0.03	0.03	0.04	0.04	0.0392
V3	0.10	0.13	0.08	0.09	0.12	0.05	0.05	0.0892
V4	0.10	0.13	0.08	0.09	0.12	0.08	0.08	0.0966
V5	0.08	0.09	0.04	0.05	0.06	0.05	0.05	0.0593
V6	0.13	0.17	0.23	0.18	0.18	0.16	0.16	0.1740
V7	0.13	0.17	0.23	0.18	0.18	0.16	0.16	0.1740

Principle Eigen Vector (λ_{max}) = 7.17
Consistency Index = 0.029
Consistency Ratio = 0.022

Explanation: On comparing the 7 possible alternatives on the basis of Service

From the table it is clear that on the basis of services Vendor V1 has the higher relative percentage weight age of 37% among all the Vendors and Vendor V2 has the least relative percentage weight age 4% among all the Vendors.
So on the basis of services the order of priority (with respect to the relative percentage weight age) is:

Vendor V1	**Vendor V7**	**Vendor V6**	**Vendor V4**	**Vendor V3**	**Vendor V5**	**Vendor V2**
37%	17%	17%	10%	9%	6%	4%
Most important Vendor	Second Most important Vendor	Third Most important Vendor	Fourth Most important Vendor	Fifth Most important Vendor	Second least important vendors	Least important Vendors

Table 37 Comparing on the basis of delivery time

On the basis of Delivery Time							
	V1	**V2**	**V3**	**V4**	**V5**	**V6**	**V7**
V1	1.00	5.00	5.00	4.00	3.00	1.00	1.00
V2	0.20	1.00	1.00	0.50	0.33	0.20	0.20
V3	0.20	1.00	1.00	0.50	0.33	0.20	0.25
V4	0.25	2.00	2.00	1.00	0.50	0.25	0.25
V5	0.33	3.00	3.00	2.00	1.00	0.33	0.33
V6	1.00	5.00	5.00	4.00	3.00	1.00	1.00
V7	1.00	5.00	4.00	4.00	3.00	1.00	1.00
Sum	**3.98**	**22.00**	**21.00**	**16.00**	**11.17**	**3.98**	**4.03**

Normalized weighted Matrix								
	V1	**V2**	**V3**	**V4**	**V5**	**V6**	**V7**	**Average**
V1	0.25	0.23	0.24	0.25	0.27	0.25	0.25	0.2477
V2	0.05	0.05	0.05	0.03	0.03	0.05	0.05	0.0435
V3	0.05	0.05	0.05	0.03	0.03	0.05	0.06	0.0452
V4	0.06	0.09	0.10	0.06	0.04	0.06	0.06	0.0687
V5	0.08	0.14	0.14	0.13	0.09	0.08	0.08	0.1062
V6	0.25	0.23	0.24	0.25	0.27	0.25	0.25	0.2477
V7	0.25	0.23	0.19	0.25	0.27	0.25	0.25	0.2409

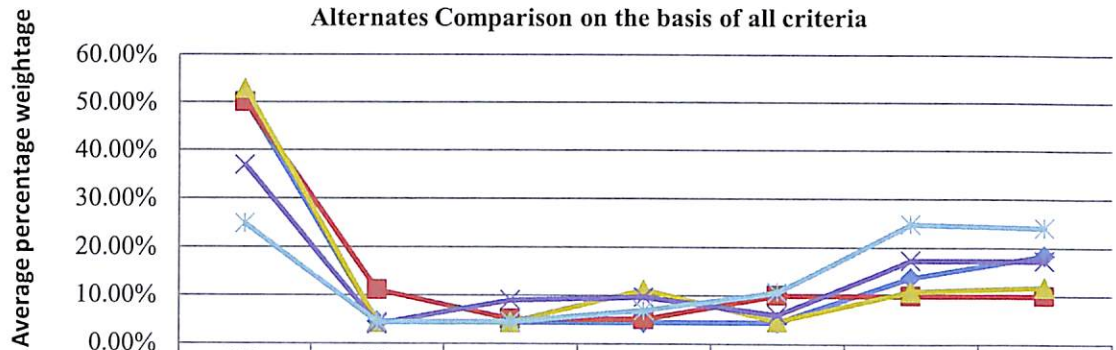
Principle Eigen Vector (λ_{max}) = 7.09
Consistency Index = 0.015
Consistency Ratio = 0.011

Explanation: on Comparing the 7 possible alternatives on the basis of delivery time
Vendor V1 has the higher relative percentage weight age of 25% among all the Vendors and Vendor V2 has the least relative percentage weight age 4.35% among all the Vendors.
So on the basis of delivery time the order of priority (with respect to the relative percentage weightage) is:

Vendor V1	**Vendor V6**	**Vendor V7**	**Vendor V5**	**Vendor V4**	**Vendor V3**	**Vendor V2**
25%	24.77%	24.09%	10.62%	6.87%	4.52%	4.35%
Most important Vendor	Second Most important Vendor	Third Most important Vendor	Fourth Most important Vendor	Fifth Most important Vendor	Second least important vendors	Least important Vendors

So, whenever we will make over the decision on selecting a best vendor on the basis of Delivery Time, we will consider the above order of the vendors with the assigned percentage weight age of them using comparative analysis.

9. 4 Summary of results



	V1	V2	v3	v4	V5	V6	V7
Available resources	50.25%	4.42%	4.40%	4.31%	4.40%	13.80%	18.43%
Price	50.00%	11.00%	5.00%	5.00%	10.00%	10.00%	10.00%
Quality	52.82%	4.31%	4.31%	11.19%	4.55%	10.92%	11.90%
Services	36.78%	3.92%	8.92%	9.66%	5.93%	17.40%	17.40%
Delivery Time	24.77%	4.35%	4.52%	6.87%	10.62%	24.77%	24.09%

Now Final weights assign to a particular vendor can be obtained as follows:
Criteria Weight

$$\begin{pmatrix} 0.503 & 0.500 & 0.528 & 0.368 & 0.248 \\ 0.044 & 0.110 & 0.043 & 0.039 & 0.044 \\ 0.044 & 0.050 & 0.043 & 0.089 & 0.045 \\ 0.043 & 0.050 & 0.112 & 0.097 & 0.069 \\ 0.044 & 0.100 & 0.046 & 0.059 & 0.106 \\ 0.138 & 0.100 & 0.109 & 0.174 & 0.248 \\ 0.184 & 0.100 & 0.119 & 0.174 & 0.241 \end{pmatrix} * \begin{pmatrix} 0.503 \\ 0.260 \\ 0.134 \\ 0.068 \\ 0.035 \end{pmatrix} = \begin{pmatrix} 0.487216 \\ 0.060796 \\ 0.048555 \\ 0.058647 \\ 0.061978 \\ 0.130548 \\ 0.154912 \end{pmatrix}$$

Here from the table , it is clear that on the basis of all 5 criteria (namely available resources, price, Services, quality and delivery timings), Vendor V1 has the higher relative percentage weight age of 49% among all the vendor and vendor V3 has the least relative percentage weight age of 5% among all the Vendors.

9.5 Conclusion

So the final order of priority of vendors with respect to the relative percentage weight age is:

Vendor V1	Vendor V7	Vendor V6	Vendor V5	Vendor V2	Vendor V4	Vendor V3
48.7%	15.49%	13%	6.10%	6%	5.8%	4.80%
Most important Vendor	Second Most important Vendor	Third Most important Vendor	Fourth Most important Vendor	Fifth Most important Vendor	Second least important vendors	Least important Vendors

Here the ranking of the decision factors is Price> Quality >Delivery Time> available resources > Services.

CHAPTER X

PROJECT MANAGEMENT, SCHEDULING AND RESOURCE LEVELING

10.1 Introduction

Project Management (PM) tools and methodologies are an asset to Event Management. Managing an event is essentially managing a project. Events have a defined beginning and end, and they are unique in terms of teams involved, and changing environments.

A Project is a temporary endeavor undertaken to create a unique product or service (PMI, 2008)

Table 38 Comparison of Events and Projects

Event and Projects are both	Event unlike projects are
Temporary	Executed and consumed simultaneously (Salem et al , 2004)
Unique output	Co-created with participants and adjusted during execution (Tum , 2006)
Executed by team	Executed on specific dates that can not be adjusted
Output based	

The **Project Management Triangle** (called also the *Triple Constraint, Iron Triangle* and "Project Triangle") is a model of the constraints of project management. It contends that:

- The quality of work is constrained by the project's budget, deadlines and scope (features).
- The project manager can trade between constraints.
- Changes in one constraint necessitate changes in others to compensate or quality will suffer.

As the constraints are usually competing, one side of the triangle cannot be changed without automatically affecting the other two sides. The project manager has to assess how a tight budget might affect the other constraints. Facing a cost bottleneck might mean that it will take longer to complete the project or it might require a reduction in scope.

10.2 Project Management (PM) tools in event management

Employing PM methodologies can have a big impact on event success. Streamlining processes will bring efficiency and effectiveness to event planning.

- ***Statement of Work:*** Assures everyone is on the same page by defining the scope. It also clarifies the strategic goals and purpose(s) of the event, before planning efforts start.
- ***Feasibility Study***: Determines if the event can deliver the desired return on investment and return on opportunity. Its results point to which events should be nipped in the bud. It can also be applied

to evaluate risks and analyze pros and cons, e.g. for determining event themes, formats, time & date, and location.

- ***Work Breakdown Structure (WBS)***: Divides the work to be performed into manageable work packages, and then breaks them down into activities. For ease of monitoring and controlling the progress, activities can then be assigned to a person, timeline, and budget.
- ***Gantt Chart and Critical Path***: Supports scheduling, and demonstrates dependencies visually. It highlights the critical path by identifying activities that are to be completed as scheduled, so not to delay the entire project.
- ***Risk Assessment***: Keeps track of potential risks, their probabilities, and possible impacts. The register lists risk owners, and actions for risk mitigation to be taken should they materialize.

10.3 Gantt Chart

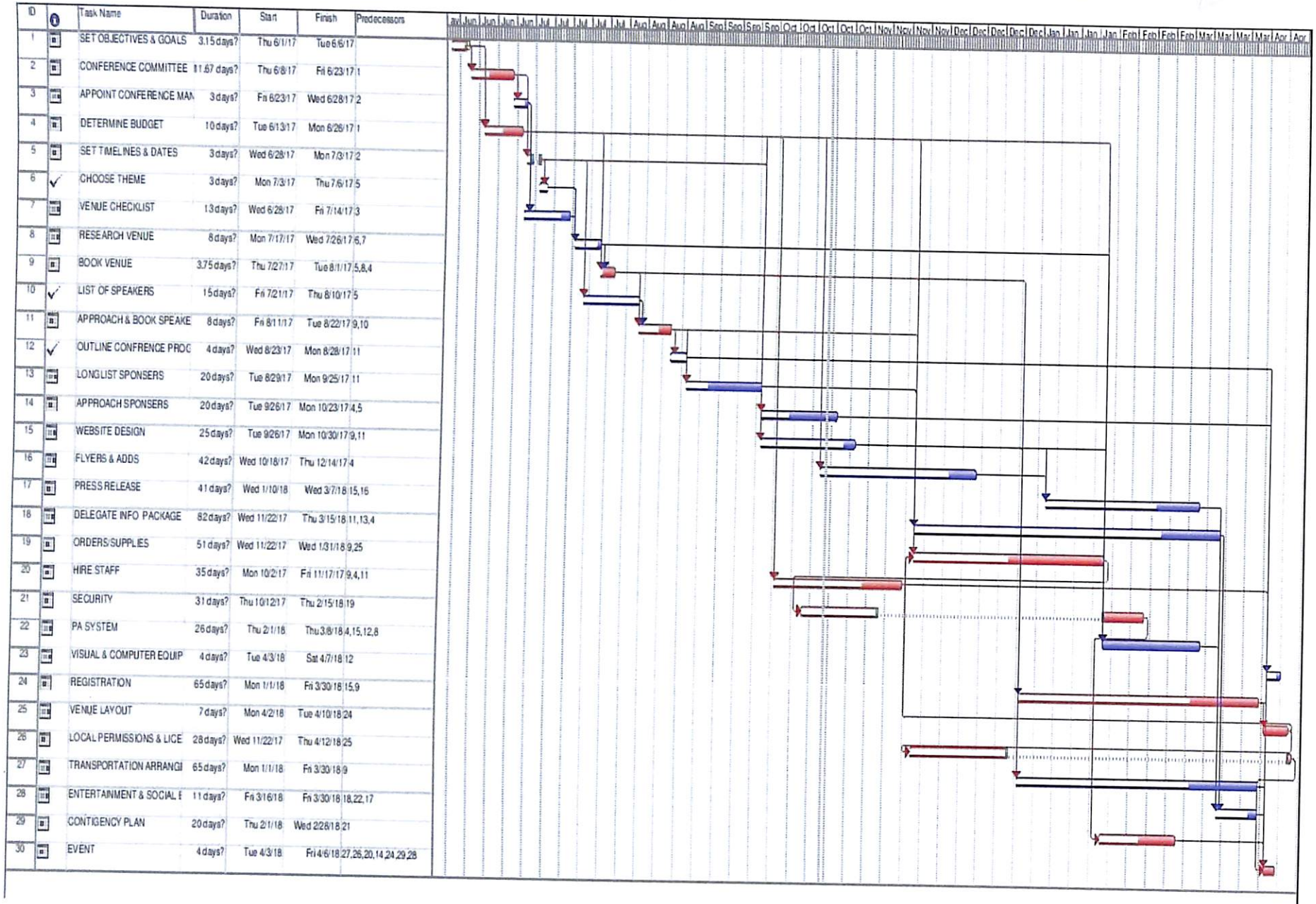
A Gantt chart is a key tool for planning and tracking our conference. In its simplest form it works as a schedule management tool that allows to control the milestones and activities related to your conference by tracking the start/end dates and the people directly responsible for each activity.
The major features of the Gantt Chart are:
(a) a listing of the tasks that must be completed (seen on left of the chart below).
(b) the time frame for each task (the date on which the task must start and the date when it must finish)
The Gantt Chart has two principal benefits:
(1) The chart conveys complex information more easily at a glance; and more importantly
(2) The chart requires the Event Manager to go through the process of identifying tasks and considering timelines for each task.
Table shows the resources and associated cost with each resource. Here costs are taken arbitrary
Table shows the list of activities, duration , start /finish date, predecessors and resources.

Table 39 Resource Sheet

RESOURCE NAME	TYPE	INITIALS	MAX. UNITS	STD. RATES	OVERTIME RATES	ACCRUEE AT	BASE CALENDER
POOJA	Work	P	100%	$8.00/hr	$1.00/hr	Prorated	Standard
RAHUL	Work	R	100%	$7.00/hr	$0.50/hr	Prorated	Standard
GHOSH	Work	G	100%	$12.00/hr	$1.00/hr	Prorated	Standard
SHYAM	Work	S	100%	$11.00/hr	$2.00/hr	Prorated	Standard
RAM	Work	R	100%	$8.00/hr	$1.00/hr	Prorated	Standard
RAGHAV	Work	R	100%	$14.00/hr	$3.00/hr	Prorated	Standard
ADVERTISING AGENCY	Work	A	100%	$20.00/hr	$5.00/hr	Prorated	Standard
PROCUREMENT AGENCY	Work	P	100%	$22.00/hr	$8.00/hr	Prorated	Standard
MEGHA	Work	M	100%	$14.00/hr	$3.00/hr	Prorated	Standard
SECURITY AGENCY	Work	S	100%	$18.00/hr	$5.00/hr	Prorated	Standard

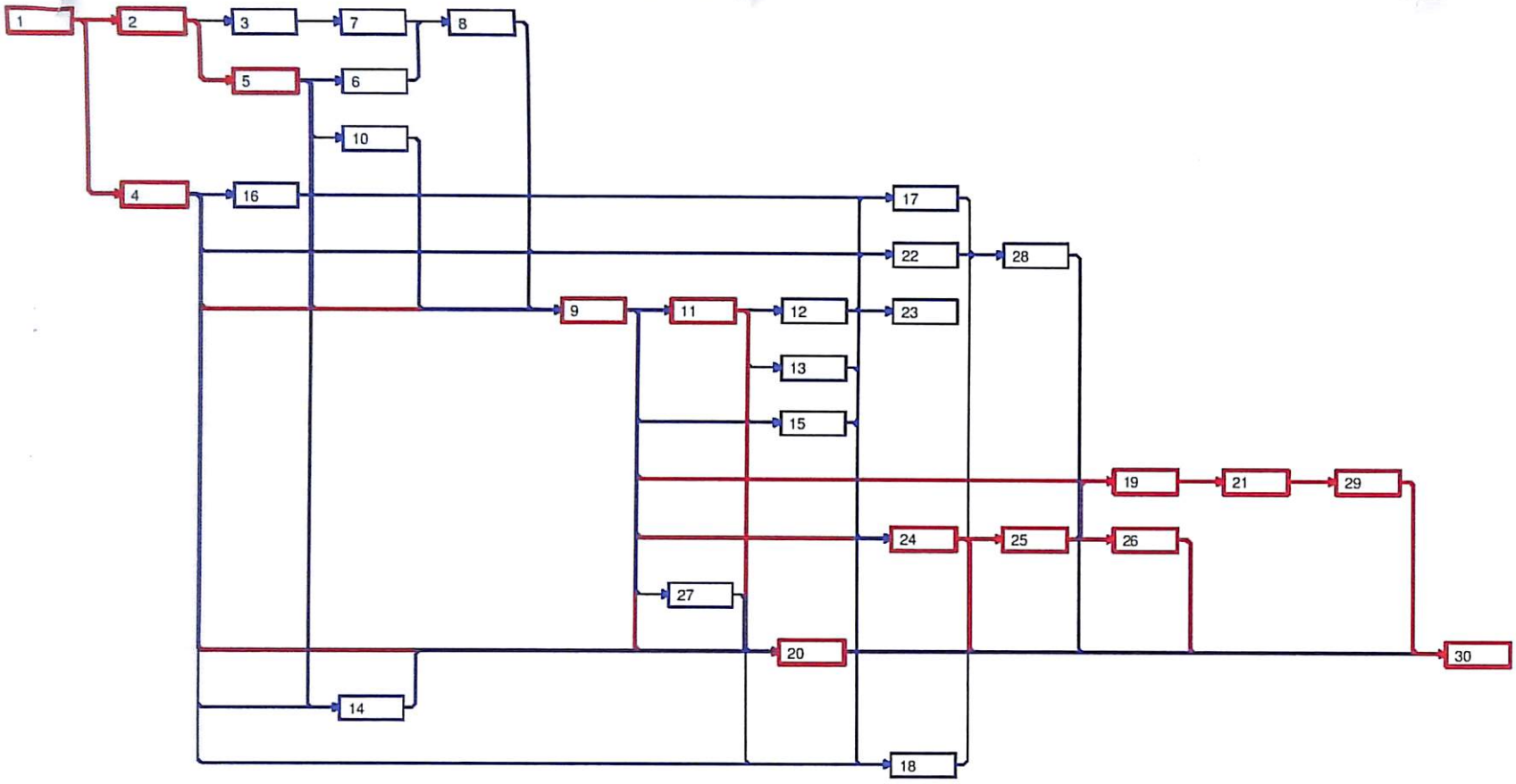
Table 40 Task details

ACTIVITIES	DURATION	START DATE	FINISH DATE	PREDECSSORS	RESOURCES
SET OBJECTIVES & GOALS	3.15 days?	6/1/2019 8:00	6/6/2019 9:12		POOJA,GHOSH[50%]
CONFERENCE COMMITTEE	11.67 days?	6/8/2019 8:00	6/23/2019 14:20	1	RAHUL[60%],RAM[40%]
APPOINT CONFERENCE MANAGER	3 days?	6/23/2019 14:20	6/28/2019 14:20	2	RAHUL
DETERMINE BUDGET	10 days?	6/13/2019 8:00	6/26/2019 17:00	1	GHOSH[80%],POOJA[20%]
SET TIMELINES & DATES	3 days?	6/28/2019 14:20	7/3/2019 17:00	2	SHYAM
CHOOSE THEME	3 days?	7/3/2019 14:20	7/6/2019 14:20	5	RAM
VENUE CHECKLIST	13 days?	6/28/2019 8:00	7/14/2019 17:00	3	SHYAM
RESEARCH VENUE	8 days?	7/17/2019 8:00	7/26/2019 17:00	6,7	SHYAM
BOOK VENUE	3.75 days?	7/27/2019 8:00	8/1/2019 15:00	5,8,4	SHYAM[80%],RAHUL[20%]
LIST OF SPEAKERS	15 days?	7/21/2019 8:00	8/10/2019 17:00	5	RAGHAV
APPROACH & BOOK SPEAKERS	8 days?	8/11/2019 8:00	8/22/2019 17:00	9,10	RAGHAV
OUTLINE CONFRENCE PROGRAME	4 days?	8/23/2019 8:00	8/28/2019 17:00	11	RAM
LONGLIST SPONSERS	20 days?	8/29/2019 8:00	9/25/2019 17:00	11	RAHUL[50%],RAM[50%]
APPROACH SPONSERS	20 days?	9/26/2019 8:00	10/23/2019 17:00	4,5	RAHUL,RAM
WEBSITE DESIGN	25 days?	9/26/2019 8:00	10/30/2019 17:00	9,11	ADVERTISING AGENCY
FLYERS & ADDS	42 days?	10/18/2019 8:00	12/14/2019 17:00	4	ADVERTISING AGENCY
PRESS RELEASE	41 days?	1/10/2020 8:00	3/7/2020 17:00	15,16	MEGHA
DELEGATE INFO PACKAGE	82 days?	11/22/2019 8:00	3/15/2020 17:00	11,13,4	ADVERTISING AGENCY
ORDERS/SUPPLIES	51 days?	11/22/2019 8:00	1/31/2020 17:00	9,25	PROCUREMENT AGENCY
HIRE STAFF	35 days?	10/2/2019 8:00	11/17/2019 17:00	9,4,11	MEGHA,SHYAM
SECURITY	31 days?	10/12/2019 8:00	2/15/2020 15:48	19	SECURITY AGENCY
PA SYSTEM	26 days?	2/1/2020 8:00	3/8/2020 17:00	4,15,12,8	POOJA
VISUAL & COMPUTER EQUIPMENT	4 days?	4/3/2020 8:00	4/7/2020 17:00	12	POOJA
REGISTRATION	65 days?	1/1/2020 8:00	3/30/2020 17:00	15,9	RAM
VENUE LAYOUT	7 days?	4/2/2020 8:00	4/10/2020 17:00	24	SHYAM
LOCAL PERMISSIONS & LICENCE	28 days?	11/22/2019 8:00	4/12/2020 11:12	25	SHYAM
TRANSPORTATION ARRANGEMENTS	65 days?	1/1/2020 8:00	3/30/2020 17:00	9	GHOSH
ENTERTAINMENT & SOCIAL EVENT	11 days?	3/16/2020 8:00	3/30/2020 17:00	18,22,17	RAGHAV
CONTIGENCY PLAN	20 days?	2/1/2020 8:00	2/28/2020 17:00	21	RAHUL[25%],RAM[25%]
EVENT	4 days?	4/3/2020 8:00	4/6/2020 17:00	27,26,20,14,24,29,28	POOJA,RAM,SHYAM,MEGHA



ID	Task Name	Duration	Start	Finish	Predecessors
1	SET OBJECTIVES & GOALS	3.15 days?	Thu 6/1/17	Tue 6/6/17	
2	CONFERENCE COMMITTEE	11.67 days?	Thu 6/8/17	Fri 6/23/17	1
3	APPOINT CONFERENCE MAN	3 days?	Fri 6/23/17	Wed 6/28/17	2
4	DETERMINE BUDGET	10 days?	Tue 6/13/17	Mon 6/26/17	1
5	SET TIMELINES & DATES	3 days?	Wed 6/28/17	Mon 7/3/17	2
6	CHOOSE THEME	3 days?	Mon 7/3/17	Thu 7/6/17	5
7	VENUE CHECKLIST	13 days?	Wed 6/28/17	Fri 7/14/17	3
8	RESEARCH VENUE	8 days?	Mon 7/17/17	Wed 7/26/17	6,7
9	BOOK VENUE	3.75 days?	Thu 7/27/17	Tue 8/1/17	5,8,4
10	LIST OF SPEAKERS	15 days?	Fri 7/21/17	Thu 8/10/17	5
11	APPROACH & BOOK SPEAKE	8 days?	Fri 8/11/17	Tue 8/22/17	9,10
12	OUTLINE CONFRENCE PROG	4 days?	Wed 8/23/17	Mon 8/28/17	11
13	LONGLIST SPONSERS	20 days?	Tue 8/29/17	Mon 9/25/17	11
14	APPROACH SPONSERS	20 days?	Tue 9/26/17	Mon 10/23/17	4,5
15	WEBSITE DESIGN	25 days?	Tue 9/26/17	Mon 10/30/17	9,11
16	FLYERS & ADDS	42 days?	Wed 10/18/17	Thu 12/14/17	4
17	PRESS RELEASE	41 days?	Wed 1/10/18	Wed 3/7/18	15,16
18	DELEGATE INFO PACKAGE	82 days?	Wed 11/22/17	Thu 3/15/18	11,13,4
19	ORDERS/SUPPLIES	51 days?	Wed 11/22/17	Wed 1/31/18	9,25
20	HIRE STAFF	35 days?	Mon 10/2/17	Fri 11/17/17	9,4,11
21	SECURITY	31 days?	Thu 10/12/17	Thu 2/15/18	19
22	PA SYSTEM	26 days?	Thu 2/1/18	Thu 3/8/18	4,15,12,8
23	VISUAL & COMPUTER EQUIP	4 days?	Tue 4/3/18	Sat 4/7/18	12
24	REGISTRATION	65 days?	Mon 1/1/18	Fri 3/30/18	15,9
25	VENUE LAYOUT	7 days?	Mon 4/2/18	Tue 4/10/18	24
26	LOCAL PERMISSIONS & LICE	28 days?	Wed 11/22/17	Thu 4/12/18	25
27	TRANSPORTATION ARRANGI	65 days?	Mon 1/1/18	Fri 3/30/18	9
28	ENTERTAINMENT & SOCIAL E	11 days?	Fri 3/16/18	Fri 3/30/18	18,22,17
29	CONTIGENCY PLAN	20 days?	Thu 2/1/18	Wed 2/28/18	21
30	EVENT	4 days?	Tue 4/3/18	Fri 4/6/18	27,26,20,14,24,29,28

Fig 13 Gantt Chart



*Critical paths are shown by Red color

** Figures mentioned inside the box indicates corresponding activity WBS code.

Fig 14 Network chart showing different tasks

10.4 Critical Path and duration

List of critical activities during PETROTECH -2021 are :

Total duration: 225.4 days (06/01/2019 to 04/12/2020)

Table 41 Critical Path and duration

Critical Activities	Duration	Start	Finish	Predecessors	Resources
SET OBJECTIVES & GOALS	3.15 days?	6/1/2019 8:00	6/6/2019 9:12		POOJA,GHOSH[50%]
CONFERENCE COMMITTEE	11.67 days?	6/8/2019 8:00	6/23/2019 14:20	1	RAHUL[60%],RAM[40%]
DETERMINE BUDGET	10 days?	6/13/2019 8:00	6/26/2019 17:00	1	GHOSH[80%],POOJA[20%]
SET TIMELINES & DATES	3 days?	6/28/2019 14:20	7/3/2019 17:00	2	SHYAM
BOOK VENUE	3.75 days?	7/27/2019 8:00	8/1/2019 15:00	5,8,4	SHYAM[80%],RAHUL[20%]
APPROACH & BOOK SPEAKERS	8 days?	8/11/2019 8:00	8/22/2019 17:00	9,10	RAGHAV
ORDERS/SUPPLIES	51 days?	11/22/2019 8:00	1/31/2020 17:00	9,25	PROCUREMENT AGENCY
HIRE STAFF	35 days?	10/2/2019 8:00	11/17/2019 17:00	9,4,11	MEGHA,SHYAM
SECURITY	31 days?	10/12/2019 8:00	2/15/2020 15:48	19	SECURITY AGENCY
REGISTRATION	65 days?	1/1/2020 8:00	3/30/2020 17:00	15,9	RAM
VENUE LAYOUT	7 days?	4/2/2020 8:00	4/10/2020 17:00	24	SHYAM
LOCAL PERMISSIONS & LICENCE	28 days?	11/22/2019 8:00	4/12/2020 11:12	25	SHYAM

CONTIGENCY PLAN	20 days?	2/1/2020 8:00	2/28/2020 17:00	21	RAHUL[25%],RAM[25%]
EVENT	4 days?	4/3/2020 8:00	4/6/2020 17:00	27,26,20,14,24,29,28	POOJA,RAM,SHYAM,MEGHA

10. 5 Visual Reports

1. Project cash flow generation
2. Baseline Cost report

		Data			
Year	Quarter	Cost	Cumulative Cost	Actual Cost	Actual Work
2019	Q2	2239.60	2239.60	1387.01	146.37
	Q3	6984.80	9224.40	5453.60	476.00
	Q4	36130.40	45354.80	29526.40	1794.80
2019 Total		45354.80	45354.80	36367.01	2417.17
2020	Q1	30003.67	75358.47	15818.07	1206.47
	Q2	2307.20	77665.67	204.80	25.60
2020 Total		32310.87	77665.67	16022.87	1232.07
Grand Total (USD)		77665.67	77665.67	52389.88	3649.23

Table 42 Cash flow in each quarter

(ii) Baseline Cost report

Table 43 Baseline Cost Report

Time Weekly Calendar	All

		Data	
Tasks	Tasks 01	Cost	Actual Cost
PETROTEC 2021	SET OBJECTIVES & GOALS	181	166
	CONFERENCE COMMITTEE	571	242
	APPOINT CONFERENCE MANAGER	168	101
	DETERMINE BUDGET	870	430
	SET TIMELINES & DATES	264	185
	CHOOSE THEME	192	192
	VENUE CHECKLIST	1144	858
	RESEARCH VENUE	704	563
	BOOK VENUE	298	61
	LIST OF SPEAKERS	1680	1680
	APPROACH & BOOK SPEAKERS	896	627
	OUTLINE CONFRENCE PROGRAME	256	256
	LONGLIST SPONSERS	880	360
	APPROACH SPONSERS	2400	960
	WEBSITE DESIGN	4000	3600
	FLYERS & ADDS	6720	5376
	PRESS RELEASE	4592	3214
	DELEGATE INFO PACKAGE	13120	10496
	ORDERS/SUPPLIES	8976	4488
	HIRE STAFF	7000	4900
	SECURITY	4464	2902
	PA SYSTEM	1664	1210
	VISUAL & COMPUTER EQUIPMENT	256	205
	REGISTRATION	4160	2912
	VENUE LAYOUT	616	440
	LOCAL PERMISSIONS & LICENCE	2464	2341
	TRANSPORTATION ARRANGEMENTS	6240	4368
	ENTERTAINMENT & SOCIAL EVENT	1232	862
	CONTIGENCY PLAN	345	275
	EVENT	1312	1100
PETROTECH 2018 Total		77666	52890
Grand Total		77666	52890

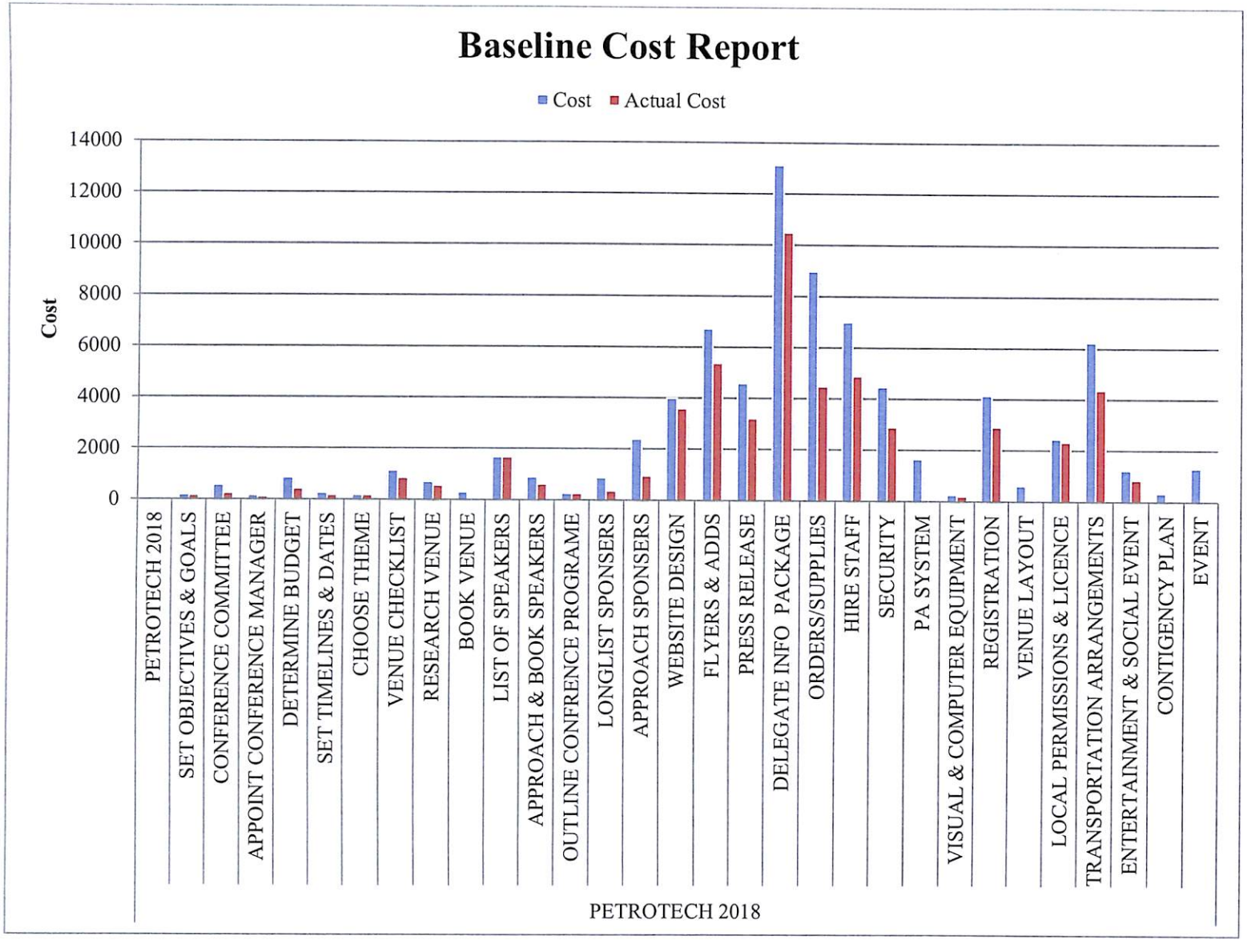


Fig 15 Baseline report

10.6 Resource Leveling

Resource leveling is a technique in project management that overlooks resource allocation and resolves possible conflict arising from over-allocation. When project managers undertake a project, they need to plan their resources accordingly.

This will benefit the organization without having to face conflicts and not being able to deliver on time. Resource leveling is considered one of the key elements to resource management in the organization.

An organization starts to face problems if resources are not allocated properly i.e., some resource may be over-allocated whilst others will be under-allocated. Both will bring about a financial risk to the organization.

RESOURCE NAME	TYPE	INITIALS	MAX. UNITS	STD. RATES	OVERTIME RATES	ACCRUEE AT	BASE CALENDER
POOJA	Work	P	100%	$8.00/hr	$1.00/hr	Prorated	Standard
RAHUL	Work	R	100%	$7.00/hr	$0.50/hr	Prorated	Standard
GHOSH	Work	G	100%	$12.00/hr	$1.00/hr	Prorated	Standard
SHYAM	Work	S	100%	$11.00/hr	$2.00/hr	Prorated	Standard
RAM	Work	R	100%	$8.00/hr	$1.00/hr	Prorated	Standard
RAGHAV	Work	R	100%	$14.00/hr	$3.00/hr	Prorated	Standard
ADVERTISING AGENCY	Work	A	100%	$20.00/hr	$5.00/hr	Prorated	Standard
PROCUREMENT AGENCY	Work	P	100%	$22.00/hr	$8.00/hr	Prorated	Standard
MEGHA	Work	M	100%	$14.00/hr	$3.00/hr	Prorated	Standard
SECURITY AGENCY	Work	S	100%	$18.00/hr	$5.00/hr	Prorated	Standard

Here, based on MS Project output resources namely Pooja, Shyam , Ram , Advertising agency are over allocated needs to be leveled on day to day basis.

Table 44 Total resource duration

RESOURCES	DURATION
POOJA	305.65 hrs
RAHUL	351.27 hrs
GHOSH	585.2 hrs
SHYAM	808 hrs
RAM	850.4 hrs
RAGHAV	272 hrs
ADVERTISING AGENCY	1,192 hrs
PROCUREMENT AGENCY	408 hrs
MEGHA	640 hrs
SECURITY AGENCY	248 hrs

CHAPTER-XI

MANAGING RISK AND CONTINGENCY PLANNING

11.1 Introduction

This is an important activity that deals with the planning and management of emergency situations which are likely to attract resources and the deployment of specific arrangements beyond those normally required to safely manage and control the event. These scenarios, however unlikely, should be considered as part of the planning assessment process, even if the likelihood is very small.

11.2 Risk Identification and responsibilities

Every event has attendant risks; the first step in managing those risks involves examining all areas of our event to determine where losses can occur. This examination is not limited to safety issues, but can ensure that the event is conducted in the safest possible manner and if something unfortunate does occur that the loss does not further impact the organization either financially or through adverse publicity. There are four general areas of losses associated with events:

- Personnel
- Property
- Income
- Liability

By examining all areas where losses could possibly occur, we can identify where we may need to purchase additional insurance. Although the process may not guarantee that you have identified every possible risk factor associated with the event, the exercise will assist with demonstrating your diligence in attempting to identify those you can manage and control and could be a factor in reducing your obligatory insurance costs.

For events the combination of individual risk factors is extremely important in establishing the degree of risk. Changing one aspect of an event may greatly increase the risk factors. Some examples include: if free admission is allowed as a last minute decision that will change the whole nature of risk for the event. If the event is transferred from one location to another with less capacity you may have a serious problem of not being able to seat everyone. If the weather suddenly changes you may have risks for which you are not prepared.

Risk Responsibilities

The responsibility for managing risk is shared amongst all the stakeholders of the project. However, decision authority for selecting whether to proceed with mitigation strategies and implement contingency actions, especially those that have an associated cost or resource requirement rest with the Project Manager who is responsible for informing the funding agency to determine the requirement for a contract modification. The following tables details specific responsibilities for the different aspects of risk management.
Risk Activity Responsibility Risk Identification: All project stakeholders
Risk Registry: Project Manager Risk Assessment: All project stakeholders
Risk Response Options Identification: All project stakeholders
Risk Response Approval: PM with concurrence from CO/PO/COTR
Risk Contingency Planning; Project Manager(s)
Risk Response Management; Project Managers
Risk Reporting; Project Manager

11.3 Risk assessment

In compliance with health and safety law there is a legal requirement to undertake a risk assessment of those hazards, which could cause harm to your staff and/or members of the public attending the event. A risk assessment is a systematic approach to the control of hazards and should be done in relation to the physical characteristics of the venue, likely audience behaviour, technical installations, nature of performance etc. It involves the identification of foreseeable hazards, evaluating the risks associated with them and considering what needs to be done to reduce the risks to an acceptable level. The process should be comprehensively documented and recorded. Write down all the activities and attractions, which make up the event and identify ways in which people (employees, the public and any contractors) could be harmed.

The risk of a hazard causing harm is a measure of the likelihood or probability of an accident coupled with the severity of the injury or loss. The simplest form of a risk assessment uses the common categories of High, Medium and Low.

11.4 . Risk mitigation steps

11.4.1 Venue Design

It needs to be sufficiently large to accommodate the size of the audience expected, taking account of the space that will be occupied by structures, the activities and the facilities provided.

The suitability of the site will also depend on the ground conditions, access routes, the provision of services, and any environmental constraints such as the potential for noise disturbance if there are houses or workplaces close to the venue.
A site-layout map should be drawn up showing the position of all the activities/attractions, the facilities and structures, the circulation routes and entrances and exits. There should be sufficient, well dispersed exits to allow for safe and rapid evacuation and a specific non pedestrian route may need to be identified for emergency vehicles.

11.4.2 Crowd Management

The objectives in restricting the numbers in attendance at any event is to avoid the dangers of overcrowding and to ensure that the means of escape in an emergency are adequate for the numbers of people being evacuated from the venue. To determine the total number of people who can inhabit a given space you will need to calculate the 'occupant capacity'. The following factors should be considered:

- Layout of the venue/site
- Viewing areas
- Seating arrangements
- Site/venue infrastructure
- Exit doors and routes
- Circulation areas
- Space required per person

The advice of a competent person and the fire authorities should be sought when determining the numbers of people who can be accommodated at the event. If the event involves the provision of seating only, then the number of seats the venue can hold will be a determining factor.
Capacities should be arrived at not only in terms of space allowance, but also through considering appropriate rates of entry and exit from areas of the facility within specific time limits. This involves monitoring crowd or audience levels in particular areas. A well-managed and secure system of advance ticket sales is the best method of avoiding over-capacity. Where this is not an option and there is a limit on attendance numbers, it is important to have some method for assessing the numbers admitted to ensure the 'occupant capacity' is not exceeded. This can be achieved by using designated entrances manned by stewards in a way, which will allow them to carry out an accurate form of head counting.

11.4.3 Structural Safety

The failure of any temporary structure in a crowded, confined space could have devastating effects. It is therefore essential to ensure that any temporary seating, staging, sound towers, large tents, marquees, stalls, attractions etc, are acquired from reputable companies, comply with the

appropriate standards and are erected by experienced persons using safe working practices. A competent person should provide certification on the stability of all such structures and you should be advised of the maximum wind loading which structures can withstand. Once the structure has been erected, a competent person (structural engineer) should 'sign it off' as being sound.
The risks associated with the supply and use of these structures can be minimized by adherence to the following safety guidelines:

- provision of a clear brief to the supplier
- provision of clearly defined site layout drawings
- provision of proper working drawings
- accurate setting out and leveling of bearing pads
- an organized work sequence and regular inspections
- adherence to design without site modification unless absolutely necessary
- regular maintenance and inspection of components
- adequate time for erection
- routine inspections during the period of the event

11.4.4 Barriers/Fences

Barriers may be required for a number of purposes including securing the site, controlling entrances and crowd movement, relieving crowd pressure, excluding people from un authorized or dangerous areas, protecting the public from dangerous equipment and preventing climbing on structures. Types of barriers can range from simple rope and post to Herras fencing. Front of stage barriers are likely to be essential for pop concert type events to enable those suffering physical distress to be removed to a place of safety and to displace any crowd surges away from the centre of the stage. The basic design criteria for barriers are that they are capable of withstanding the load which is likely to be placed on them. Obviously the effective use of such systems also depends on the provision of sufficient numbers of trained stewards.

11.4.5 Lighting

If a venue is intended for use outside daylight hours, all parts of a venue should be provided with suitable levels of artificial lighting to allow people to leave, enter and move about the venue and its surrounds in safety. An adequate emergency lighting system should be available as a back up if the normal system fails. Particular attention should be given to clear illumination of exits and directional signs, which indicate escape routes and clear lighting of entry and exit ramps and stairways.

11.4.6 Electrical Systems

Electrical installations for one-off events, particularly outdoor events, can be complicated and extensive and is definitely a job for an expert. If not installed and managed correctly, serious injury to employees and/or members of the public can occur. Only electrical equipment designed for outside use should be provided at outdoor events. The positioning of cables often causes problems where temporary supplies are used - where cables have to cross pathways and roadways, they should ideally be buried to protect them from damage and prevent trip hazards. Where this is not possible, cables should be covered with suitable matting or where there is a risk of vehicular damage be provided with additional sheathing or routed and supported overhead. Again professional help is essential. In all circumstances, inappropriate equipment and connections or inadequately protected circuits may cause electric shock and/or overloading, which can lead to lighting/sound failure or result in a fire.
A qualified electrician should check generators, including those, which have been brought to the venue by other persons such as caterers. Where necessary, they should be properly earthed and located away from public areas or surrounded with appropriate barriers. Ideally electrical generators should be used at events.

11.4.7 Fire Protection Equipment

An adequate number of the appropriate types of fire extinguishers and if required other types of fire suppression equipment should be provided in key positions, such as close to catering areas, power sources and fireworks firing zones.
Special care should be afforded the use of LPG cylinders at catering concessions, they should be caged, located in the outdoors and access should be limited to the user.
Dependent on the level of fire risk at an event you should consider designating a number of event stewards as a fire watch team. All stewards should know the location of the fire prevention equipment and how to use it. They should be trained to inform their immediate superior as soon as an outbreak of fire is confirmed and should only attempt to suppress a fire for a short time. In the case of fire the primary consideration is to evacuate those in danger and to inform the emergency services. Emergency action procedures for dealing with all outbreaks of fire should be written down and agreed with the Fire Authorities.

11.4.8 Environmental Issues

Issues of public health at events such as: food hygiene, sanitary and drinking water provision and noise/ air pollution are monitored and regulated by Environmental Health Officers. Environmental Health Officers with responsibility for monitoring the effects of noise and air pollution, drinking water provision and sanitary accommodation operate from within the local authority structure. The

relevant Health Authority Environmental Health Officer has responsibility for all issues related to food hygiene at event catering concessions.

11.4.9 Noise

Site design, layout and management systems are important in minimizing the environmental impact of noise. The location of the stage, the orientation of the speakers, the type of sound system, the control of sound power levels, and the duration and timing of the entertainment can all be engineered to reduce the noise impact.

11.4.10 Catering and Food Safety

The event organizer should ensure that all caterers operating on their behalf are reputable, their staff are appropriately trained and food handling and preparation techniques are safe. Caterers operating concessions should be asked to produce food stall licences, occasional food permits (where appropriate) and where required a casual trading permit from the local authority. The suppliers of catering outlets must have the facilities required in order to prevent the contamination of food.

11.4.11 Minor Incidents /Issue

The incident may affect persons in attendance at the event, cause a delay in a specific aspect of the event or disrupt the smooth running of the event in some way. The responsibility for activating a pre-planned recovery mechanism to effectively bring an incident to resolution must be clearly defined in your event procedures and contingency plans. Undertaking a what if exercise at the planning stage can assist in identifying the procedures you need to put in place to recover from such occurrences and allow the event to continue.
Examples of such incidents include difficulties with suppliers, the malfunction of equipment, the resolution of crowd management issues etc.
It is important to appreciate that a minor incident could have the potential to develop into a major incident if not properly planned for and managed.

11.4.12 Major Incidents

An incident such as a major fire, a serious accident involving a number of casualties, crowd disturbances which cannot be controlled by event staff, a bomb scare, structural collapse or even the effects of bad weather can necessitate control of the venue/event to be relinquished to the emergency services. The response to a major incident will normally require a multi-disciplinary approach in which the event management staff, the Health Authority, and the Local Authority may all play a part..

11.5 Risk Contingency Planning

Contingency planning is the act of preparing a plan, or a series of activities, should an adverse risk occur. Having a contingency plan in place forces the project team to think in advance as to a course of action if a risk event takes place.

- Identify the contingency plan tasks (or steps) that can be performed to implement the mitigation strategy.
- Identify the necessary resources such as money, equipment and labor.
- Develop a contingency plan schedule. Since the date the plan will be implemented is unknown, this schedule will be in the format of day 1, day 2, day 3, etc., rather than containing specific start and end dates.
- Define emergency notification and escalation procedures, if appropriate.
- Develop contingency plan training materials, if appropriate.
- Review and update contingency plans if necessary.
- Publish the plan(s) and distribute the plan(s) to management and those directly involved in executing the plan(s).

Contingency may also be reflected in the project budget, as a line item to cover unexpected expenses. The amount to budget for contingency may be limited to just the high probability risks. This is normally determined by estimating the cost if a risk occurs, and multiplying it by the probability.

Associated with a contingency plan, are start triggers and stop triggers. A start trigger is an event that would activate the contingency plan, while a stop trigger is the criteria to resume normal operations. Both should be identified in the Risk Register and can be embedded, example; the stop trigger can be included in the contingency plan field.

11.6 Tracking and Reporting

As project activities are conducted and completed, risk factors and events will be monitored to determine if in fact trigger events have occurred that would indicate the risk is now a reality.Based on trigger events that have been documented during the risk analysis and mitigation processes, the project team or project managers will have the authority to enact contingency plans as deemed appropriate. Day to day risk mitigation activities will be enacted and directed by the project managers. Contingency plans that once approved and initiated will be added to the project work plan and be tracked and reported along with all of the other project activities. Risk management is an ongoing activity that will continue throughout the life of the project. This process includes continued activities of risk identification, risk assessment, planning for newly identified risks, monitoring trigger conditions and contingency plans, and risk reporting on a regular basis.

SUMMARY

To summarize the findings of the study:

- Majority of participants seems dissatisfied with different dimensions of service quality offered to them. From paired T test it is concluded that there is no significant difference between the mean of each dimensions. Although the there exists a high level of internal consistency among the 15 items of service quality constructs. While measured Cronbach's alpha a 0.89 result was obtained which indicates the existence of high reliability among items of service quality and this implies that a better service quality can be provided by the organizer fulfilling all dimensions concurrently.
- Based on AHP methodology Vendor (V1)-M/s Ajay travels is most preferred vendor with weight of preference (45.73%).There is a little difference in the weights of the second(V2) and third (V3) ranker vendors, but in case of compromise second ranked vendor can be chosen. Similarly in case of Vendors V4, V5 and V6 one of them can be chosen in state of equal results.
- Based on Network charts and critical path calculations, a total duration of 225.4 days is required to complete all critical activities along the network diagram with four resources required resource leveling on day to day basis.
- Proposed revenue sources for PETROTECH-2021 are grouped into following categories:
  (v) Revenue from Delegate registration Fees (INR 34.44 Crores)
  (vi) Revenue from Sponsorships (INR 22.50 Crores)
  (vii) Revenue from Buyer-Suppliers meet(INR 64.69 Lakhs)
  (viii) Revenue from Exhibition Stand (INR 78.95 Crores)

  Total projected revenues from all streams in case is : INR 136.53 Crores, while budgeted cost is INR 10 Crores. Also, breakeven, we need to sell 11905 conference tickets to recover the fixed cost at the unit price of INR 17788 .

- Based on job assignment problem , it is learnt that during event competency planning is very important and resources can be optimized using Operation research techniques such as Hungarian Assignment model.

RECOMMENDATIONS

As presented in the findings of the study all the five dimensions of service quality have significant close relation and impact on customer satisfaction. So working to improve these aspects will contribute to the overall customer satisfaction at such event. Based on the findings of the study, the following recommendations are provided by the researcher:

- Rather than selecting vendors on the basis of past experience and preference , organizers may employ Analytical Hierarchical Process to reach to an optimal solution. This will help to support the decision with scientific inputs.
- Organizers can use new Technology such as wearable RFID wristbands, Mobile apps and virtual reality to improve the experience of participants and reducing huge engagements of workforce.
- A proper scheduling of tasks should be carried out, with a focus on critical activities that can delay the event. All kinds of plans such as marketing, staffing etc. should be followed as per approved plans of conference committee.
- Before, investing in such mega events, organizations should give close attention to sources of incomes and expenses. For proper pricing strategy , breakeven is necessary to be calculated to recover the cost incurred for organizing such events.
- The study can further include routing and time window scheduling of vehicles, as during such events city transportation is main concern.
- Although study focus on generalize risk management tactics during such events, however a probabilistic approach can be used using optimization techniques risk tree techniques.
- For a good event planning , all four pillars of event management i.e Time ,Finance, Technology and Human resource needs to work together and synchoronise.

Limitations of the study

- Availability of two past events does not help in accuracy for estimation of long term. An average percentage increase over base data considered for easy calculations. however, no statistical tool considered to forecast the demand and effect of other socio-economic factors such as inflation , income etc.
- This study takes into account estimation of several guess inputs not the actual input due to non availability of data.
- Sample for the survey consists of majority of Public Sector employees and therefore demographic difference could not be visualized.
- Though there were so many limitations were there , but the quality of the work did not deteriorate .Efforts have been made to improve it further by the applications of Operation Research Technique considered in the present study.

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APPENDIX-A

Survey Questionnaire

OBJECTIVE:

This survey is a part of academic dissertation research work towards MBA(Oil and Gas Management) of University of Petroleum and Energy Studies(UPES),Dehradun with an objective to study how different participants/stakeholders expect & perceive the service quality offered at an International event.

PURPOSE:

Information provided by you is important to us and shall be used as an academic input for statistical analysis, hypothesis testing and empirical modeling of results. These results will be the basis of recommendations that may be used to organize PETROTECH** '2021 by M/s Indian Oil Corporation Ltd. (IOCL).
(**The PETROTECH is a series of International Oil and Gas Conference and Exhibition held biennial to exchange views , expertise and experiences in Oil & Gas industry).

QUESTIONARIE FRAMEWORK:

The survey has been broadly classified into **TWO** categories i.e **EXPECTATIONS & PERCEPTIONS (EXPERIENCE)** of an offered service-detail description of these dimensions, interpretation and rating methodology follows in the respective sections of the survey.

You are requested to provide information based on your recent experiences and /or close preferences (In case you have not been a participant of any such international event in the past). This is a voluntary survey and the information provided by you is anonymous (you need not to mention your name/identity).This survey will take approx. 10-15 minutes to complete. However, you can save your information and continue later anytime during the survey, by clicking **"SAVE AND CONTINUE LATER"** tab at the bottom of survey. Once you finish the survey, click on **"FINISH SURVEY"** to submit your responses.

1. How frequently in a year do you visit any International Event/Conference/Expo (of any area of your interest)?

- o 1- 3 times
- o 4-6 times
- o 7+ times
- o Never

2. If your response to above question is "Yes" , then please tell us which one of the following stakeholder position best describes you as participant.
NOTE: If you have not attended any such event , then choose "Not applicable " in the option.

- o Owners, Stockholders & Investors
- o Government & regulators: Local, National, International
- o Plenary/Sectional Speaker, Paper presenter etc.
- o Academician, subject matter expert(SME's)
- o Bankers & Creditors
- o Buyers, customer, Prospects
- o Partners & suppliers
- o Professional & Industries association
- o Management/Organizer
- o Employees, union & work councils
- o College student
- o Media: Local, national, international ,trade, financial
- o NGO
- o Communities & Interest groups
- o Not applicable
- o Other (please specify):

3.Have you ever attended any International conference/exhibition/event in Oil & Gas/ Petrochemical industries such as PETROTECH, SPE, OPEC, BASRA, ADIPEC etc. /or any similar event?

- o Yes
- o No
- o Can't Say
- o Other -Please specify

4. This section deals with your opinion about an International event and its venue. Please, show the extent to which you think an event/venue 'SHOULD' possess the following features. There are 22 statements followed under the dimensions of "EXPECTATIONS". Provide your response to each one of these statements. (1= Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5= Strongly Agree)

No.	Statements	1	2	3	4	5
1	Event venue should have modern equipment complying to highest international standards & features.					
2	The Physical facilities should be visually appealing with clean ambiance.					
3	Management staff should be well dressed with a neat appearance and should possess adequate knowledge/skills to support International					

	visitors.					
4	Running orders (a brief schedule and outline of the event's proceedings), Briefing notes for Provost/Minister/Speakers & teleprompters should be well placed in order.					
5	Event timelines and sequences should be strictly followed.					
6	All kinds of services should be performed with right deliverable at the first time					
7	All the timelines for set services should be strictly followed as promised					
8	All the relevant facts/records should be updated and presented accurately.					
9	Event Staff should be polite, courteous and willing to help visitors.					
10	Important announcements/changes in scheduled programme should be immediately informed to the participants/speakers.					
11	Assistance staff should never be too busy to respond to visitor's requests and provide individual attention.					
12	Visitor's issues should be sincerely resolved at priority by the management staff					
13	Eminent speakers/Intellectuals should be invited with a good quality researched work, Journals & path-breaking innovations in their field.					
14	Non formal discussions/debates around new technology , issues and practices should be included in the event programme					
15	There should be an arrangement for free consultation and discussion around business strategies/expansion plans/development of an overseas prospective client base					
16	Moderator, facilitator and centralized helpdesk should voluntarily help the visitors and instill trust/confidence.					
17	Conference reading material should be of the highest standard with good quality of books, journals, and e-storage devices.					
18	Event venue should have fair connectivity to city hotels with advanced charting out of traffic route/festivals seasons scenarios.					
19	Event timings should be convenient to the visitors of all age groups/genders/cultures.					
20	Visitors with special needs should be accommodated with parking/drop off areas, approaches, entrance, elevators/lifts ,rest rooms, BSL interpreter, Braille, note taker etc. that effectively guarantee their fair access to the conference venue					

21	All overseas visitors should be treated with a cordial & in deference manner, which should be appropriate to their culture, food preferences and linguistic salutation/Valediction gesture etc.					
22	Overall perception of participants should be measured through post event survey at the time of conclusion or latter through emails/otherwise.					

5. There are 22 statements followed under the dimensions of PERCEPTION. Provide your response to each one of these statements. (1= Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5= Strongly Agree)

No.	Statements	1	2	3	4	5
1	Event venue had modern equipment complying to highest international standards & features.					
2	The Physical facilities were be visually appealing with clean ambiance.					
3	Management staff were well dressed with a neat appearance and possessed adequate knowledge/skills to support International visitors.					
4	Running orders (a brief schedule and outline of the event's proceedings), Briefing notes for Provost/Minister/Speakers & teleprompters were well placed in order.					
5	Event timelines and sequences were strictly followed.					
6	All kinds of services were performed with right deliverable at the first time					
7	All the timelines for set services were strictly followed as promised					
8	All the relevant facts/records were updated and presented accurately.					
9	Event Staff were polite, courteous and willing to help visitors.					
10	Important announcements/changes in scheduled programme were immediately informed to the participants/speakers.					
11	Assistance staff was never be too busy to respond to visitor's requests and provide individual attention.					
12	Visitor's issues were sincerely resolved at priority by the management staff					
13	Eminent speakers/Intellectuals were invited with a good quality researched work, Journals & path-breaking innovations in their field.					

14	Non formal discussions/debates around new technology , issues and practices were included in the event programme					
15	There were arrangement for free consultation and discussion around business strategies/expansion plans/development of an overseas prospective client base					
16	Moderator, facilitator and centralized helpdesk were voluntarily helping the visitors and instill trust/confidence.					
17	Conference reading material was of the highest standard with good quality of books, journals, and e-storage devices.					
18	Event venue had fair connectivity to city hotels with advanced charting out of traffic route/festivals seasons scenarios.					
19	Event timings were convenient to the visitors of all age groups/genders/cultures.					
20	Visitors with special needs were accommodated with parking/drop off areas, approaches, entrance, elevators/lifts ,rest rooms, BSL interpreter, Braille, note taker etc. that effectively guarantee their fair access to the conference venue					
21	All overseas visitors were treated with a cordial & in deference manner, which was appropriate to their culture, food preferences and linguistic salutation/Valediction gesture etc.					
22	Overall perception of participants was measured through post event survey at the time of conclusion or latter through emails/otherwise.					

6. How would you like to receive information about such International event?

- o Internet
- o E-newsletter
- o Newspaper
- o Magazine
- o Radio
- o Bill board/Street signage
- o Word of mouth
- o Other (please specify):

7. What is your gender?

- o Male
- o Female
- o Transgender
- o Don't Want to disclose

8. What is your age?

- o 12 yrs or under
- o 13-19 yrs
- o 20-29 yrs
- o 30-39 yrs
- o 40-49 yrs
- o 50-59 yrs
- o 60-69 yrs
- o 70 yrs or over
- o Prefer not to say

9.What is the highest degree attained by you?

- o No formal Education
- o Vocational training
- o High School
- o Diploma
- o Undergraduate Degree
- o Master Degree
- o Professional
- o Doctorate
- o Others(Please specify)

10. To which country do you belong? Choose any country from the drop down menu (Click the cursor on the arrow below).

11. What is your ethnicity? Choose any option from the drop down menu (Click the cursor on the arrow below).