

# Strategic position of national procurement information technology essay

[Technology](#), [Information Technology](#)



This chapter represent a brief overview of research approach and methodology used to carry out this study. This will provide the rationale for adopting particular study, moreover, data collection method, research approach and research strategy are also presented in this chapter. It is also discussed in this chapter about the suitability of research approach and strategy for this project. This chapter also gives justification about choosing a particular methodology for carrying out the project work. This research methodology was adopted on the basis of scope, objectives and limitations (such as availability of data and time constrains) of the project study and thus forms a relation between the information available and data required for the study.

#### **4. 1. Research Strategy and Approach**

According to (Saunders et al., 2009), the first step towards designing a research is to decide the nature of project work as deductive or inductive followed by choosing the characteristic of the work as qualitative or quantitative. Deductive approach is based on, a hypothesis, theory, tool or framework, which is developed with the help of literature review (figure 4. 1). Hypothesis is tested in real life situations and will give information about the particular question with limitations and gaps. All collected data and literature will be tested or rejected by researchers. The deductive approach represents the commonest view of the nature of relationship between theory and research (Bryman and Bell, 2007).

## **Figure 4. 1 Deductive approach**

### **Inductive Approach**

On other hand, an inductive approach begins with collecting real life data through experiments and observations to develop the theory based on collected data (Easterby-Smith, 2008 and Saunders, 2009). Inductive reasoning is the basis of inductive approach i. e. the researcher analysis the suitable application in the desired area to form an objective and develop hypothesis based upon that objective. Then the data will be collected by conducting survey or experiments in order to support the project and thus reaches a conclusion. The inductive approach is illustrated in the figure (4. 2) given below:

## **Figure 4. 2 Inductive Approach**

### **4. 2 Research Strategy**

It is very important to establish a practice and style of research which is to be used for this project. There are mainly two types of research namely, qualitative research and quantitative research (Fisher, 2004) . Qualitative design is more of objective in nature and refers to the collection of data in the form of words through interviews and discussion sessions. Where the Quantitative research deals with more of numerical data available collected during interview, surveys and from the published literature. For this study, we have adopted qualitative research strategy for this research project due to its subjective nature and the results will be presented in descriptive form. The main reasons to choose qualitative method are to look for qualitative information rather than quantitative information. Other reason to choose

qualitative method is because the research questions can be better answered using qualitative data rather than numerical data. One of the reasons to use qualitative method was difficulty in obtaining the quantitative information from managers as they consider that providing this data may violate company policies because quantitative design deals with collecting data which can be in the form of, or can be expressed as, numerals (Easterby-Smith, 2008).

### **Research Approach for this Project and its Rationale**

Considering the nature of the project, which suggest a framework for supplier selection tool health care procurement of medical devices, a deductive approach is used. In this approach, the literature is reviewed first to analyse the current supplier selection procedures and practise in healthcare. The rationale for choosing deductive approach because the literature is already rich with supplier selection approaches and considering the nature of healthcare and its criticality, it is will be useful to discuss and analyse the organisations behaviour. The project is based on qualitative data collection method but the questionnaire also contained some quantitative data as well. The rational for this approach was to prepare a set of questions and send them to all the interviewees in advance so that they can prepare themselves for the interview. This technique would help to reduce the duration of the interview and give chance to the interviewee to have all required information beforehand.

### **4. 3 Research Design**

Research design is very critical for data collection. There are a number of methods available upon which research design can be based. Yin (2009) classified these methods into five types: experiment, survey, archival analysis, history and case study. A summary of these research methods is given in table below:

#### **Table 4. 1 Classification of Research Methods (Yin, 2009)**

The selection of suitable method for research is based on three criteria as the type of research questions, the extent of investigator's control over behavioural events and the degree of focus on contemporary events as opposed to history. It is evident that all the research methods up to certain extent overlap each other as shown in above table. Therefore selecting an appropriate method is critical to the success of research work. The method which is chosen for this research study is based on single case study methodology.

#### **4. 3. 1. Case Study**

Case studies are used as a strategy for conducting research which is involved with the investigation of a specific working principle to enhance the knowledge and its causes. Case study approach is not suitable research methodology to study how the entire organisation performs but it can be used as to explore the specific even or department of the organisation (Noor, 2008). As its is mentioned that case study is an empirical study which investigate a specific event or occurrence within its real life context and uses multiple sources of evidence. In case study, the possibility of the researcher

to make an in depth analysis of an event or occurrence is greater than any others research methods. Case study uses multiple sources of evidence which allows the researcher to lessen the possibility of personal bias and findings of the research can be supported by building convincing arguments. Case study strategy can be divided into four types of research designs based on two dimensions such multiple case versus single case and holistic case versus embedded case (Yin, 2009). A single case study is usually used where it is characterised as a critical case or alternatively, a unique or an extreme case (Saunders et al., 2009). According to Yin (2009), a single case study can be used to test a well formulated theory. Multiple case studies on the other hand, are the same study which may have more than one case and is simply an extension of single case study. The researchers can use multiple cases to confirm whether the findings of one case occur in other cases and as a result it generalises the findings. The second dimension of Yin (2009) is holistic versus embedded which refers to the unit of analysis.

### **4. 3. 2. Rationale for the case study**

The case study is said to be holistic when it considers the entire organisation as a whole and if it deals with more than one unit of analysis say different groups or departments then it is said to be embedded. Considering the above explanation, the research adopted in this study is holistic multiple cases which allows the researcher to perform an in depth analysis in the chosen subject area.

## **4. 4 Data Collection**

All the information gathered in the project was based on two types of research data, one is primary research and other is secondary research. The findings of the research study are mainly from the primary research, whilst the secondary data was also obtained to support the primary research findings. These are further explained as follows.

### **4. 4. 1 Primary Research**

It is one of the difficult and challenging data in terms of the collecting information and engagement with organisations. In this regard a case study research methodology was used to acquire primary data. The primary data collected through case studies are qualitative in nature. There are various ways to collect qualitative data like in depth interview, group focus discussions, participatory observation and from published documents (Bryman and Bell, 2007). In this research, in depth interviews were conducted with different people (key informants) to gather information and used as the primary data. Though the interviews can be structured or semi-structured but we used semi-structured open-ended questionnaire to collect data (Saunders et al., 2009). The semi-structured interviews for this research are also referred as in-depth or non-standardised interviews. Semi-structured interview is referred to as a " wide-ranging category of interview in which the interviewer commences with a set of interview themes but is prepared to vary the order in which the questions are asked and to ask new questions in the context of the research situation" (Saunders et al., 2009). The semi-structured interview is further classified into one-to-one interview and one-

to-many interview. This research adopted face to face interview (NHS Healthcare) and internet interview using Skype software (Pakistan Healthcare professional). The other alternative to face-face and internet interview is telephone interview. An interview guide is a "structured list of issues to be addressed or questions to be asked in semi structured interviews" (Bryman, 2007). The questionnaires for the interview were carefully prepared on the help of the study supervisor. Also, the researcher was very cautious in avoiding the bias of nature literature review and through this way the reliability of the information was not harmed. Totally, three interviews were conducted and the company, date and time of the interview are shown in Table 4. 2. The interviews were also recorded with consent of interviewees that gives the research the possibility to follow up the interview data in a secure way.

### **Name of the company**

### **Name of the person**

### **Designation**

### **Date of Interview**

### **Type of Interview**

### **Duration**

Health Facilities Scotland(NHS National Services

Scotland)MikeBlackmoreEquipping Manager31/1/2013In Person55

MinutesNational procurement(NHS National Services Scotland)Paul

HornbyOutsourcing ManagerMedical Devices7/2/2013In Person70



minutesPakistan Steel Hospital(Pakistan Steel Mill corporationM. Umber  
BhattiManagerCentral Medical Stores15/1/2013Telephone40 Minutes

## **Table 4. 2 Information about interviews**

### **4. 4. 2 Secondary Research**

The secondary research data which already exists and it is cheaper to use and easier to obtain as well (Bradley, 2007). An extensive literature review was carried out in order to collect the secondary data. That data provided a basic knowledge of the previous research on topic. This also included the review of past research which is related to purchasing, strategic purchasing and supplier selection, and supplier evolution and supplier management. Most of the research data was collected from the journals and some previous written thesis. Moreover, finding of the journal article gave good understanding and suggestion to the reader (Creswell and Miller, 2000). We used Emerald, Science direct, Wiley and JSTOR as sources for the journal article. More than 100 journals were reviewed for collecting data and information to structure the theoretical framework. Though the information was very useful but there was dearth of research articles on supply chain management in healthcare and specifically to this research topic.

## **Chapter 5- Results**

This chapter is based on the primary research data which is based on the two different case studies. Case study 1 is related to supplier selection in NHS Scotland and case study 2 is related to supplier selection in Pakistan. Both of the case studies are related to the healthcare sector. In these case

studies the purchasing functions discussed especially purchasing function in terms of the supplier selection related to medical devices.

### **5. 1 Case study 1: National Procurement (NHS Scotland)**

NHS Scotland's Procurement Centre of Expertise established in 2005 to provide goods, services technology solutions and procurement advice to NHS Scotland's 14 Regional Health Boards and 8 Special Health Boards. National procurement is the part of the National Health Services Scotland Procurement (NHS NSS Scotland) and supporting boards with procurement of different commodities is one of the core function of the National procurement, its is base for the outsourcing of goods and services to third party. It is the competence of the organisation to establish the procurement channel which can be utilised by the all the NHS trust. There is mandatory function of the organisation to make sure that all the procurement is carried out according to the European Directives for Procurement.

### **Figure 5. 1 Strategic position of National Procurement (Hornby, 2012)**

The main objective of the National Procurement is to help the boards in term of acquiring goods and services. The overall spending of the National procurement for the third party outsourcing is £ 2. 5 Billion per year. The overall all procurement is about £800 million in which medical devices account for the £250. There are around 80 contracts for the procurement of medical devices.

## **Figure 5. 2 NP Procurement Distributions**

The National procurement is about 300 employees and turn over of around £800 million. The company is procuring around 200, 000 different healthcare products and with accessories. It can be notices that why that much amount of products, these products includes products like hip joints with 20 different sizes with more that 100 attachment of different sizes. It is evident from the amount and number of products being procured that this is not an easy job to be procuring products related to health.

### **5. 1. 1 Supplier Selection process**

The supplier selection is mainly based on the different stages, in which different decisions are made. The supplier selection prices discussed here will be mainly analysed from the interview with concerned organisation. The decision making is key for the procurement of medical devices. The decision is mainly based on the procurement strategy by the management. The decision making tool (Figure 5. 3) is mainly used by the procurement professionals and procurement managers of the concerned trust to decide which route to chose. Figure 5. 3 Decision matrixes for procurement (Information for Buyers, Scottish Government)

### **5. 1. 2Purchasing strategy**

Strategy will enhance the correct supplier selection and it will make things streamline in the supplier selection. The strategy is developed procurement professional for acquiring medical device in that strategy the buying is justified. This strategy is mainly based on the information about the stakeholders mainly users which will evaluate the medical device and

suppliers. Current Contract Status: details of any current contracts in existence. This may help to identify opportunities for aggregating demand and/or collaboration with other organisations Supply Market Analysis: Market analysis to understand the market landscape and identify key players Risk Management: Identification and Assessment Option Summary with Benefits: the options available to progress the procurement. These may be based on the procurement route, the availability and use of collaborative arrangements and/or the cessation of service. Opportunity Assessment: considering the opportunities available from the procurement in line with the Best Value Triangle options Sustainable Procurement: details of the social, economic and environmental elements of the proposed procurement that should be addressed through the Specification / Evaluation Criteria / Key Performance Indicators Contract Management: how to implement and manage the contract, facilitate access for users and ensure the effective transfer and close of the contract. Anticipated Outcomes/Benefits: The Procurement Officer must provide details of the anticipated outcomes following the proposed procurement including benefits where applicable. It is noted that monetary benefits may not always be available in the case of a contract re-let where the satisfaction of need is priority

### **5. 1. 3 Planning**

The next stage will be the use of advisory panel which is consists of the different people all over from the trusts. This is done by asking volunteers to come up and give their expertise in acquiring new medical devices. These people are from different section of the health specialties, people like end

user who will be accessing the practical application of the device. There is a major contribution from the medical physics department as they will be repairing and maintaining the medical equipment. The scope is advised which is the basis of the procurement process. The document which is to be prepared should include Specification, Selection and award criteria, Pre-Qualification Questionnaire (PQQ), Invitation To Tender (ITT) - including Terms and Conditions. It has been found that it is beneficial to prepare documents before the advert is made. This whole process is very time taking and needs lots of meetings and information gathering. Once the advert is made, there is a time required mentioned in the Official Journal of the European Union (OJEU tool kit) to receive the initial offers.

### **5.1.4 Selection Criteria**

Evaluation of all received offers will be based on the minimum set of criteria which are to be mentioned in the advert. These are essential criteria which are mentioned in every tender special when buying a medical device. When this was asked in the interview that what are the minimum selection criteria's which are to be used, it was revealed that following the minimum criteria's. The qualification stage, which involves an examination of the capability and suitability of the potential suppliers to perform the contract, and is used to produce a short-list of suppliers to whom the Invitation To Tender (ITT) document is issued. Equipment should be CE marked. It should meet or be equivalent to quality standards of ISO 13485[1]. Economic and financial standing

## Specification

Providing technical specification is very challenging task, the initial evaluation of all the suppliers will be mainly based on the technical specification provided by the end user. The specification is an important aspect of the acquisition of medical equipment, and it requires multi-disciplinary input to ensure that user needs are met. A specification aims to set out clearly the description of the customer requirements, and it should be the document against which tenders can be compared. In order to compare like with like, the specification should be unambiguous about which facilities or features are mandatory and which are merely desirable. A balance needs to be struck between taking account of user preferences, and writing the specification in a way that may limit reasonable competition. The timing and frequency with which specifications are required will depend on the nature of the equipment under review, particularly the value of the equipment and the pace of technological change. For high cost items, the specification is likely to be reviewed at the start of each procurement; for low cost items, bought on a regular basis, reviews are likely to be much less frequent. Trusts should ensure not only that the process for drawing up specifications is robust by involving an appropriate mix of users, but also that specifications exist and are sufficiently up-to-date (audit Report). Pre-purchase Questionnaire: A checklist provided to suppliers, mostly for medical devices. Among the information asked is the following: CE marking or other safety standards (e. g. ISO9001, 12001, 13485) Service/spares, installation information Training required, if provided or not Year product on market Repairs, third party or not Is installation necessary Software upgrades

notification availabilityIonising radiation hazardDecontamination  
procedureWill it be reprocessedCan be cleaned/ autoclaved

## **5. 1. 5 Selection and Award Criteria**

The distinction between selection and award criteria is crucially important. Selection criteria are focussed on " the bidder" and award criteria is focussed on " the bid" and purchasers must maintain a clear distinction between both throughout the procurement process. This means that issues/questions which are appropriate to the selection criteria must be addressed at the selection stage and cannot form part of the award stage (even if they were omitted from the selection stage in error) and vice versa. The selection stage, often known as the " pre-qualification stage", involves an examination of the suitability and capability of the potential suppliers to perform the contract that will be awarded at the end of the competition. The criteria used for selection must be appropriate, relevant and proportionate to the particular procurement. The selection process should be a " backward-looking, not forward-looking" process. That is, the criteria for selection must concentrate on the general suitability and capability of the supplier for the project.

## **Issuance of ITT**

ITT document should include complete information for future potential suppliers about the medical device to be procured. The content will be specific to each requirement however there are a number of generic documents that you should include in the ITT pack. Whilst developing the documentation it is likely that the procurement officer will draw information

from the Developing Strategy stage of the Procurement Journey. If following a "restricted" procurement procedure, the ITT will only be sent to those who were successful at the Pre-Qualification Questionnaire (PQQ) evaluation stage. These are the mandatory requirements which should be included in the tender document. Instructions to tenderers e. g. timetable, submission deadline, e-tendering process, including information regarding the impact on a public body of the Freedom of Information (Scotland) Act 2002 and the Environmental Information (Scotland) Regulations 2004. Background and overview of the tendering and evaluation process including details of presentations and site visits, if applicable. Terms and Conditions of contract which will apply to any resulting contract with the principle supplier. Specification and technical requirements. Response requirements. Quality questionnaire. Pricing schedule. Form of tender. Acceptance of Terms and Conditions. For frameworks inclusion of mini-competition guidance.

### **5. 1. 6 Award Criteria**

There will be available building of the criteria for medical devices, these criteria are finalised through the literature review and interview with the NHS procurement professionals. The ration in (Table 5. 1) is used to evaluate the suppliers and maintain the trade off between Quality and price. Commodity

Type	Description	Suggested Price/Quality Ratio
Routine	Low Value/High Volume	Many Existing Alternatives
90: 10	to 80: 20	Leverage
High spend area	Many Sources of Supply	Commercial involvement can influence price.
70: 30	to 60: 40	Strategic
Strategic to Operations	Few Sources of Supply	



Large Spend Area-Specification may be complex  
 Bottleneck-Few Sources of Supply and alternatives available-Complex specifications-If supply fails, impact on organisation could be significant  
 Table 5. 1 Price Quality ratio (Information for Buyers, Scottish Government)  
 The award criteria depend on following factors:

## Quality

Quality is one of the baseline criteria when buying medical devices. Quality in terms of medical devices means there is value for money. It must be made sure that equipment procured should be good enough to meet the standards set in the criteria. The weighting given to quality is 50% of all the marks. It also depends on the equipment and strategy by the SCOPE in which it is decided that how much score is given to quality. If the equipment which is specialised and there are limited technology related then there will be less scoring to quality.

## Price

Price/financial evaluation criteria should include: Whole Life Cost comparisons  
 Quantifiable financial benefits arising from the technical evaluation (e. g. speed, fuel or electricity consumption, coverage, shelf life etc)  
 Fixed or variable pricing  
 Cost of components, spare parts, consumables and servicing  
 Risk analysis and financial appraisal (for major contracts of strategic importance, especially those of an innovative nature)  
 The total cost of owner model is used to analyse the financial impact of whole life cycle of the medical device. It is very clear that very few tenders have been decided on the only price basis. So price is taken as the one of the major criteria's

but once the award of contract is based on the economically adventurous in nature so other factor will be considered along with price. The price is given major share in the criteria which can be accessed in the table 4. 1

### **After sales Service**

After sales service includes the response time in the even of failure of medical device. After sales service is one of the criteria which will establish that how contractor is going to manage the equipment once delivered and installed. In the event of supplier being international so it can be asked to present how it is going to provide after sales services.

### **Delivery**

Delivery has been given among 5% in the total criteria scores. The marks will be given on the basis of early to late delivery. The maximum marks will be given to the supplier who will supply the required medical device in the least mentioned time but not later the maximum delivery which is mentioned in the tender documents.

### **Technical Capability**

In technical capability supplier will be asked to prove the technical qualification related to medical device. The technical capability is qualitative in nature so score are given on the basis of excellent, very good, fair, poor or not acceptable. In technical capability supplier can also be asked to provide the list of trained engineers of the required medical device.

## **Financial Position**

This is one of the criteria which are specially used when buying the medical device which has the huge amount of capital allotted to it. The financial position is will show that how strong is the supplier and its is made sure that supplier is not going to be bank corrupt or he has the enough financial resources to deliver the medical device on time. It is also in subjective on nature the scoring will be more like qualitative (excellent, very good, fair and poor).

## **5. 2 Case study 2: Procurement process of Pakistan Steel Mills Hospital**

Pakistan Steel Mills Hospital is a service body of Pakistan Steel Mills. Pakistan Steel Mills Hospital was chosen for case study on Pakistan because this hospital represents similar supply chain management practices of majority of healthcare sector in Pakistan. This case study will cover all the government rules which are applicable in procurement process being part of the government organisation.

### **5. 2. 1 Procurement process**

The procurement process is usually based on the procurement which is used in whole of the steel mill. There is particular department which deals with all the procurement process. It depend on the financial capacity of the medical devices that will decide that, which type of procurement process (Table 5. 2) will be used. Here only procurement process which is used for the procurement of medical devices will be discussed. Table 5. 2 Financial threshold (PPRA 2004)

## **5. 2. 2 Planning for procurement**

The planning starts with establishing the need of medical device to be procured and it discussed mainly in Pakistan Steel hospital with user department, GM medical and the stores department. The market research is conducted by the user and Biomedical engineering department to see the current best models available. This is established by contacting the suppliers of medical devices with brochures and price (to get the estimate of price). Financial approval is required by the Pakistan Steel laws before procuring any equipment or services. Document is prepared with attached brochures and estimated price to get the approval from competent authorities. Once approval has been made then tender documents is to be prepared which will be used for the procurement of medical device. There is one major problem with procuring medical device is that Pakistan steel keeps the record of all the procured equipment with specific coding, all the required information (specification, supplier, price) is available in that data . As technology changes occurs in medical devices so it's a lengthy and time taking process to change all the data once procuring the same medical device or there is re-buy option. Its is also necessary to establish which route should be used to buy the medical device. Its has been seen and informed that Single stage with two envelope bidding procedure is used tom procure medical devices. Procurement can be planned either on the basis of quarterly releases of the project funds or budgetary allocations. The quality of products/services and their specifications are usually based on the quality scope defined in the approved documents like PC-1 etc. However the approved specification provides the minimum acceptable standards and the procurements should

achieve or exceed the given specification. Specifications are prepared by the users which are mainly people from the Biomedical engineering department, Central medical store and nurses and doctors. Figure 5. 4 One stage bid for medical devices

### **5. 2. 3 Invitation for Tenders**

Invitation of the tenders is made by the advertisement mainly published at least two news papers one English and second in other language.

Determining the nature, quantity and quality of goods and services required to be procured or acquired, the appropriate time scale and the procedure to be adopted for the same. The bidding documents are issued to all the interested parties. The bidding documents include the following sections:

(Pakistan Steel Mills) Invitation for Bids (IFB) Instructions to Bidders (ITB) Bid Data Sheet (BDS) General Conditions of Contract (GCC) Special Conditions of Contract (SCC) Technical Specifications and Drawings (TS) Forms and Procedures (FP) Bid Form and Price Schedules Bid Security Form Form of Contract Agreement Performance Security Forms Bank Guarantee Form for Advance Payment Form of Completion Certificate Form of Operational Acceptance Certificate Change Order Procedures

### **5. 2. 4 Supplier Selection**

There are mainly two steps for supplier selection, one is the evaluation of the supplier once the bids are received against issued tenders and another one is financial opening means price. There are certain areas where suppliers selections are made. These criteria's are mainly are prepared by the end users mostly the people from Pakistan Steel hospital. These Criteria mainly

depend on the different types of the equipment being purchased. It has been noticed that due to the poor quality of the equipment more and more of the organisation are using Quality criteria's as: CE Marked FDA approved ISO Certified but this is very limited. Technical Specification Quality After Sales Service. Description of the few of the main criteria is given below: CE marked: is used to evaluate suppliers who are not able to maintain and achieve levels of standards required in the European countries. There are so many products which will not qualify for the CE Marked certificate. FDA Approved is mainly used in America and other countries. ISO Certification: This criterion is not used usually because there will be very limited supplier available. The reason behind that is that there is no such manufacturing of medical devices in Pakistan and most of the companies work as the distributor for the some Multinationals companies. Quality: There is no such way to conduct the Quality of the equipment because most the ranking used in the Pakistan Steel is for the construction projects. This criterion is not used always because some times it takes the bias nature of the buyer into account and there has been some problems related to these criteria. Some other criteria are the financial position of the company and services provided in the past are some times taken into consideration. Technical specifications are the main focuses for the supplier selection in the technical evaluation. specifications are carefully prepared. It is very necessary that specifications do not contain any product names or specific nomenclatures which relates to any special brand or product. The First stage of the supplier selection is mainly on the technical basis. Once the bids are open then the technical evaluation team mainly based of the one purchase department, one from the management and one

user group. These are the people who select supplier on the basis of the pre-specified specification and some other quality standards' like ISO, FDA and CE marked. All the suppliers are ranked according against minim set of criteria. The successful suppliers name as posted on the PPRA website.

### **5. 2. 5 Award criteria**

When the financial opening of the tenders has been established then all the pre selected bidders are called for the financial opening of the tender which is already submitted at the time of technical submission. The lowest bidders are the one who will be selected and send official letter for the delivery. This is one of the dilemmas of the procurement in Pakistan that all the bid are finalised in the lowest price basis. In the procurement of medical device lowest price is not always the right choice because there are so many supplier, whos products do match technical specification but quality so poor that it does not benefit the patient in any way.

### **5. 2. 6 Supplier Management**

Supplier management is the area which is not focussed in the public sector in Pakistan. In the case of medical equipment the medical suppliers with good after sales services are keep in touch are informed about the progress and future projects. This some times shows biased nature of the procurement professionals. There is data base availed fro the supplier with purchase department. In the data supplier are placed according to their supplies and their previous contracts. There is no such system which can measure the previous performance of the suppliers.

## 5. 2. 7 Framework for Supplier Selection

This framework is prepared after the literature review and all the interviews.

This framework is suggested for the procurement of medical devices.

Yes/NOPPQ review Restricted tender type Specifications, PPQ and

Criteria Rules and regulation Stakeholders Management Procurement Supply chain management Noyes

## Figure 5. 5 Framework for Supplier Selection

ITT

### Supplier Selection

Processing: Tender documents

## 5. 2. 8 Phases of Supplier Selection

### A. Phase 1

Supply chain management: There is great role of supply chain management for the health care procurement which is not established until yet in Pakistan. Supply chain can impact many areas of the organisation. It is noticeable from literature that there is very little or no integration between supply chain and other departments when procuring medical devices. Supply chain can create a balance between the supply and demand side and it will create opportunities for all departments to get on to one platform to maximise the knowledge before procuring medical devices.

### B. Phase 2

Management: It very important to have good management set up strategy for procurement. The management will be responsible for the development



of the strategy for the procurement. There is trend in public sector that most of the procurement budgets are finalised and authorised to different department on the fiscal year. So it will be better to develop a stagey for procuring medical device. The procurement can be collaborative or agile, it the duty of the management to decide which procurement way is best to buy medical devices. Procurement: Procurement department is seen as the inter-link between the different departments and suppliers. The main responsibility of the procurement department is to conduct the fair and appropriate tender process. The procurement department is the department which will play key role in terms of engaging different departments. IT can bee seen that there is two way arrows between management procurement and stakeholders, this means that there is information sharing between all three baseline departments. Stakeholders: There is very key role of all stakeholders in the procurement process, especially in the selection of the suppliers. As it is already mentioned that stake holders can be people from medical engineering and end users. The medical engineering department will mainly look at the technical features of the medical devices, where the end users will look at the application side of the medical devices. These are the people who will be preparing specification and criteria's for the evaluation and selection of the suppliers. The main criteria which have been suggested in this framework will be: Quality: It is the virtue of any medical device to have quality which is to be best for the patients and it must give the value for money  
Technical Capability

### **Phase 3: Supplier Selection**

Tender procedure: It is already decided that which equipment is to be purchased and on which type of tender to be placed. If there is open tender who means any one can participate then next step will be the selection of the suppliers based on some basic criteria. Technical specification: the technical evaluation teams must be assigned to evaluate the bids against the technical specifications' of the medical devices. these teams should be constituted from stakeholder, management and procurementISO

Certification: It should be mandatory to have relevant ISO certification of the supplier as it is the quality sign. CE marked: IT is quality assign for all the medical devices used in the or manufactured in the European subcontinent.

There is different procedure for the restricted tenders, where suppliers are evaluated on the initial stages on basic minimum criteria's, which are mentioned above. Then the selected suppliers will be sending a PPQ which will contain some information against their record and financial capability.

### **The Criteria which are suggested for the PPQ are:**

After Sales Service: As there are not much capabilities and trainings availed in Pakistan so its suggested that after sales services should be given due weighted when selection supplier. This can be achieved by keeping previous record or asking for the references from the supplier. Financial position:

Financial positions of the suppliers can give an overview that how its going to perform in the future because there is possibility that supplier get bank defaulter in the future an all the process and important time is lapsed.

Delivery: The delivery has not been seen as important factor in Pakistan but

it is important in the NHS Scotland which is evident from the interviews and literature review. Delivery is very important when there is lots of item or different types of medical devices. The more the time is taken the more patient will lose the time to be treated on that devices. So it is suggested that keeping the value for money delivery should be considered as key criteria.

## **CHAPTER 6 – DISCUSSION AND CONCLUSION**

The main focus of research was to analyse the strategic framework for the supplier selection and management in two different settings. The comparative study was carried out on two different organisations NHS Scotland and Pakistan Steel Hospital, Pakistan. In the first the supply chain management was analysed with respect to service, which proved that supply chain management is the emerging technology for the procurement of medical device. The literature proved the positive impact of the health care supply chain on the processes of supplier selection management.

Procurement is not possible with real scenario of the product to be procured and strategy. There are certain models available for the procurement and the process for the procurement. It is very critical to establish the framework on which the procurement will be carried out. The framework should be prepared from the strategic point of view which will help the organisation to decide how many suppliers to use and it will also save the time. This framework will be helpful to establish the criticality of the product and also will provide the market analysis with the help of data of supplier availed within the organisations. For effective purchasing and efficient supplier

selection is very important for healthcare sector. Process of supplier selection and supplier evaluation could be a complicated job; this is mainly due to two reasons. Firstly each supplier can be evaluated by more than one performance criteria and secondly the fact that each supplier has a distinctive capability and thus has different criterion. Further decision on type of sourcing is another problem that healthcare organisations face. For single sourcing it is responsibility of buyer to find best possible buyer in order to assure that supplier meets buyer demand as per specification. Multiple sourcing demands buyer to choose and maintain right number of supplier to avoid any future disappointment in terms of supply. There are some aspects which affects the supplier selection process when comparing the two different organisations.

6. 1 Financial resources: The financial capability of the organisation is key to the success of procuring best medical devices. In Pakistan, as there are limited resources available to the hospital for buying medical devices, so it affects the whole procurement process which is evident from the award criteria which is based on the lowest price. Where the NHS uses the economical advantageous supplier for the procurement of medical devices which gives extra strength to the procurement process as quality can not be compromised.

6. 2 Political Environment: There is uncertain environment in Pakistan due to the terrorism and corruption. Although effort has been made by the Pakistan Steel Mills and PPRA to curtail corruption but there is still need to do more. The main effect of the corruption is that some time suppliers are given undue favours during preparing specification and establishing the criteria for supplier selection.

6. 3 Organisational Structure: There is no comparison between the NHS

Scotland and health care procurement in Pakistan as NHS is world leaders in terms of health quality. The point here is that different procurement department or even Board like NHS National Services can contribute effectively to the supplier selection. There should be a separate and independent procurement function for the procurement departments in the healthcare sector.

#### **6. 4 Challenges for the procurement of Medical Devices**

The main focus of the procurement of medical devices is to have value for money and maximising benefits for the patients. The one of the challenge for procurement department is to finalise the actual cost related to medical device. For instance, the purchase price for a piece of equipment or drug, or fee paid to surgeon is not the whole cost of a treatment, this also includes operation costs, implementation costs, supervisory personnel, training, insurance, supplies, space in the hospital, and so forth (Gelijns & Halm 1991). The other challenge for the procurement of medical device is selection of supplier as device industry is " younger, less concentrated, and comprises mostly smaller firms", and there is much " greater heterogeneity of medical devices in terms of design purpose and use" (Gelijns & Halm 1991). The medical device life is normally shorter with respect to drugs and other health products because fast changing technology and competitors may rapidly introduce a slightly modified version of a previous device (Gelijns & Halm 1991). They note that many purchasers and providers are unaware that the clinical testing and regulation of medical devices is vastly different from that for pharmaceutical products (Ramsey et al. 1998). In

terms of forming evidence bases, randomized trials common in drug studies are often difficult or unrealistic to perform for medical devices (Ramsey et al. 1998). Before establishing the boundary definition for device as will be used in this thesis, these challenges in technology assessment are addressed next.

## **6.5 Limitations of the research study**

The research was carried out to analyse and compare the supplier selection process in two different organisations which are very different in terms of geographical location and organisational structure. Only one hospital from the Pakistan was chosen for the case study, so the results may not be generalisable to the all hospitals in Pakistan. Though efforts were made to gather data as much comprehensive as possible but as the data was collected from only few key informants so the findings of the study may not generalisable to whole of healthcare sector. Though, there is lack of research in supplier selection in healthcare sector all over the world and particularly there is no research on this topic available in Pakistan. But, due to time constrains, this research was not able to cover supplier selection and its impact with respect to supplier buyer relation.

## **6.6 Conclusion**

This research will be helpful for the people willing to conduct future research related involving procurement of medical device in healthcare sector. So this research with the help of some quantitative data gathered through the research will be very helpful and can give some other perspectives of supplier selection. It was revealed from interview with one of NHS

professional and he suggested that there is no such framework from supplier buyer relationship in NHS. There is need for the research to evaluate the effect of the rules and regulations on the supplier selection and procurement process for healthcare. There was gap between the rules and its applications when talking about procurement in Pakistan because rules were mainly prepared for the overall procurement not for the healthcare product.