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E-procurement adoption impacts on organisations “Performance and Maturity”

An exploratory case study

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E-procurement adoption impacts on organisations “Performance and Maturity”:

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By

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ABSTRACT

Procurement is one of the important and supporting aspects in any organisation functions. As organisational sectors involve in more technology oriented for their procurement systems, their need to understand e-procurement practice have become more significant. In this paper the possible impacts that e-procurement has on the performance and maturity level of an educational organisation have been investigated. The purpose of this paper is to present, explore and scrutinise the degree of e-procurement usage in the nominated organisation regarding the performance and adoption within their internal system. This study also aims to generate meanings from the data set collected in order to identify patterns and relationships as well as formulating the research questions to be explored. This research summarising and contextualising an e-procurement system in a non-profit educational organisation based in the United Kingdom.

An inductive case study approach that included multiple sources of data and different collection methods and techniques such as unstructured in-depth interviews, snowball sampling and documentation were adopted and utilised. This research was a single exploratory case study and was not trying to generalise the results to other cases. The general findings and empirical results represent the maturity level of the system in the selected organisation.

The effects after the adoption on the performance and following that the maturity level have been noticed. Four different categories of improvements were identified as follows: sourcing, transactions, payments and analysis. E-procurement can offer considerable potentials to different organisations if the right adoption system is realised and takes place aligned with both a well designed strategy plan and operational functions to meet the requirements in order to magnify the performance ability specified to the needs of each individual organisation.

Dedication

Special thanks to my **beloved parents and my brother** who are always encouraging me and are sympathetic throughout my future endeavours with their endless support.

Acknowledgement

Tackling a journey has always had its own way of approach to complete. Here, I would like to thank my supervisors, Prof. Kostas Nikolopoulos and Prof. Bernardo Batiz-Lazo who had been instrumental with their expertise from starting to finishing the process. Their comments for improving the work were substantial for a better achievement of this research.

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PAPER ONE

CHAPTER 1 INTRODUCTION

The research presented in this thesis is about exploring e-procurement quality from an educational organisation perspective. This chapter provides a brief background into the study and then reviews the research objectives and questions. Then, an overview of relevant literature is given, followed by details of the thesis structure. This aforementioned educational organisation in this research is located in the Gwynedd, northwest of Wales in the United Kingdom. The university in the selected city in wales is one of the smallest in the United Kingdom. For the sake of anonymity the name of the organisation has been omitted.

1.1 Background

A number of high profile studies have clearly shown that procurement in essence is essential in any organisation's structure (Brandon-Jones & Kauppi, 2018; Turban et al., 2018; Nicoletti, 2018; Rothkopf & Pibernik, 2016; Yu et al., 2015; Pearcy et al., 2008; Gunasekeran and Ngai, 2008; Angeles & Nath, 2007; Panayiotou et al., 2004). E-procurement (electronic procurement) is an organisational use of information technology (IT) in establishing the contracts as well as purchasing goods and services (Vaidya & Campbell, 2016; Kim et al., 2015; Smart, 2010; Morris, 2000). Following the growth and the use of e-commerce in B2B (business to business) markets, there have been a significant adoption for new supply chain technology and related applications by organisations, internationally and globally. The procurement function has been specially affected by this trend with a forecasted growth in electronic procurement applications for covering of both strategic sourcing activities and transactional buying (Croom, 2000).

1.2 Research Motivations:

In this section there are two types of motivations from the academic and practical perspectives that have considered to be able to initiate the study and proceeding with the rest of the research.

1.2.1 Academic motivation

There was a need for investigation in the educational sector about e-procurement activities in the U.K. that had not been covered in the recent literature in the past as one of the important factors to be considered.

1.2.2 Practical motivation

Practical motivation for this research was the necessity for a thorough investigation in one of the universities in the U.K. as an example of an educational organisation that started the process of *adoption* and *implementation* of e-procurement in their internal structure.

1.3 Research Objectives & Questions

This thesis focuses on the impact of electronic procurement and refers to performance and maturity level within an organisation. The objectives of this paper is to explore and investigate the degree of e-procurement usage within the nominated organisation regarding the performance and adoption of the facilities. This research is trying to investigate and open the black box of e-procurement within an educational organisation in terms of the research for the first time in the U.K.

In addition to that the better understanding of procurement process and to some extent identify the possible barriers and structural-cultural matters. This has accomplished through an exploratory case study that integrates some observations and interviews with the executives of a non- profit educational organisation in the United Kingdom. This process has done over an in-depth analysis of the results. The name of the organisation has been omitted for confidentiality reasons.

The overall aim of this study is to pinpoint e-procurement system strength, based on an in-depth exploratory investigation. Research objectives give rise to the following two questions. Therefore, two questions were formulated to better understand this concept:

RQ1: What is the impact of e-procurement on the performance of an educational organisation?
RQ2: What is the impact of e-procurement on the maturity of an educational organisation?

This research and study makes two **key contributions** to the exiting literature. First, there has been an exploratory investigation about the impact of e-procurement in a non-profit educational organisation which has been not been studied extensively in the past from the perception and the angle of performance. Second, exploring the maturity perspective level through this designated organisation as a case study to observe the effects and significances after the adoption in an educational organisation environment.

E-procurement in the selected educational organisation appears to be underdeveloped and there have not been an adequate research into the causes of this underdevelopment. Similarly, no research has aimed at understanding that how the managers and directors are making decisions about e-procurement in such organisations. The ability to understand the requirements of the potential e-procurement users appear critical in the eventual success or failure of implementation and the use of the system.

Within the recent literature, there is very little discussion of e-procurement quality, as perceived by the users of educational organisations in the UK. The lack of antecedent literature was therefore a key motivator in undertaking an in-depth study of e-procurement from an angle of performance and maturity level (Brandon-Jones & Kauppi, 2018). It has been argued by a number of academics and practitioners that the benefits of e-procurement implementation can only be fully realised if individuals use the system and their contracts appropriately and are engaged with the system. In turn, managing procurement on its own has been noted as an important action or occupation towards contracts, internal and external affairs in any type of organisations. However, to date there has been no rigorous empirical examination in some types of organisation. The literature review indicated that there are many benefits to e-procurement, but also substantial barriers to the adoption.

1.4 Relevant literature

The research draws on various areas of literature. At a theoretical level, grounded theory, used in much of the methodology approach, provides the conceptual underpinning of the construct. However, much work in this area is based on very different contexts to e-procurement.

The evolution of the procurement functions towards supporting of both supply chain objectives and corporate goals are among the important factors of development (Gebauer & Shaw, 2004). Corporations recognise that for increasing their profits and stock value they need to aggregate the power of recently merged organisation as well as reducing their spend through external suppliers in the businesses (Sriram and Stump, 2004). This goal along with other drivers have led to recognise the need of tools and technologies to support the procurement managers for increasing their contribution and productivity to create more values. The applications of e-procurement are designed to automate and optimise spends, improve workflow and processes, support bidding, buying cycle, tendering and facilitating more effective search for services and products through the internet (Subramaniam & Shaw, 2002).

1.5 Thesis structure

- **Chapter 2:** reviews and explores the selected relevant literature with the recent studies about procurement and electronic procurement and they real definition as well as the important role of supply chain management and it's risks in e-procurement and the necessity of it in the design of this research structure. This chapter opens up to different types of market structure and their relationship with EDI capacity.

- **Chapter 3:** depicts the design of the research methodology as part of this study with all the research methods that have been used for shaping the theoretical framework and the rational behind the specific methodology selected. This has explained together with all the relevant data collection methods to this research.
- **Chapter 4:** presents the data collection and the analysis procedure of this work with using different research strategies. Starting with describing the first case study and the way that data collection proceeded along with the criteria for selecting the right participants in the same field and explaining how the data extraction stage and terminating of data collection have been recognised. Furthermore, reveals the evolution of the themes from the original data and organising the findings in specific categories as they have been evolved. Finally the analysis of the data from the whole process have been enlightened.
- **Chapter 5**: describes the discussion and expounds both implications and limitation of the study that had faced. Lastly, the recommendations for further study that are coming from this investigation have been elucidated.
- **Chapter 6**: concludes the first paper with all the achieved aims and objectives of this research that have been met. In addition to that, reviewing the gaps in the literature that have been used to build up the initial ideals of this study.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

This chapter begins by reviewing the e-procurement literature that relates to the study.
The broad aim of a literature review is to critically review the relevant literature with respect to the area of interest. In this research the importance of electronic procurement is to identify the key themes and the general areas of concern have been reviewed.

This will also lead to identify productive avenues for future research. Furthermore, a review process should be able to produce an understanding of important relationships between the specific subject of interest (Hart, 1998). In this type of discussion Miles & Huberman (1994) noted, that every researcher regardless of their research approach such as: unstructured, inductive or conductive, all will come to the field work with some orienting ideas, as drawn from the literature. In this case study, electronic procurement in a non-profit educational organisations have been covered in the United Kingdom. This review also draws upon the benefits of e-procurement in education organisations in the aspects of maturity and performance level.

2.2 Maturity level and performance

There are different context in the maturity and performance aspects of an organisation to be identified and introduced. Organisations need to consider their strengths and weaknesses before making decisions to explore new online channels without weakening the existing channels. Since the performance and maturity are believed to portray the same meaning, both will be used interchangeably in this paper. Performance and maturity are defined as the degree to which an organisation is prepared to participate in the digital B2B transactions through considering various e-readiness success factors and challenges. Maturity is a measurement of the ability of an organization for continuous improvement in a particular discipline.

The higher the maturity, the higher will be the chances that incidents or errors will lead to improvements either in the quality or in the use of the resources of the discipline as implemented by the organisation (Mettler and Pinto, 2018). In the other hand maturity means the level of development or growth. When something is mature, it is in a state where there is no further development ahead or yet to be achieved as there is not such an ultimate or perfect system in any part of the world, this progress is always ongoing in any system and unit.

2.3 History of E-procurement

The Electronic procurement concept had been around since 1970s but in many different forms and data transmissions. The very first E-transaction was materialised with the use of punch cards and data phones that operated as the basic modems. As technology and computers started to become more powerful and prevalent in middle of 1980s, EDI- known as Electronic Data Interchange started to flourish. EDI systems are used for transferring (POs) the purchase orders through electronic formats from buyers to seller (Neef, 2001). Since EDI became progressively the current & common method of *procurement* at the time, technical rules and standards started to stablish amongst *buyers & suppliers*.

In the middle of 1990s with the booming of the internet new technological and strategic visions been made in several areas. Hence, the use of the intranet & internet for E-procurement became a visible and known solution to corporations, because of its functionality and its *robust communication conveying*, of data transfer *between buyers & sellers*. Later, the feasibility of using E-procumbent as a full solution for corporations became clear and could penetrate in the public & private sectors as some Internet browsers, for instance: Internet Explorer & Netscape created a user-friendly environment for the comfort of customers and computers could have a place in people's routine life (Nicoletti, 2018; Bidgoli, 2004).

Since late 1990s till today, the use of ***Extranet*** became a new selling strategic idea for most companies. It facilitates corporations to boost their abilities, expanding their volume discounts to their business partners and in return, to receive some additional income for having of internal suppliers and helped them to lower their prices and costs (Zhou et al., 2018; Nicoletti, 2018; Bidgoli, 2004). As Croom and Johnston (2003) found that the procurement is a very important activity in all the firms and organisations in both private and public or governmental sectors.

Managers of procurement are consistently looking for a better and more efficient solution to lower their procurement cost (Risks , reliability and processes) by mechanising and automating of supply chains (Trkman & McCormanck, 2010).

As Davil et al. (2003) mentioned; any technology and system designed to simplify the procuring of goods and services through internet can be named as e-procurement. The main critical modification of *Electronic procurement* in comparison with the *traditional procurement* is the ability of ordering services and goods directly through a web network by any employees or individuals (Croom & Johnston , 2003).

Electronic procurement is the subcategory of ***electronic – commerce* and *SCM***. At its basic first level, it provides ***purchase and sales*** through the Web-Site. In more complex and global phases, e-procurement provides a well-organised and economical, paperless system solution for purchasing of goods & services or transferring them. This would be achieved by proving an environment for the users to place an order for an item from a device such as: computer or any internet devices which is connected to the network, or even a mobile phone, electronic kiosk, televisions, tablets and other devices. Then, finally, providing an electronic payment environment system to settle the purchase and further analysis (Tanner et al., 2018).

A high-tech purchasing and procuring solution reduces or eradicated paper and manual steps in any processes. Similarly, a management system for any businesses or corporations to integrate all aspects of the business's package including: Manufacturing, planning, sales, purchasing, finance and marketing (Hanak et al., 2018; Kasemsap, 2017). E-Procurement could be pleasantly summarised with the use and the help of internet to connect and bond suppliers and buyers and facilitate them with a flawless purchasing system to merchandise goods, services, with concentrating on three main areas: *business to business (B2B) , Business to consumer (B2C) and Business to government, and in reverse* (Bak, 2018). Alternatively, it can be defined in a way that : e-procurement is an Internet based procurement which generates a private and internet network market , and will automate communications , collaborations and transactions , between all partners in supply chain by the means of Internet connection or other networking facilities (Zhou et al., 2018).

Reunis et al. (2006) refers to e-procurement as the use of various forms of communication technology (usually web-based) at some or all stages of the procurement process. This may include initial need identification and specification, through the search, sourcing and negotiation stage of contracts and order placement, and on to include mechanisms that register receipt, trigger payment and support post-supply evaluation. Of the limited number of authors who distinguished between types of e-procurement, de Boer et al. (2002) and Reunis et al. (2006) are perhaps the most have useful ideas. de Boer et al. (2002) suggest that e-procurement can be broken down into e-sourcing, e-tendering, e-reverse auctioning, e-MRO, Web-based ERP and e-informing. E-Sourcing tools are designed to facilitate the process of identifying new suppliers. E-tendering is concerned with sending requests for quotes to potential suppliers and dealing with responses. E-Reverse Auctioning enables buyers to purchase from a number of suppliers using a reverse auction mechanism. E-MRO and Web-based ERP tools are concerned with the process of creating and approving purchase requisitions using Internet technology. Finally, E-Informing systems are aimed at gathering and distributing information, such as spend analysis and system compliance data, from internal and external parties (de Boer et al., 2002).

2.4 Definition and advantages of E-Procurement

Traditional procurement methods involve running requests primarily over the phone, through snail mail, or via face-to-face meetings. The purchasing and supply as called procurement, in any organisations is the one which spans in both internal and B2B (business to business) services (Rodríguez-Enríquez et al., 2016; Kim et al., 2015; Trkman & McCormack, 2010; Falk, 2005). This is one of the important activities that can be also found in all type of organisations, private, public, governmental and charities, likewise it can be responsible for large amount of purchasing and spending. The expenditures may cover: IT equipment and supplies, material components, facilities, sub-contract capacity, stationary, consumables, travel and insurance services. Most of the organisations spend at least one-third of their incomes and turnovers on the purchases of goods and services (Killen and Kamauff, 1995; Zenz & Thompson, 1994) indeed the organisation involved in this research has its spend value as much as 40% (per cent) on procurement activities. To simplify the definition and combining most of the descriptions read, it could be summarise that e-procurement is the electronic purchase and sale of goods and services, usually through an Internet-based platform. It is a tool designed to improve the purchasing process transparency and efficiency and help companies capture savings.
Given the vast benefits of e-procurement over traditional procurement methods, the reasons that organizations have for moving to e-procurement can generally be divided into two main categories such as, the need to improve process compliance and the need for process efficiency improvements.

"For an organisation to be truly effective, every single part of it, each department, each activity and each person and each level, must work properly together, because every person and every activity affects and in turn is affected by others" (Muhlemann et al., 1992).

Croom (2000) has cited that procurement is one of the significant activities in all the firms and organisations, in both public and private or governmental also, defines the e-procurement as mirroring of the procurement activities and processes through the external communications and the internet with suppliers. E-procurement has been a great deal of research but it has been more focus on the developing of inter-organisational electronic networks (Boyer, 2002). Chomchaiya et al. (2016) have researched about the important performance factors in government electronic procurement system with refer to its transaction and acquisition costs which include, sourcing costs, ordering management.

There are many empirical studies that aimed to capture and cover the benefits and drawbacks of implementation and adoption of e-procurement system such as Toktaş-Palut et al. (2014) who have provided a thorough literature overview on the process. Some of the benefits that have been quoted by many other authors include, enhanced decision making, reduced paper works, having wider range of supplier's communications, information exchange improvement, transaction and administration costs reduction, lowering the buying price, better management and control of suppliers, time savings and shortening of purchasing process (Turban et al., 2018; Nicoletti, 2018; Brandon-Jones & Kauppi, 2018; Vaidya & Campbell, 2016; Patrucco, 2016; Kim et al., 2015; Doherty, 2013; Puschmann & Alt, 2005; Lancioni et al., 2003; Presutti, 2003).
In the other hand, some discussions have been about the barriers and drawbacks of implementing the e-procurement which cover the cost and benefit concerns, lack of top management support, lack of e-procurement knowledge and skilled personnel, lack of system integration between suppliers and business partners and unsurety about the legal position of the system (Rodríguez-Enríquez et al., 2016; Toktaş-Palut et al., 2014; Handfield & Bozarth, 2012; Schoenherr & Mabert, 2011; Smart, 2010; Trkman and McCormack, 2010; Angeles and Nath, 2007; Frohlich, 2002).

Additionally (Wang et al., 2016; Lin, 2014; Teo et al., 2009) stated the significance of top management support and emphasised that it's positively related to the adoption of electronic supply chain management system for the firms and organisations. (Wang et al., 2016; Handfield & Bozarth, 2012) have also suggested that supply chain analytics (SCA) can influence procurement decision makers to enhance their further decisions and identifying different business issues. Furthermore Grönroos (1995) discussed the importance and the ties between customers and suppliers that reflect the strength of the relationship between each of them. Since a buyer has the choice of selecting among different suppliers, it secures a low production cost, because of production competition and efficiencies (Bakos & Brynjolfsson, 1993; Malone et al., 1987).

“Some of the initial providers of electronic markets have attempted . . . to capture customers in a system biased towards a particular supplier. We believe that, in the long run, the significant additional benefits to buyers possible from the electronic brokerage effect will drive almost all electronic markets toward being unbiased channels for products from many suppliers” (Malone et al., 1987, p. 492).

Some scholars repeatedly highlighted the significant role of organisational culture for sustainability of the entire organisation (Wang et al., 2016; Bharosa, 2013; Melo et al., 2009). As Evans & Wurster (2001) also claimed that the use of information technologies enabled the access of data and information to be extensively distributed, such as the ability to offer the access to a large range of catalogues for suppliers, and different range of products and services available to customers and suppliers.

Electronic procurement has changed the way that organisations acquiring services and goods. Gunasekaran and Ngai (2008) stated that a company’s supply chain process can not be integrated successfully without using and the adoption of e-procurement systems. Once the technology become a dominant design, the industry will move to a fast growth stage until reaches the enough maturity level. Subsequently, when most of the organisations have adopted the new systems and technologies, then the slope of the technology will flat out naturally (Utterback, 1994; Henderson and Clark, 1990).

In addition to that Angeles and Nath (2007) explored the challenges of e-procurement and classified them into four different issues: immaturity of the market services, existence of maverick buying, lack of standardisation and integration, and other difficulties in integrating of e-commerce with other systems. *Maverick buying* is a term that described in supply chain management when a department acts independently to buy services or materials, without incorporating with the main purchasing department (Karjalainen & Van Raaij, 2011). In other words, purchasing by avoiding the standards and regulations of procurement processes of an organisation.

Alongside e-procurement systems (Rothkopf & Pibernik, 2016; Angeles and Nath, 2007; de Boer et al., 2002) purchasing cards have also been suggested to prevent maverick buying and organising the payment structures (Rothkopf & Pibernik, 2016; Roy, 2003). Other related issues including the adoption of new technologies (Uyarra & Flanagan 2010; Gunasekeran and Ngai, 2008; Pearcy et al., 2008; Johnson and Klassen, 2005) and the success factors (Urciuoli et al., 2013; Gunasekeran & Ngai, 2008; Puschmann and Alt, 2005) as well as the impact on the organisation and costs have been covered by (Wamba et al., 2015; Andrews & Van De Walle, 2013; Brun et al., 2004; Deeter-Schmelz et al., 2001).

Further to that, several examinations have been accompanied to study the implementation of e-procurement benefits in organisations (Hartley et al., 2004; Croom, 2000). Maturity aspect and the ways of measuring it in organisations have been firmly and broadly discussed by many authors (Benbasat, 1980; Nolan, 1973; Greiner, 1972). Besides, Greiner (1972) individually stated that developing a successful organisation requires of going through five phases of maturity: the creativity phase, directing, delegation, continuing and finally collaboration phase.

In the same field of e-procurement concept the technical perspective of organisations (Panayiotou et al., 2004; Liao et al., 2003) and the managerial and decision-making perspectives have been debated (Devadoss et al., 2003). Each organisation or government unit needs, supplies, equipment and services to accomplish its missions (Clemons, 1993). Hence, e-procurement can act as a powerful business tool that can revolutionise of the buying task and functions of an organisation by streamlining and automating of the labour-intensive procurement routines. In next section, the chosen methods of the study has explained.

2.5 Defining Supply Chain (SC)

A standard supply chain may involve in a selection of stages they could be categorised such as: raw- material and suppliers or components, customers, distributors, wholesalers, retailers or manufactures (Puschmann and Alt, 2005). Goods, services, imports and exports system within, the companies from one - to another throughout their whole manufacturing progression is also part of the process of SC - Supply Chain (Hugos, 2018; De Villiers et al., 2017).

A supply chain contains of direct and indirect sections in satisfying a customer needs. The supply chain isn’t only involved in suppliers and section of manufacturers, it also surrounds of warehouses - transports and also customers. In every organisation on their own, such as manufactures, it will make them involve to fulfil the customers need in this regard (Chopra, 2004). The control area of supply chain is also covers: Marketing, distribution, fresh product developments, operations, finance and all sort of customer services (Cooper, 2017; Kache & Seuring, 2017).The customers are one of the integral parts in the supply chain areas. The main scope of all supply chains are to fulfil and satisfy the customer needs. The basic circle of supply chain starts with a new customer order and ends when a pleased customer has accomplished the purchase.

Supply chain management (SCM) controls and contains all the progresses that are used to manage and integrate the supply- part of a firm in a chain, Hence, products and services are able to be scheduled in the right time for delivery onto their customers, in the actual location, with the precise quantities at the best possible price (Porter, 1980). In the other hand, *e-commerce, e-sourcing, e-procurement, electronic data interchange (EDI) and e-auction* are all used as an application of IS to facilitate and integrate SCM and bring it up-to-date with the new technologies and take it out of its old-fashion and primary pattern and shell of SC (Dedrick et al., 2008; Kameshwaran et al., 2007; Puschmann and Alt, 2005; Presutti, 2003; Lee & Whang, 2000).

Supply chain term implies the meaning of involving simply as one player at a time in each individual stages. In the real life, manufactures may get delivery from numerous suppliers and then supply numerous distributors. Hence, majority of supply chains are in a network structure. It could be also suitable to use of terms such as: *supply web* or *supply network* to label the actual structure of supply chains.

2.5.1 Supply chain management (SCM)

The concept of supply chain management (SCM) had been so popular in the past and recent years (Michalski et al., 2018; Prajogo et al., 2018; Kull et al., 2018; cooper, 2017). Additionally, this term is repeatedly used to describe administrative responsibilities in every corporation (La Londe, 1997). Jones and Riley (1985) mentioned that supply chain management contracts with the overall flow of the materials right through the end users.

2.5.2 The Structure of SCM

The term of (*Supply chain management*) turned into a “Hot concept” and is integral part of most businesses that is useable in most of the fields such as: manufacturing, marketing, customer management, distribution or even transportation and is quite rare if anybody wants to pursue and run a *management system*, without tapping into this area and not getting the benefits of *supply chain management* system (Ross, 1998).

Although, SCM is so common and popular in the academic world and different practices but still, there are some confusions in the definitions. Some authors define it in *operational terms* consisting the flow of *products and materials*, some other state that is a *management’s philosophy* and others suggesting it as term in a management process (Tyndall et al., 1998).

Having said these definitions, the supply chain will be defined as three categories or even more entities like, Individual or organisations and would be involved in services, products and finance or even information based on the customer sources as well as all the up-streams and down-streams of the whole progress. Having had all these three scopes and definitions, It's possible to classify supply chain in three levels: *"Direct supply chain"*, *"an extended supply chain"* and *" an ultimate supply chain"*.

As (figure 1a) shows a direct supply chain contains: a company, a supplier and similarly is consist of up(s) and down-streams of the actual flow (Mentzer et al., 2001). The extended supply chain has shown in (figure 1b), that includes the main suppliers source and the second supplier acting as a middleman and connector, to connect the rest of the line together, and in the end there will be also customer brokers as well as the start of the line and there are all indirections with the services, products, finances and information of the flow (Mentzer et al., 2001).

The last level, as illustrated in (Figure 1c) explains the maximum complexity of a supply chain system that can actually spread in terms of the relations between, products, finances, services and all the ultimate suppliers and customers in the rest of the chain (Boone et al., 2007; Mentzer et al., 2001).

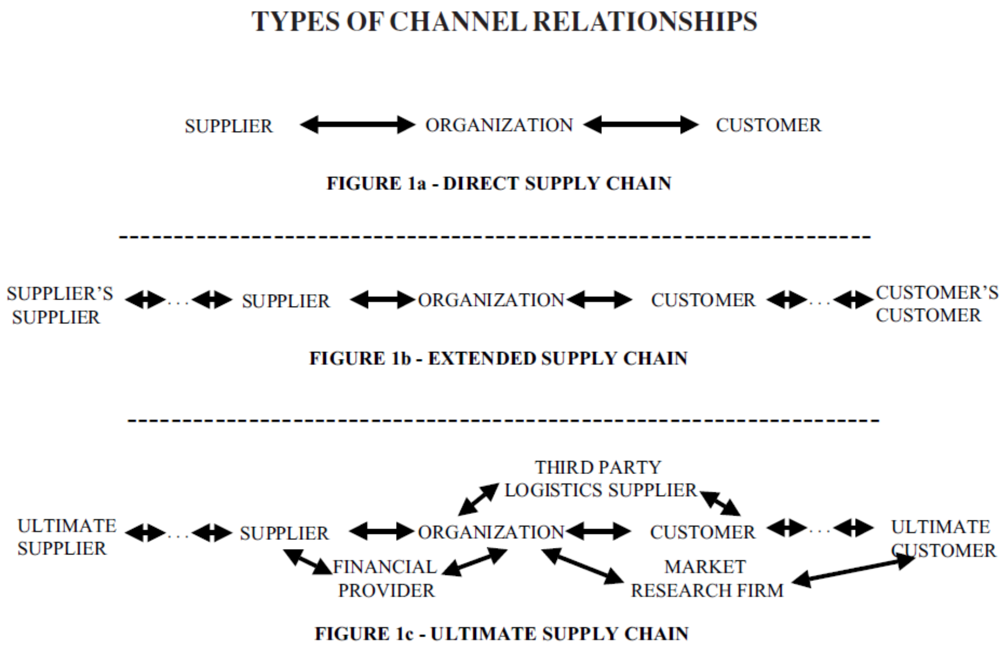


Figure 1: Types of network relationships. Source: (Mentzer et al., 2001 p.5).

Moorman et al. (1993) described, trust as an enthusiasm and motivation from one to another party to cooperate in the same field. Morgan & Hunt (1994) emphasised on the philosophy of *Supply chain optimisation* and *Supply chain management* that arises from two aspects of *commitment* and trust in *relationships* within the workforce. Webster (1992) highlighted that networks are the multi-layered and complex organisational arrangements that come as a result of several tactical alliances. Hence, the networks are well-recognised organisations for supply chain management. The fundamental characteristics of a network's organisation is an association.

An unfastened and flexible union guided from a centre where the main functions consist of: management, development of unions themselves, the coordination of technology and financial resources, as well as management of strategies and essential competencies that will bind the actual network to make the run right (Webster, 1992). Finally, quite a few writers in the past suggested that the support from top management plays a crucial role in organising and shaping the values in firms and organisations, their orientations and directions (Akhtar, 2018; Wang & Dass, 2017; Ifinedo, 2008; Kotter 1990; Webster 1988; Hambrick & Mason 1984).
Day & Lord (1988) found that help and support from the top levels of management have quite a significant impact on the performance of an organisation. Lambert et al. (1998) suggested that supports from top management, commitment, responsibility and leadership are really important factors and influence a lot for implementation of SCM (Supply chain Management). Figure 2 illustrates the significance of antecedents by some companies and represented as an important relation to a Supply Chain Optimisation (SCO) system. When some related companies attain a SCO in supply chain, they would be able to begin an implementation progress to pursue SCM (Mentzer et al., 2001).

To express differently, SCO (Supply Chain Optimisation) is a readiness of a company to address their issues gathered and listed in Figure 2 from a systemic and strategic point of view. Management of a supply chain is only possible when many companies decide to be in line with the actual supply chain and achieve the same orientation and moving towards implementing the real management philosophy of a SCO.

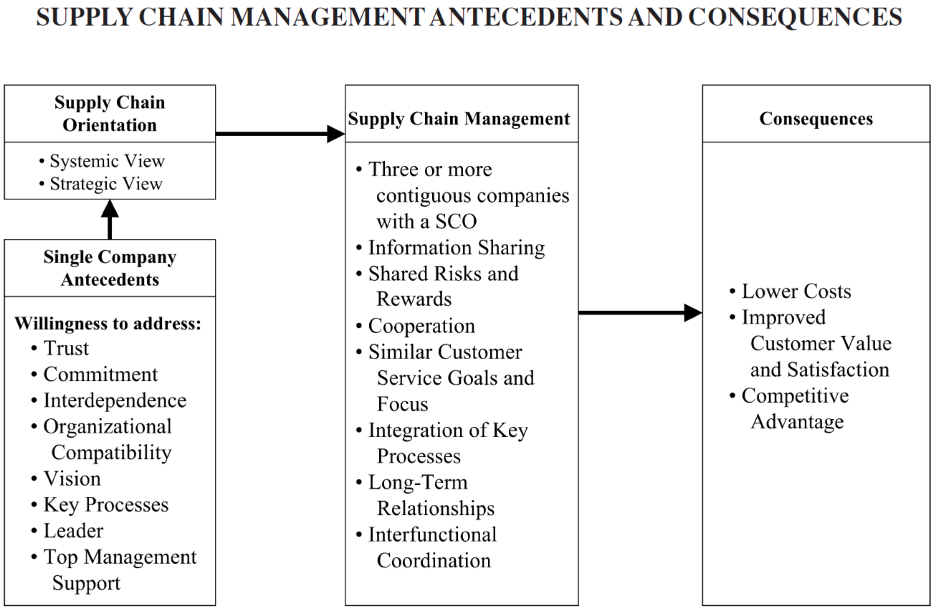


Figure 2: Supply Chain Management Antecedents consequences (Mentzer, et al., 2001 p.12).

Supporting the material's flow in a supply chain and its concerned functions are the main focus, such as: *Procurement – Production*, *Transport* as well as distribution and sales as shown in Figure 3 (x-axis) also categorising the demand fulfilment process - ATP (available to promise) within short-term sales.

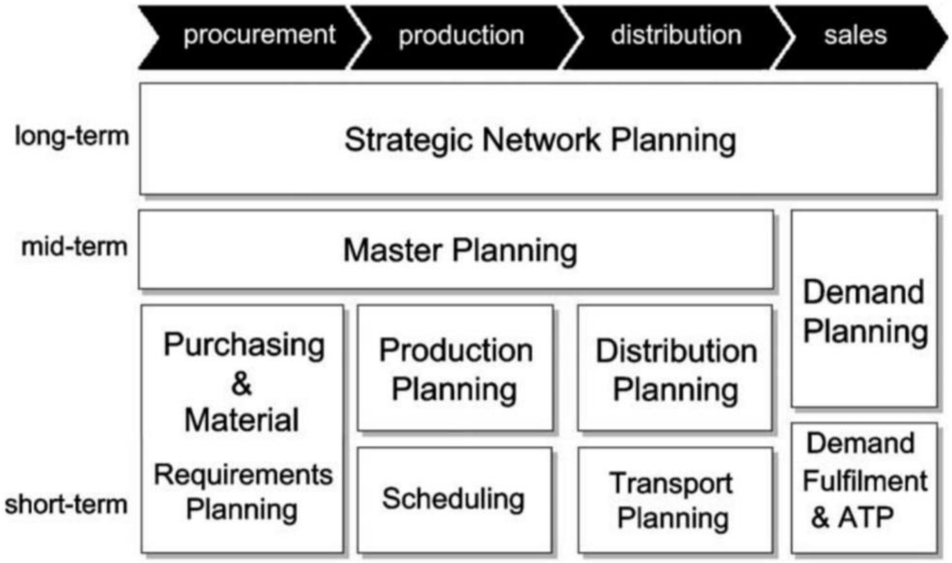


Figure 3: Modules covering the SC planning matrix. Source: (Stadtler, 2005; Meyr et al., 2002).

The planning tasks can be linked to the levels of aggregation and planning intervals – from: Long term to short terms as illustrated in Figure 3 (y-axis). These are the two main matrixes in supply chain (SC) planning which starts with procurement level (Stadtler, 2005; Meyr et al., 2002, p. 99).

2.5.3 Competitiveness & customer services

As (Stadtler ,2005) describes the concept of SCM through a house illustration in Figure 4 , the roof of the house has covered with two elements which are : competitiveness and customer services. As it goes down the roof of the house lays on two pillar elements that are: “Integration of Organisational Units” and “Coordination of flows”.

From the many phases of SCM these factors identified in three blocks and every pillar play a significant role helping the innovation scheme in SCM. There are six factors shown in different blocks in every pillar as illustrated in Figure 4*: “Choice of partners” , “Network of organizations” , “Leadership” , “Information and communication technology”, “Process orientation*” and “*Advanced planning*” (Stadtler, 2005).

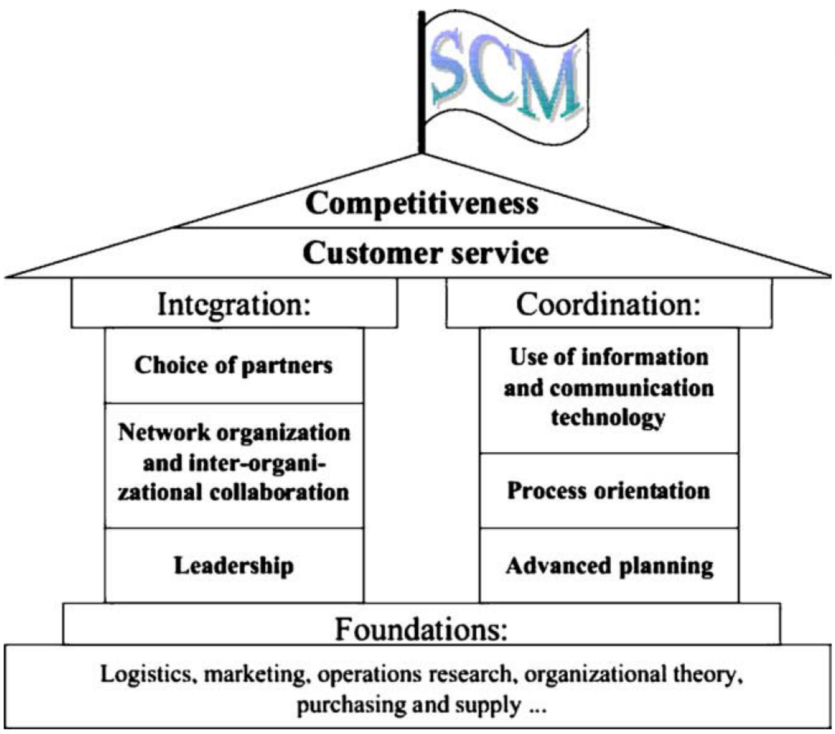


Figure 4: The house of Supply chain Management. Source: (Stadtler, 2005).

2.5.4 The supply chain risk management framework

The attempt to clarify the risks in a supply chain environment could be categorised in five main sections as shown in Figure 5 illustrated. SCRM summarises all the identification process in supply risks and evaluating them through the variety of available approaches and eliminating as it goes to the next step to finalise the risk.

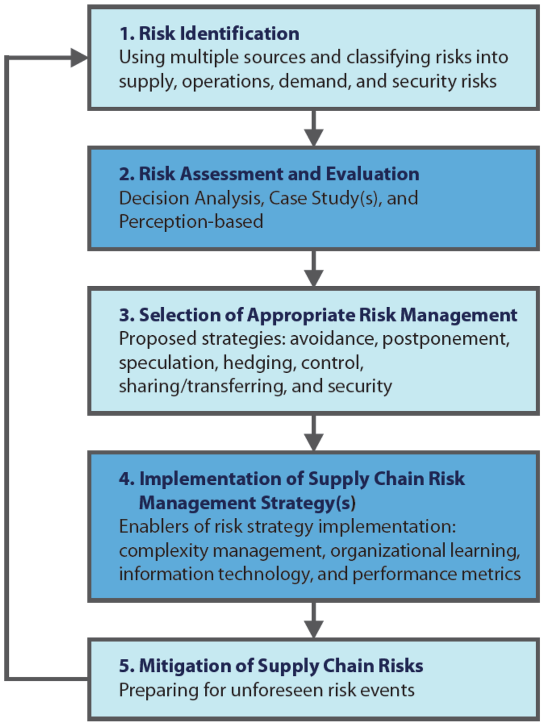


Figure 5: SCRM five main steps for risk identification (Adopted from: Neiger et al., 2009; Manuj & Mentzer 2008; Gaonkar & Viswanadham, 2007).

2.5.5 Procurement

As defining of procurement it can be described as the act of attaining goods, works, services or utilities from an external source in order to meet some conditions such as quality, quantity, location, and time (Hugos, 2018; Sanders, 2011). It's desirable that the goods, works, raw materials or services are suitable and they are procured within the best appropriate cost or budget to meet the needs of the recipient, customer or consumers from all kinds (Monczka et al., 2015; Weele, 2010).

Procurement is one of the biggest expense elements in any firms or corporations on their budget structure, and could have an important influence on the total performance of a company (De Villiers et al., 2017; Croxton et al., 2001). Carr (2000) could also find that the performance of a firm has a direct relations with some functional levels such as: purchasing skills and taking risks in purchasing strategies.

2.5.6 Public procurement rules

(PPR) – Rules, could be divided into these five categories: *Information collection, supplier interaction, contracting, requisitioning and Intelligence – analysis.*

2.5.7 Information collection

Here there are some specific processes exerted by webster & wind (1988, 1972) named and labeled as the purchasing tasks in five steps to be considered as follows:

1. finding the needs,
2. establishing on specifications,
3. findings the alternatives ,
4. the assessment of alternatives,
5. selection of the related suppliers.

These are all done in the procurement's level of information collection. As mentioned by Segev et al (1999) in collecting the information or data, the buyers will identify their needs and then sources will be evaluated to fulfil their orders. This process is done by information collection about the conditions of the market , sellers and products.

2.5.8 Supplier interaction

All communication types related to the buyers as a request including: "*request of proposal as (RFP)*", "*request of information*" and "*biding*" are all enclosed and included in the supplier interactions.

Rink and Fox (1999) embrace all the supplier interaction in procurement activates in all the stages of the life cycle of the product, from all levels of progresses such as: Quotes requesting, request of volume discount and biddings. Segev et al. (1998) shows a report that RFP has been ranked 3rd in frequent use of techniques used in bidding and dealing with customers, the demand of it was the third in rank.

2.5.9 The structure of procurement in supply chain management (SCM)

Electronic commerce - (EC) has penetrated in our basic daily life and has a broad range of areas. Electronic procurement (E-procurement), is one of the areas within the huge realm of the *Electronic-commerce (E-commerce)* as *subcategory of Supply chain management* (SCM). It's a concept that will surround all activities of suppliers – buyers and their relationships, from planning for production, forecasting through procurement to customer services and management of orders. SCM identified the end points of Supply chain management as: "*supplier's supplier*", and, "*customer's customer*" (Bidgoli, 2004). Procurement in every company might look small, but is the most costly part of the supply chain, There are two types of approaches for procurement in the current market: "*Vertical and Horizontal*".

2.5.10 Horizontal Markets

By the time that e-procurement gets implemented by most of the companies the horizontal and vertical markets it then merges and goes toward transparency. This merging might be in a few years ahead but is will definitely will be feasible and is a must to be implemented for future improvement to be part of the system (Bidgoli, 2004). These type of market's main focus is within a broad range of industries, for example: electricity, software, power or unities. While, almost a huge percentage and segment of electronic markets have been structured vertically, but horizontal markets are just started to expand, as new online purchasing facilities (Helmold & Terry, 2017). For instance: All types of companies around the world need, pencils, pens, paper and so on, companies supplying office stuff don't just focus on a specific industry, but they do distribute to every types of companies. These kind of companies provide the basic needs to everybody, not matter what types of business, customers and recipients they are dealing with and is basically not a focal approach (Turban, 2018). Companies might need both markets as a combination, like a direct and an indirect procurement types and moving towards it to an unite entity.

2.5.11 Vertical Markets

A vertical market focuses on a particular type industry, for instance: telecommunication, financial corporation or transportation. Mostly suppliers are from vertical types in manufacturing sections. Besides, elaborating on e-procurement, there are some vertical hubs sometime provide the up-to-date news and other information of what they like and their best interest on the official web-pages. It's mostly a very local and near partnership. Hubs are posing almost similar benefits and services as of an indoor e-procurement system solution, but on a limited and smaller scale (Turban, 2018; Helmold & Terry, 2017).

2.5.12 The process of procurement in today's market

Majority of the firms and corporations are still using paper driven and manual systems, as they are called "*traditional procurement*". Head manager and chief supervisor approvals are mostly required as the procedure of ordering in an everyday purchases in Traditional procurement system. Two approaches are structured in today's system: Centralised and De-centralised (Nicoletti, 2018; Weele, 2010).

2.5.13 Centralized Procurement

Procurement can be centralised or decentralised; the choice between the two depends on which is the more economically efficient. In middle of 1980s majority of companies were using procurement in a centralised manner. All orders and purchasing must had been gone through a purchasing channel or a department. For larger corporations and multi-location firms, there had been a PO (purchasing office) involved for each region and locations, or even having had a single and independent department in the relevant headquarters, where all the purchasing items and goods needed to be approved. In addition, loads of agencies in the government that had and having a centralised procurement system area are started to realise the importance and the advantages of having E-procurement system as an *ALL-IN-ONE* system instead of handling all these complicated, manual and man driven and involved processes (Eichhorn & Towers, 2018; Helmold & Terry, 2017).

Moreover, here we can mention some main advantages of using Centralised system:

- A better control over and manage on expenses in the organisation and having more purchasing information in the system.
- Ease of controlling over and dealing with contractual customers and vendors.
- Some factors like: Quality, *"Service level agreements (SLA)"* and prices are have been negotiated in advance.
- Easy to standardise of policies, ordering forms, processes and procedures are all uniform all over the company.
- Efficiency in dealing with payments and invoicing that been issued from certain vendors, been centralised in the purchasing – departments.

As the dis-advantage of cartelised system of procurement is the time. Because of many layers involved in the system, approval and process cycles to reach to the final step, from the perspective view of employees is really long. The department of purchasing might delay the orders till there are enough need or demand on a specific product, and customers don't know about it, and they are not involved in the process. This will limited and reduce the cost of purchasing in bulk quantity. Cost in overall is normally higher when loss of production is taking into consideration. In addition to that, extra effort of manual tracking of purchase items, on hold, refunded or rejected, need to be done (Helmold & Terry, 2017).

2.5.14 De-centralised Procurement

Late in 1980s, the standards are began to move towards de-centralisation. Companies and firms also large corporations wanted to modernise the processes and to realise the saving of cost and time within de-centralisation. Although there is still a manager or a person been empowered to place a low cost item order in a paper-based process. In some companies they allow payment and invoicing to be as a responsibility for the department or they rather prefer to give it to the procurement section. There are still errors in these type of systems, like: duplicating of unwanted orders, (the order been placed twice but just had been sent to the customer once) (Helmold & Terry, 2017; Lysons & Farrington, 2016).

2.5.15 Indirect Procurement

An indirect procurement encompasses the purchase of any items for the daily basis activities. There are some types which are common in indirect form of procurement which are: parts replacement, purchase for office, travel and equipment and any kind of these activates. Normally in a typical firm or corporate environments almost 60% to 80% of their purchases done by an end user (neef, 2001). As we go further in this section indirect procurement will be subdivided further into *MRO and ORM*. MRO stands for (Operation resource management) which involves in those necessary purchases to keep the manufacturing up-and-running such as: production of equipment and parts replacement and servicing. Placing an order on these types, are more complicated than ORM’s because of having different volumes, the importance of the purchase and frequently arranged services. OMR stands for (Maintenance, Repair and Operations) and defines all the services and products used to equip the daily sequence of the business such as: computers, furniture, travel, office equipment and printers (Neiger et al., 2009; Lysons & Farrington, 2006).

2.5.16 Electronic Data Interchange

(E-D-I) known as Electronic – Data – Interchange is a method for exchanging the transaction between the business and organisation (Rai et al., 2018). To archive efficiency in B2B transactions, large organisations have adopted some strategies for E-Data-Interchange for conducting transaction of business within private and far- distance – system networks.

Electronic - Data – Interchange is an exchange of *computer to computer* for business data in an electronic structure format , among the partners in businesses. Nevertheless, implementing of these are required to establish of some protocols and the cost would be expensive (Michalski et al., 2018; Prajogo et al., 2018). Mostly, the high investing cost of these new systems and equipping a firm or large companies with EDI was almost prohibitive for such size of companies and organisations, so, they could not apprehend and realise the advantages of using this kind of technologies (Prajogo et al., 2018). This chapter has collected data and information from the relevant sources regarding the electronic procurement and all other related terms that are also currently using in a broad and extensive filed of supply chain management which is a critical pillar in any business around the world regardless of their activities. Electronic supply chain management is a growing filed and business layout process. This research have aimed to be covering this topic in-depth to help the research on its own as a backbone as well as future researchers of this study.

CHAPTER 3 DESIGN RESEARCH METHODOLOGY

3.1 Introduction

This chapter explains, investigates and presents the research methods of the chosen designed methodology for the purpose of performing this research. Here the details of the research methods framework the sources of data used and the data collection process have been explained. It also illustrates the research phases , the philosophical background and the techniques behind every methods that have been used and applied in the work throughout the whole process. To support this, a thorough investigation has been done related to the nature of the work. To fulfil such purposes this chapter provides an outline to how the research is conducted. Also, covering the *Grounded theory approach* and *Case study* as two methodologies combination that used in the study. In addition to that, the suitability of each methodologies and their validation have been described. This will be also followed by a thorough discussion about the validity and reliability of the data collected. The following section describes an overview about the methodology background , the research contributions and the research questions.

3.2 Overview

Most empirical researches in the field of e-procurement are based on the U.S. data and to a lesser extent on the data from other large economies such as the U.K. So, this research was a great opportunity to show the possible potentials of the this area within the organisations in this country. The mission of this research is to publish original and empirical research in business and management fields to demonstrate of both practical and academic relevance. The *academic relevance* refers to the research contributes that is on-going in the academic debates and discussions on the specific and relevant topic in the management areas. The Practical relevance refers to the relevant manuscript which is explicitly relevant to the managerial challenges and the real world practises. An ideal manuscript balances a rigorous and novel aspects of a topic within the contemporary concern.

To be able to answer the research questions the methodology approach has to allow the researcher to understand the organisational context and the core concepts. Therefore, the research focus is based on the meaning and exploring rather than measurements. The methodology selected was a case study research with an inductive approach to develop the theory as Glaser & Strauss (1967, p.37) underlined that "*An effective strategy is, at first, literally to ignore the literature of theory and fact on the area under study, in order to assure that the emergence of categories will not be contaminated by concepts more suited to different areas. Similarities and convergences with the literature can be established after the analytic core of categories has emerged* ".

Case studies can deliver a very rich variety of data sources including of interviews, observations, archival data, ethnographies and survey data (Eisenhardt & Graebner, 2007). This has been done through a single case study as it can richly describe and define the existence of a phenomenon (Siggelkow, 2007). Case study research is also has the potential of focusing on a few examples, but it needs a significant effort to get the necessary depth (Blaxter, 2010).

The Interviewees who have special knowledge about the given topic are characterised as key informants (Mikkelsen, 1995). Stuart et al. (2002, p. 422) noted that observations using of a case study method are often more stronger for indicating the causal and predictive relationships than other types of an empirical research. The case study can go beyond the narrative descriptions since representing an in-depth investigation (Arbin, 2008, 2003). It also allows extrapolation which is based on the analysis and validity to be generalised when the test of the external validity is based on persuasiveness or the logic of the theoretical schema (Mitchell, 1983).

3.3 Methods of Data collection

Data collection methods are an integral part of research design. There are many different types of data collections such as: (Interviews, observation, questionnaires by mail and electronic, physical experiment, unobtrusive, telephone interviews and computer assisted interviews (Sekaran & Bougie, 2016).

Although interviewing has the advantage of flexibility in terms of adapting, adopting, and changing the questions as the researcher proceeds with the interviews, but questionnaires have the advantage of obtaining data more efficiently in terms of researcher time, energy and costs. Unobtrusive methods of data collection, such as extraction from company records, have advantage of accuracy for the researcher (Schensul et al., 1999). Interviews are one method of obtaining data; they can be either unstructured or structured, and can be conducted face to face, over the telephone, or via the computer. Unstructured interviews are usually conducted to obtain definite ideas about what is, and is not, important and relevant to particular problem situation. Structured interviews give more in-depth information about specific variables of interest. To minimise bias in responses, the interviewer must stablish rapport with the respondents and ask unbiased questions. Face to face interview and that conducted over the telephone have their advantages and disadvantages and both have their uses in different circumstances. The **advantages** and **disadvantages** of personal or face to face interviews and telephone interviews are presented in Table 1.

Mode of data collection	Advantages	Disadvantages
Personal or face to face interviews	• Can establish rapport and motivate respondents. • Can clarify the questions, clear doubts, add new questions. • Can read nonverbal cues. • Can use visual aids to clarify points. Rich data can be obtained.	• Takes personal time. • Costs more when a wide geographical region is covered. • Respondents may be concerned about confidentiality of information given. • Interviews need to be trained. • Can introduce interviewer bias.
Telephone interviews	• Less costly and speedier than personal interviews. • Can reach a wide geographical area. • Greater anonymity than personal interviews.	• Non-verbal cues cannot be read. • Interviews will have to be kept short. • Obsolete telephone numbers could be contacted and unlisted ones omitted from the sample. • Respondents can terminate the interview at any time.

Table 1: The Pros & Cons of face to face and telephone interviews. Adapted from (Sekaran & Bougie, 2016; Schensul et al., 1999).

One method of collecting data is to interview respondents to obtain information on the issues of interest. **Interviewing is a useful data collection method**, especially during the **exploratory stages of research**. Where a large number of interviews are conducted with a number of different interviewers (Strauss & Corbin, 1998; Corbin & Strauss, 1990).
Interviews may be structured or unstructured and conducted face to face by telephone, or online. Unstructured and structured interviews will be discussed below:

3.3.1 Unstructured interviews

Unstructured interviews are so labeled because the interviewer does not enter the interview or intervene the settings with a prior planned sequence of questions to be asked from the participant. The type and nature of the questions asked from each participants and individual might vary according to their type of work, level of jobs and the position they are holding (Corbin & Strauss, 1990).

It is important at this point to discuss and explicate the difference between the *methods* and the *methodology*. Orlikowski and Baroudi (1991) have described methodology as “Which research methods are appropriate for generating valid evidence” and following that also Cox (1996) has explained methodology as “concerned with the analysis of how research should be undertaken or how it can proceed, in other words, the study of the means of attaining knowledge of the world, rather than the techniques of research or practice themselves”. Hence, the research methods are the techniques and the procedures that are used within an overall methodology stage, based on the values and the assumptions that the researcher possesses. The assumptions are commonly explained by the orthodoxy of *ontology* and *epistemology* (Smart, 2010).

Orlikowski and Baroudi (1991) have defined these two concepts as follows:
Ontology is “Whether social and physical worlds are objective and exist independently of humans, or subjective and exist only through human action”. Then, following this, Blaikie (2007) has also explained that “the claims or assumptions that a particular approach to social enquiry makes about the nature of social reality”, in other words “claims about what exists, what it looks like, what units make it up and how these units interact with each other”.

Epistemology is “Criteria for constructing and evaluating knowledge”. In addition to that, Blaikie (2007) described the epistemology as “the claims or assumptions made about the ways in which it is possible to gain knowledge of this reality, whatever it is understood to be; claims about how what exists may be known”.

As befitting to the perception of the PhD which is "learning how to do research", a wide range of possible paradigm have been assessed and evaluated for the purpose of this research to be appropriate. These relevant paradigms have summarised in Table 2 as adapted from other researchers. In particular, and for the purpose of this research design the *ontological* and the *epistemological* assumption are more in attention for this research work.

ITEM	**PARADIGM**	
	Positivism	**Realism**
ONTOLOGY	Naïve realism: Reality is real and apprehensible.	Critical realism: Reality is "real" but only imperfectly and probabilistically apprehensible and so triangulation from many sources is required to try to know it.
EPISTEMOLOGY	Objectivist: Findings true	Modified objectivist: Finding probably true.
METHODOLOGY	Experiments and surveys: Verification of hypotheses: Chiefly quantitative methods.	Case studies / convergent interviewing: Triangulation, interpretation of research issues by qualitative and quantitative methods such as structural equation modelling.

Table 2: Philosophies of knowledge in different paradigms. Source: (Li, 2010; Smith, 2003; Guba & Lincoln, 1994).

Further to this Hughes & Sharrock (1980) has explained the links between *methodology* and *methods*, that one determines and represents the other: "no technique is self-validating; its effectiveness, i.e. its very status as a research instrument making the world tractable to investigation, is from a philosophical point of view, ultimately dependent on epistemological justifications". This point of view has initialised and developed after Morgan and Smircich (1980) who have recomended that "the choice of a method embodies a variety of assumptions regarding the nature of knowledge and the methods through which that knowledge can be obtained".

Therefore, within the context of this orthodoxy, the researcher should be able to state their own philosophical position as the basis for developing an appropriate methods for their own research (Smart, 2010).

Despite the fact that, this type of widely-postulated prescriptive approach, has more published and used in operational research but does not state specifically its philosophical position. Also, whithin the majority of the articles that published in the supply chain management (SCM) research, this is rare to see an overt discussion about these issues related to this field.

Methods often justified with regards to the specific objectives and research questions that have been established, usually as part of a reseach programme, from a rseach gap or the relevant literature. Correspondingly, the importance of the pre-determining epistemological stance has always been challenged. In this regard, Connell & Nord (1996, p. 408) have argued about the opposing epistemological positions in the UK and the USA and defined them as “paradigm wars”.

Their disagreement proposes that there is “uncertainty on questions of ontology and epistemology and recognition that values play an important role in determining the field’s content”. They have also propose and suggest an alternative agnostic approach, that completly rejects the ontological and epistemological tradition and articulates uncertainty about what represents as an external reality and our relation to it (Yin, 2015). The role of the researcher in this style of research is to investigate organisational phenomena and to identify relationships and provide explanations. Typically, these type of organisational interactions need to be explored in detail with the appropriate participants and stakeholders, when examining a new or emerging phenomenon (Yin, 2003).

3.3.2 Snowball Sampling

A sampling procedure may be defined as snowball sampling, chain sampling or referral sampling when the researcher accesses informants through contact information that is provided by other informants (De Certeau and Mayol, 1998, 1984). This process is, by necessity, repetitive of the informants that refer the researcher to other informants, who are contacted by the researcher and then refer her or him to yet other informants, and so on (Biernacki & Waldorf, 1981; Goodman, 1961; Browne, 2006). Snowball sampling is arguably the most widely employed method of sampling in qualitative research in various disciplines across the social sciences. (Noy, 2008).

Here in this study the initial contacts were found through the organisation's data base. This was based on their relevancy of their titles and positions there were holing to the research intention about the internal procurement process of the organisation. Then after every interview if interviewees have other people in their mind related to the research area that they thought it would helpful to the study they were referred to get in touch.

3.4 The Case Study Research Method

The term "case study" is usually applied in Operations Management (OM) to describe of the implementations of new methods or techniques (McCutcheon & Meredith, 1993). The term is also applied to articles based on interviews of key figures or managers. The misapplications of the term "case study" have affected the reputation of this research method.

The case study approach is mainly a way of conducting qualitative inquiry and is normally used when it is impossible to control all of the variables that are of interest to the researcher. Merriam (1988, p.8) stated , that the case study's unique strength is it's ability of dealing with full variety of evidences including: documents, interviews, observation and artefacts.

The main purpose of using a case study is to gain an in-depth understating and getting the knowledge about a situation those who involved using different sources of data. The interest is in the process rather than the outcomes, is more in the context rather than a specific variable and is also in the discovery rather than the confirmation. Merriam (1988, p. 9) also has defined the case study as "an examination of a specific phenomenon, such as a program, an event, a process, an institution, or a social group".

"A case study is an objective, in-depth examination of a contemporary phenomenon where the investigator has little control over events" (Yin, 1989). "The case study's purpose may be strictly to describe a situation but, more often, it is to understand how or why events occur" (Yin, 1989). The case study is considered one of several ways of doing social science research, along with surveys, histories, and the analysis of archival information (Yin, 2003). Case studies can be done from both perspectives positivist and interpretivist epistemological Cavaye (1996) but the purpose and the nature of both perspectives are different.

Positivist believe that the world conforms to the laws of causation that could be objectively tested. Their type of research is confirmatory and hypothetico-deductive (Fitzgerald and Howcroft, 1998; Orlikowski and Baroudi, 1991). They try to attempt and understand maters and phenomena through analysing this means that people have to be assigned to explore them. Their type of research approach is inductive and they are concerned about interpreting social patters and discovering things (Fitzgerald et al., 1998; Klein et al., 1999; Orlikowski & Walsham, 1995).

Case study method enables the researcher to closely examine the data within a specific context. In most cases, a case study method selects a small geographical area or a very limited number of individuals as the subjects of study. "Case studies can also play an important role in theory testing" (George and Bennett, 2005; Dubois & Araujo, 2007). Case studies, in their true essence, explore and investigate contemporary real-life phenomenon through detailed contextual analysis of a limited number of events or conditions, and their relationships " (George and Bennett, 2005).

It is also important to discuss of inductive approach that has been used in this research. Inductive approach allows the discussion and understanding to interpret of the social world (Saunders, 2011). The main purpose of the inductive approach is getting better understanding of the venture of the problems fundamentally and getting the feel of , What has been going on in the case. This is unlike the deductive approach that emphasises of generating theory from the finding and the observation (Bryman and Bell, 2015; Saunders, 2011).

Yin (1984, p. 23) defines the case study research method "as an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used." In some case studies, an in-depth longitudinal examination of a single case or event is used. The longitudinal examination provides a systematic way of observing the events, collecting data, analysing information, and reporting the results over a long period of time.

Yin (2003) also defines three type of case study as a general category: explanatory, descriptive and exploratory. The organisation's level in their adoption progress. Exploratory case studies usually focus on the theory development. The exploratory case study concept usually asks 'what can be learned? (Yin, 2003). Here, the research goals are more explicit which would be about the impacts of e-procurement on the organisation's performance and maturity. In this regard Brown (2006) has also explained that *Exploratory research* "tends to tackle new problems on which little or no previous research has been done". and finally it could be said that Exploratory research does not provide for the final and decisive answers to the research questions, but is merely able to explores the research scope and the related area with varying the depth of the research.

3.4.1 Advantages and the strengths of the case study

There are a number of advantages in using case studies. First, the examination of the data is most often conducted within the context of its use (Yin, 1984), that is, within the situation in which the activity takes place (Challender, 2016). A case study might be interested, for example, in the process by which a subject comprehends an authentic text. To explore the strategies the reader uses, the researcher must observe the subject within her environment, such as reading in classroom or reading for leisure. Yin (2003) has proposes that a single case study can be specially suitable in the events of a “Unique”, revelatory and critical” situation and cases. Eisenhardt (2007) suggests at least 4, but no more that 10 cases in a multiple case study.

Second, variations in terms of intrinsic, instrumental and collective approaches to case studies allow for both quantitative and qualitative analyses of the data. Some longitudinal studies of individual subjects, for instance, rely on qualitative data from journal writings which give descriptive accounts of behaviour.

Third, the detailed qualitative accounts often produced in case studies not only help to explore or describe the data in real-life environment, but also help to explain the complexities of real-life situations which may not be captured through experimental or survey research. A case study of reading strategies used by an individual subject, for instance, can give access to not only the numerical information concerning the strategies used, but also the reasons for strategy use, and how the strategies are used in relation to other strategies.

3.4.2 Limitations of the case studies

Despite these advantages, case studies have received criticisms. Yin (1984) discusses three types of arguments against case study research. First, case studies are often accused of lack of rigour. Yin (1984, p. 21) notes that “too many times, the case study investigator has been sloppy, and has allowed equivocal evidence or biased views to influence the direction of the findings and conclusions”. Second, case studies provide very little basis for scientific generalisation since they use a small number of subjects, some conducted with only one subject. The question commonly raised is “How can you generalise from a single case?” (Yin, 1984 p.21). Third, case studies are often labelled as being too long, difficult to conduct and producing a massive amount of documentation (Yin, 1984). In particular, case studies of ethnographic or longitudinal nature can elicit a great deal of data over a period of time. The danger comes when the data are not managed and organised systematically.

A common criticism of case study method is its dependency on a single case exploration making it difficult to reach a generalising conclusion (Tellis, 1997). Yin (1994) considered case methodology 'microscopic' because of the limited sampling cases. To Yin (1994) and Hamel et al. (1993) , however, parameter establishment and objective setting of the research are far more important in case study method than a big sample size. Case study research forms the main part of this research project and is one type of the intensive research method. The main criticism of the case study method is that it suffers from a lack of rigour and an excess of bias. A further problem is that of external validity which is very difficult to measure in the case study setting (Berger, 1983).

The evidence from multiple case studies, however, is often considered more compelling and the overall study is regarded as more robust. For theoretical generalisability, the important consideration is related to the complexity of external validity whether external conditions are thought to produce much variation in the phenomenon being studied. According to Yin (1989) the quality of any given design can be judged according to the following four tests: *construct validity*; *internal validity* (only for explanatory and causal studies, and does not apply for descriptive or exploratory studies); the *external validity* and *reliability* has shown in Table 3 below.

MEASUREMENTS	CASE STUDY PERFORMANCE	PHASE OF RESEARCH IN WHICH TACTIC OCCURS
RELIABILITY	• Use case study protocols • Developing of case study data base	• Data collection • Data collection
INTERNAL VALIDITY	• Establishing the chain of evidence • Holding key informants review draft for case study report	• Data collection • Composition
EXTERNAL VALIDITY	• Performing pattern matching • Performing explanation building • Performing time series analysis • Use replication logic in multiple case studies	• Data analysis • Data analysis • Data analysis • Research design
CONSTRUCT VALIDITY	• Using multiple sources for evidence	• Data collection.

Table 3: Validity and reliability measurements in case study research. Source: (Yin, 1989)

3.5 Grounded Theory

Grounded theory is a systematic inductive methodology, 'grounded theory' has been developed by two sociologists, Barney Glaser & Anselm Strauss (Glaser, 1978; Glaser & Strauss, 1967, 2009; Strauss, 1987). They have defined 'grounded theory' in these words as 'The theory that was derived from data, systematically gathered and analysed through the research process' (Strauss & Corbin, 1990, p. 12). Grounded theory is all about data collection and analysis. In this approach, the aim is to construct a theory that is grounded from the data (Glaser, 1978, 1992; Glaser & Strauss, 1967, 2009). According to Glaser (1992) grounded theory deals with only inductive approach rather than deductive approach of inquiry. Further, (Punch, 2013) defined the grounded theory approach that, 'Grounded theory is not a theory at all. It is a method, an approach and a strategy.

Here the whole journey of grounded theory approach has been explained by briefly (Strauss & Corbin, 1998, p. 12) 'Data collection, analysis, and eventual theory stand in close relationship to one another and the researcher begins with an area of study and allows the theory to emerge from the data and grounded theories, because they are drawn from data, are likely to offer insight, enhance understanding, and provide a meaningful guide to action'. These paradigms are further based on three perspectives. These perspectives are epistemology, ontology and methodology (Lincoln & Denzin, 2003; Punch, 2013).

The epistemological perspective is concerned with the way knowledge is acquired. It is totally depends on the relationships between a researcher and how the researchers will perceive the actual reality (Creswell, 2014; Punch, 1998). In the other hand, ontology is concerned with the nature of reality. The reality is perceived as subjective and depends how researchers and participants perceive it (Creswell, 2013; Punch, 1998). And lastly, methodology is concerned with the processes and methods through which the researcher will acquire knowledge about the current world's status (Punch, 2013; Edwards & Skinners, 2009).

Furthermore, continuing with these concepts, Neuman (1991) emphasised differentiated the interpretivism and positivism philosophical paradigms. He said that the positivist view of the world is objective where the behaviour, the causes and effects can be measured and human activity can be predicted. He also specially quested that 'For a positivist researcher, the purpose of research is to understand, 'how the world works so that the events can be controlled or predicted'(Neuman, 1991, p. 58).

3.5.1 Grounded theory limitations

As of all research methods, grounded theory also does have a number of limitations. The most widely raised criticism of the grounded theory method concerns its epistemological roots. It has been argued that grounded theory subscribes to a positivist epistemology and that it sidesteps questions of reflexivity (Brandon-Jones; 2006). For researchers in psychology, another shortcoming of grounded theory is its preoccupation with uncovering social processes, which limits their applicability to more phenomenological research questions (Li, 2010). Grounded theory involves the progressive identification and integration of categories of meaning from data. It is both the process of category identification and integration (as method) and its product (as theory).

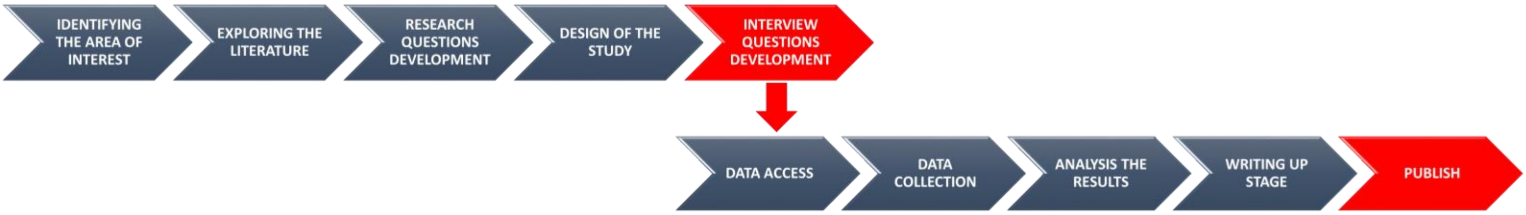


Figure 6: The frame work of the academic research process. (Adopted from: Edmondson and McManus, 2007).

Grounded theory as a *method* provides us with guidelines on how to identify categories and how to make links between categories and how to establish relationships between them. Grounded theory as a *theory* is an end-product of this process; it provides us with an explanatory framework with which to understand the phenomenon under investigation. To identify, refine and integrate categories, and ultimately to develop theory, grounded theory researchers use a number of key strategies, including constant comparative analysis, theoretical sampling and theoretical coding. The next section will cover how the case study had been selected and gives the reasons to this allocation and on what bases this has been decided.

3.6 Framework and data collection methods

This section as shown in Figure 6 describes the approaches and the steps taken to complete the research process. The framework was adapted from (Edmondson and Mcmanus, 2007) and customised to the specific elements and needs of this research to be able to have the maximum output in the progress by taking the same approach. Hence, here as illustrated above there were nine steps to reach the final publishing stage in order to finalise the case study. This started by identifying the area of the research and taking the whole concepts into consideration about the actual topic.

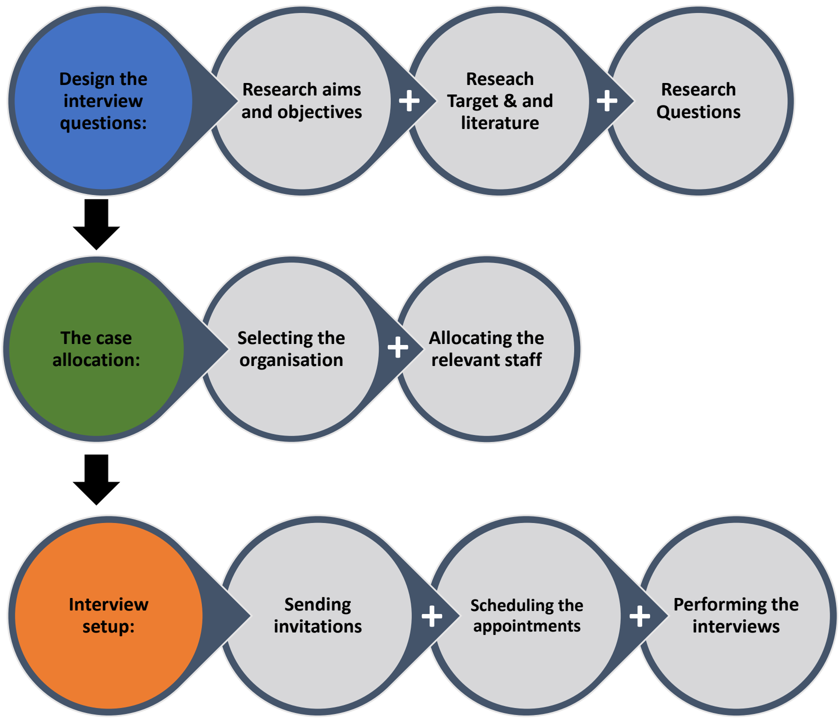


Figure 7: The research data collection process for the interview.

Then it was the literature that helped to find the gaps of the research area in the related field to explore them further that it has helped to create and develop the research questions to be able to successfully design the study process (Smart, 2010). This research has mainly utilised two types of data that included the primary and the secondary data. The primary data was collected through three techniques including (observation and semi-structured interviews) based on a single case study. The secondary data was collected through documentations and the data provided by the organisation using the organisation's database to access the relevant staff for the interview to access them base on their suitability and the criteria. Furthermore, Figure 7 also depicts the procedure model to follow in order to perform the interviews from the start to the final stage.

From the design of the interview questions, research aims and objective and the research questions. Then, following that, the case allocation process that required an initial selection according to the relevant criteria that has already covered in the text and then allocating the relevant staff with refers to their positions and suitability in the organisation. And consequently, setting-up the interview process by sending the invitations to the interviewees (Key informants) , upon their agreements and acceptances scheduling the appointments and finally performing the interview as a semi-structured style to also be able to let the participants to express their ideas about the questions that they were asked. The next section, describes the case method and methodology and the approaches have taken to achieve this.

3.7 The case methods and methodology of the research

Remenyi & Williams (1998) have explained methodology as the “overall approach to a problem which could be put into practice in a research process, from the theoretical underpinning to the collection and analysis of data”. Hence, the methodology is the combination of different methods that have used in any research. This concept also applying to the case study because case study contains different parts and procedures. Hence, this section is explaining the case study as the methodology and the selected methods in this particular research that has selected case study approach to investigate the filed.

There were three main sources of data have been used in this research as explained before and also two general two methods and techniques have been performed (Interviews and observations) that is one of the steps of the methodology. Therefore, combing all the stages will build the right methodology for the research that stars with the research framework. Then, the next step was the selection of the case study based on the criteria of the research and consequently structuring the data collection and performing the selected method as depicted in Figure 8 and finally when it comes to the last step of data analysis, comparison and conclusions of the result accordingly.

3.8 Rational behind the methodology selection for this research

Before the data collection a thorough research has been done based on the similarities of the attributes of the study and matching the scopes of this research by other researchers and their suggestions. The research needs to have some sources to validate and to back up the reasons for selecting the appropriate methodology. This has collected in Table 4 to show the suitability and validity of each elements in the case study as the chosen methodology supported by different authors and researchers to be able to answer the research questions appropriately.

SUPPORTED BY	CASE STUDY/ GROUNDED THEORY	THIS STUDY ATTRIBUTES
GLASER & STRAUSS (1967)	Case study	No hypotheses testing
CRESWELL (2003)	Case study	Being exploratory and qualitative
HARTLEY (2004)	Case study	Investigating of: • Organisation and individuals • Conducting a single case study
YIN (1994) & YIN, (2003)	Case study	Using: Triangulation (interviews, documentations and observations) Answering: "What" questions using exploratory methodology
BROWN (2006)	Case study	Using exploratory research to tackle problems with no research history
BRYANT AND CHATRMAZ (2007)	Grounded theory	Theory needs to be developed naturally without any presumption notions
STRAUSS AND CORBIN (1998)	Grounded theory	The research needs to be open and receptive to novel and new concepts
CRESWELL (2007)	Grounded theory	Theory is needed to better explain a process or how people experience a phenomenon

Table 4: The reasons and rational for the suitability of the case study in this research & Different types of approaches taken by other researchers.

In this study, a combination of qualitative case study method (Stake, 1995; Yin, 1989, 2003; Merriam, 1988) and grounded theory approach (Glaser & Strauss, 1967) were used as illustrated in Figure 8 to research about the phenomenon of a non-profit educational organisation and its adoption impacts. The use of case study is quite well-known as a research paradigm. As Yin (1994) also advocated that, the case study research is to investigate the contemporary phenomena within a real-life context especially when the boundaries between the phenomena and the contexts are not so clear.

He also (Yin, 1994, p.13) suggested and emphasised that the case study “benefits from the prior development of theoretical propositions to guide data collection and analysis” and Glaser & Strauss (1967) persisted that the grounded theory technique should not have any pre-conceived ideas or hypothesis. and finally as Hartley (2004) stated that “Case study research is a heterogeneous activity covering a range of research methods and techniques, a range of coverage (from single case study through carefully matched pairs up to multiple cases), varied levels of analysis (individuals, groups, social policies, organisations and organisational fields), and differing the lengths and levels of involvement in organisational functioning".

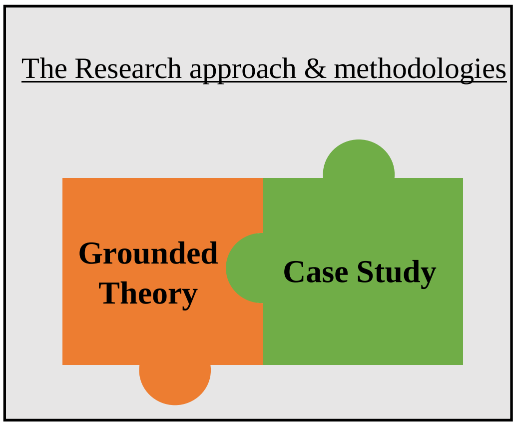


Figure 8: Mixed methods of (case study & grounded theory).

The case study inquiry copes with the technically and distinctive situations in which there will be many more variables of interest than data points, and as one result relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and as another result benefits from the prior development of theoretical propositions to guide data collection and analysis (Yin, 2003, p. 13). One of the chief reasons for conducting a qualitative study is that the study is exploratory (Creswell 2013). Creswell (2013, 2014) has pointed, “One of the chief reasons for conducting a qualitative study is that the study is exploratory.

In summary, both methodologies abilities and suitability to cope with e-procurement have been gathered in the following section. The nature of electronic procurement has multiple sides to be working a one system. Therefore, using a case study and grounded theory as one solid segment that allow the researcher to access the different sources and types of data would bring another reason for the suitability of these two research approaches.

The following as shown in Table 5 after an in-depth investigation and considering all the possibilities on different approaches will bring each of the methodologies in details to be able to see the capability and competence of each in real practice.

CHARACTERISTICS	GROUNDED THEORY	CASE STUDY
FOCUS	Developing a theory grounded in data from the actual filed	Developing an in-depth description and analysis of a case or multiple cases
TYPE OF PROBLEM BEST SUITED FOR DESIGN	Grounding a theory in the views of participants	Providing an in-depth understanding to a case or cases
DISCIPLINE BACKGROUND	• Software engineering • Information Technology • computer technology • Used by manager for explaining the organisational characteristics	• Laws • Social Science areas (Information science; Business studies) • Phycology
UNITS OF ANALYSIS	• Studying a process • Considering an action • Interaction involving of many individuals	• Studying an event • A program • An activity more than one individuals
DATA COLLECTION FORMS	Using primarily interview between 20-60 individuals	Using of multiple sources such as: • Interview • Observations • Documents • artifacts
DATA ANALYSIS STRATEGIES	Analysing data through: • Open coding • Axial coding • Selective coding	Analysing data through description of the case and themes of the case as well as cross cases themes
WRITTEN REPORT	Generating a theory illustrated in an figure	Developing a detailed analysis of one or more cases

Table 5: Contrasting the strengths and limitations of the case study vs. grounded approach. Source: (Stray et al., 2016; Ang, 2015; Okah, 2009; Creswell, 2007; Glaser & Strauss, 1967, 2009; Punch, 1998; Yin, 1989).

To achieve this a thorough research had been done within the research methods in the past by other researchers. Schoenher & Mabert (2011) had under taken a complete research on the different methods used to tackle the use of e-procurement in academia within period of (1997 – 2007). The effort of the research has been listed in Table 6 to be able to give an insight to this topic according to the methods used.

#	RESEARCH METHOD	FREQUENCY USED
1	Simple survey research	31%
2	Survey	21%
3	Single case study	18%
4	Mathematical model	13%
5	Multiple case studies	8%
6	Conceptual theory extension	4%
7	Simulation	2%
8	Content analysis of websites	1%
9	Secondary data analysis	1%

Table 6: The common research methods used to tackle e-procurement during 1997-2007. Source: Schoenher & Mabert (2011).

This study has also looked into other relevant academic researches, since 2003 to 2018 in this field to able to choose the suitable research approach to finalise for the purpose of this study. This research has been mainly informed and was influenced by publications number 7,8,11 & 15 in terms of the methodology and different approaches to be inspired from as well as the rest of the studies that were substantial in this investigation have been spanned and shown in the aforementioned list of Table 7 – 10 regarding the relevant and similar researches in this field of study.

#	AUTHORS	CONTRIBUTIONS	JOURNAL	RESEARCH METHODS	AREAS
1	Chang and Wong (2010)	Adoption of e-procurement on firms	Information & Management	Questionnaire	e-procurement; e-market place; Trust; Firms performance
2	Teo et al. (2009)	Adopters and non-adopters of e-procurement in Singapore: An empirical study	Omega	Survey/ Questionnaire	E-procurement; Adoption; Adopters; Non-adopters
3	Devaraj et al. (2012)	Effect of purchase volume flexibility and purchase mix flexibility on e-procurement performance	Journal of Operations Management	Questionnaire	Frequency; Information; sharing; Purchase volume flexibility; Purchase mix flexibility; Performance; Supplier customization; Trust
4	Mishra et al. (2013)	Capability hierarchy in electronic procurement and procurement process performance: An empirical analysis	Journal of Operations Management	Survey/ Questionnaire	Capability hierarchy; Digital procurement competence; Electronic procurement; Procurement capabilities; Procurement integration competence; Second-order construct
5	Davila et al. (2003)	The adoption and Use of E-Procurement Technology	European Management Journal Supply	Survey	Supply chain; Procurement; E-Procurement; Technology; E-commerce
6	Gebauer & Shaw (2004)	Success Factors and Impacts of Mobile Business Applications with e-Procurement	International Journal of Electronic Commerce	Phone Interview / User survey	Electronic procurement; mobile commerce; mobile technologies; technology management
7	Muffato & Payaro (2004)	Implementation of e-procurement and e-fulfillment processes	International Journal of Production Economics	Case Study	Electronic business; E-procurement; E-fulfillment; Motorcycle industry
8	Arbin (2008)	E-procurement maturity in industry	International Journal of Electronic Business	Case study (Interviews, observation and documentation)	e-procurement, e-business, value, barriers, indirect material

Table 7: Collection of the significant e-procurement journals #1

Continued...

#	AUTHORS	CONTRIBUTIONS	JOURNAL	RESEARCH METHODS	AREAS
9	Gunasekaran et al. (2009)	E-Procurement adoption in the South coast SMEs	International Journal of Production Economics	Survey/ Questionnaire	E-Procurement adoption; E-Commerce; Purchasing; Benefits and barriers; Empirical analysis; Framework
10	Puschmann (2005)	The use of e-procurement in supply chains	Supply Chain Management: An International Journal	Interviews and questionnaires	Procurement; Communication technologies; Supply chain management; Benchmarking; Critical success factors
11	Croom & Brandon-Jones (2007)	Impact of e-procurement in the UK public sector	Journal of Purchasing and Supply Management	Interviews / Grounded theory (coding)	Electronic procurement; Internal service; Structural model
12	Tatsis et al. (2006)	E-procurement in the Greek food and drink industry	Journal of Purchasing & Supply Management	Interviews and questionnaires	E-procurement; Greece; Food and drink industry
13	Walker & Harland (2008)	E-procurement in the United Nations: influences, issues and impact	International Journal of Operations & Production Management	multi-method case study/ Questionnaire survey	International organizations; Electronic commerce; Procurement
14	Doherty et al. (2013)	Institutional responses to electronic procurement in the public sector	International Journal of Public Sector Management	Interviews; observation and documentation reviews (Grounded theory)	Electronic procurement; Public sector; Institutional theory; Case studies; Public sector organizations; Public procurement; E-government
15	Croom (2005)	The impact of e-business on supply chain management	International Journal of Operations & Production Management	Interview Survey	Supply chain management; Electronic commerce; Procurement; Customer service management; Distribution management
16	Wang et al. (2016)	Factors affecting hotels' adoption of mobile reservation systems:A technology-organization-environment framework	Tourism Management	Survey (self-administered questionnaire technique)	Technology-organization-environment (TOE) framework; Mobile service adoption

Table 8: Collection of the significant e-procurement journals #2

Continued...

#	AUTHORS	CONTRIBUTIONS	JOURNAL	RESEARCH METHODS	AREAS
17	Vaidya & Campbell (2016)	Multidisciplinary approach to defining public e-procurement and evaluating its impact on procurement efficiency	Information Systems Frontiers	Field survey (web-based questionnaire)	E-procurement; Content analysis; Supply chain management
18	Chomchaiya & Esichaikul (2016)	Consolidated performance measurement framework for government e-procurement focusing on internal stakeholders	Information Technology & People	Mixed-methods approach t interviews with questionnaires	Perceptions; E-government; Work performance; IT performance management
19	Soares-Aguiar & Palma-dos-Reis (2008)	Why do firms adopt e-procurement systems? Using logistic regression to empirically test a conceptual model	IEEE Transactions on Engineering Management	Survey (questionnaire)	Electronic-procurement systems (EPS); survey method; technology–organization–environment framework; Portugal; propensity of adoption; institutional theory
20	Rajkumar (2001)	E-procurement: business and technical issues	Information System Management	Survey (questionnaire) / Interviews	Implementing MRO; E-procurement;
21	Alvarez-Rodríguez et al. (2014)	Empowering the access to public procurement opportunities by means of linking controlled vocabularies. A case study of Product Scheme Classifications in the European e-Procurement sector	Computers in Human Behavior	Conversion-method	e-Procurement; Product Scheme Classifications; Linked open data; Semantic web; Expert systems
22	Fernandes & Vieira (2015)	Public e-procurement impacts in small- and medium-enterprises	International Journal of Procurement Management	Case study - interviews	e-procurement, public e-procurement, small and medium-sized enterprises, SMEs, adoption, benefits, barriers, electronic procurement, public procurement, European Union, EU directives, Portugal, construction industry

Table 9: Collection of the significant e-procurement journals #3

Continued...

#	AUTHORS	CONTRIBUTIONS	JOURNAL	RESEARCH METHODS	AREAS
23	Arbin (2003)	The road towards successful e-ordering implementation: success factors and barriers	Journal of Electronic Business e-procurement	Case study (Interviews, observation and documentation)	e-procurement; e-ordering, implementation; longitudinal study, case study, success factors, barriers, electronic procurement, procurement management, pharmaceuticals

Table 10: Collection of the significant e-procurement journals #4

CHAPTER 4 DATA COLLECTION AND ANALYSIS

4.1 Introduction

This chapter explains and presents the process of the data collection and consequently illustrating the way they were processed in this research. This will be demonstrated by using the different techniques and ways of analysis to achieve the end results.

Due to the size of the organisation and the limited number of interviewees in the organisation who were specifically related and involved for the purposes of this research to participate as part of the staff. Therefore, it has been decided to use three different approaches in this regard, helping to build a stronger platform for the consistency of the results. Firstly, increasing the amount of time spent in the interviews and the research. Secondly, increasing the number of the questions (See. Annex 1) to be asked to be able to have an in-depth knowledge about the internal strategies and the processes of the organisation as part of this research. Thirdly, using different sources of information to raise the accuracy and validity of the research and adopting the data triangulation method in the collection process.

4.2 Case study overview

This section reviews the research literature in order to describe and evaluate the many ways that interviews can be structured. A case study is a well-known research method for exploratory and theory-building research (Yin, 2013; Eisenhardt, 1989). We have followed a semi-structured interview protocol across this specific case.

In contrast to an unstructured approach prescribed by some researches such as (Spradely, 1979), the "tighter design" of a more structured approach and method will furnish the clarity of the work and allows multiple researchers to focus and avoid the "data over load" that may occur (Miles and Huberman, 1994). Additionally, more advantages to follow structured design include to be selective and more narrow in the data collection process and the capacity of the comparisons this brings (Weller and Romney, 1988).

Ultimately, however, as Miles and Huberman (1994, p. 38), noted that ''in qualitative research, issues of instrument validity and reliability ride largely with the researcher.''

Nevertheless, all the formal processes have been taken place for development of a structured interview protocol that outlined the procedures for making the initial organisation's contact, and by requesting independent documentation to aid in triangulation of data with the interviewees verbal responses (Miller and Crabtree, 1992; Vyas and Woodside, 1984).

This is also important to mention that some of the steps and processors of the procurement and the way of system's operation have been noticed personally by the researcher to gain better grasp of knowledge about the selected case, to ensure the comparable data collection across the organisation.

There were some issues in the organisation's procurement have also been noticed while the interviews were taking place and in process but because of the purpose of this research which is an exploratory study, we did not concentrate on the causes and problems as a detail investigation.

4.3 Case study one

This study explores and narrates an organisation's internal structure and system to be investigated in year 2016. This is an exploratory case study research that has no intention to test or prove a theory nor the final results.

Similarly, no research has aimed at understanding that how the managers and directors are making decisions about e-procurement in such organisations. Therefore, two research questions were formulated to better understand this concept:

RQ1: What is the impact of e-procurement on the performance of an educational organisation?
RQ2: What is the impact of e-procurement on the maturity of an educational organisation?

The structure and the nature of this asset is a non-profit educational organisation and is a registered charity by nature. It's consisting of almost 13,477 staff and members and is considered a medium-sized organisation by educational definitions and a large-sized by government category criteria , based on the number of its staff and the turnover (£142m). Between 2014/2015 the organisation has spent approximately £57m on a wide range of goods, services and work contracts. This is almost equivalent to 40.8% (per cent) of its total expenditure. The organisation did also save up to £2.9m on a broad range of procurement and services using different strategies and tactics which also partially relates to electronic activities.

The organisation's current structure according to the interviews and other different data collected from the staff members shows that the activities and the system are decentralised and this has been asked about the decision from an executive that why this was chosen to be applied within the internal structure:

"We reviewed it about three to four years ago it used to be an individual finance department within each of the colleges but the view was that there is a lot of inconsistency in practices.

Although the organisation policy on doing something would be the same but there would be a lot of different implementations, so it was agreed to be decentralised".

The organisation receives funds from the welsh government every year as a higher educational organisation which is approximately around £11m (according to the audit's report in 2015-2016), but the figure varies every year. Funds receiving from the government will make the organisation pledged to follow the rules of the government to be able to continue receiving the budget. This also has been elaborated with one of the finance directors in the origination that:
"... Welsh government is supporting and providing a lot of infostructure and they are offering e-procurement activities and they are paying for some of that and the maturity assessment...".
The government provides the organisation another systematic facility named as purchasing cards to give more assistance in terms of electronic purchase to the organisation to help them to manage their small purchasing volumes. One of the managers explained his point of view on this:

"... We use the welsh purchasing cards system and we also get a rebate as well on that purchasing cards, it's about 0.8% and it depends on the volume of the spend that will be rebated ..."
He also added and explained the purchasing cards processes and the advantages that bring them:
"... I personally believe that, it's a good idea, it takes a lot of the small value transactions from invoicing processes, and it's convenient and cost effective ...".
"They are designed to be used for cutting the whole process of requisition, authorising, ordering, invoicing goods, services and etc..."

There are combinations of different software and outsourcings systems that are used internally. Such as, Agresso[1], sell2wales[2] and the North Western Universities Purchasing Consortium (NWUPC)[3] as they have collected by their brand names displayed in Figure 9. Agresso is being used as part of the financial system and ERP (Enterprise resource planning) applications. This software relatively is suitable for non-profit educational organisations.

[1] www.unit4.com/UKI/Agresso
[2] https://www.sell2wales.gov.wales/
[3] http://www.nwupc.ac.uk/

Figure 9: The electronic platform providers in the selected organisation. (Source: Agresso, sell2wales and NWUPC websites).

The benefits has been indicated by one of the executives:

"... It pre-negotiates all the terms and conditions and processes and allows you to be compliant with the European procurement regulations instead of going through the whole process of advertising, calling for tenders, evaluating and placing the orders, it does all that for you ...".

Besides, the disadvantages of the software has been discussed by one of the administrators as part of its integration and time consumption and the design of the system:

"... In this software, you need to do a requisition first, somebody needs to authorise it, order needs to be placed and the goods need to come in and then you need to get the invoice and then match the invoice with the goods and the receipts. It's quite an intensive effort ...".

After spending 9 months of collecting different data and information as well as performing the observation and interviews, a general sequence diagram has been produced to illustrate the internal organisation's procurement process as shown in Figure 10. There are overall 10 stages in the procurement process of the organisation to be recognised, in some situations, there are transactions that also take place without following stage 4 which would be the bidding process.

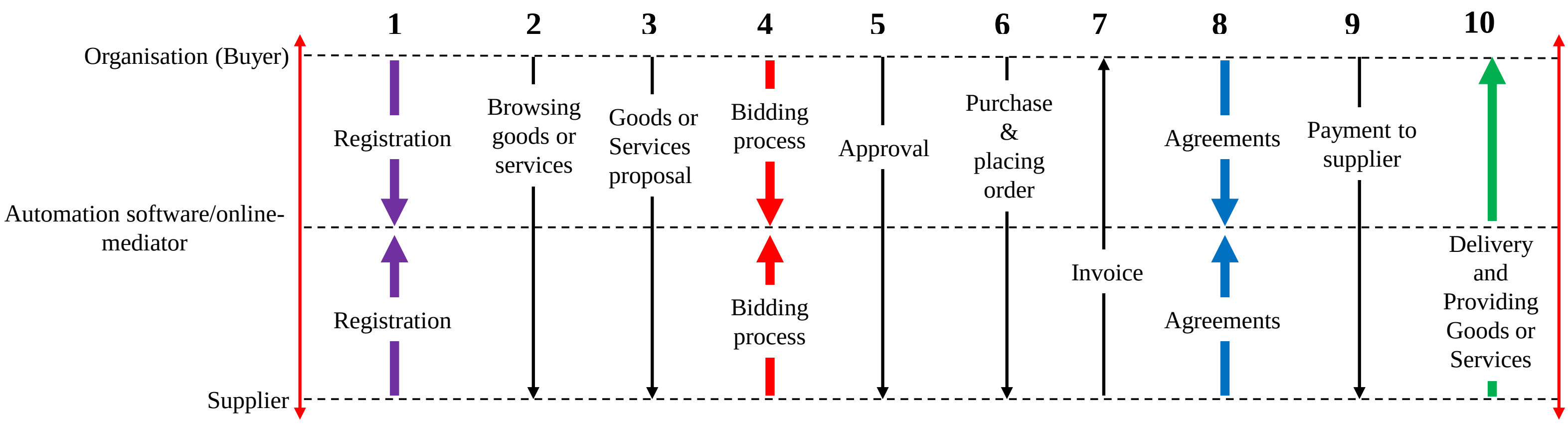


Figure 10: The specific sequence diagram of the organisation's e-procurement process. (Source: Self).

There are also some cases that the organisation would directly purchase its own needs without a mediator and directly finding a supplier and making the purchase as one single stage through (e-commerce websites) and settling their procurement needs and this would be done internally by some member of purchasing assistance to finalise the transactions. Other than that, all the purchasing should follow the same procedures to be fully compromised in the internal system. Similarly, the "NWUPC" is one of the higher education purchasing consortia operating throughout the UK. It provides a database of the suppliers for the educational organisations members, in order to access information for their purchasing needs, the one advantage have been identified by the relevant executive that:

"... It's looking to put in place a consistent and common frameworks for the sector ...".

In addition to that Sell2Wales is the national advertising website where welsh public sector organisations post their contract opportunities and currently is being used in the system of procurement. However, the organisation plan is to change to a different system which is advised by the government and they also financially support and provide training and implementation for that which is called "Basware[4]" that provides purchase to pay and e-invoicing solutions, along with a network to access around 1million companies and suppliers across the countries. This also has been supported by the government to be fully implemented. Some of the benefits that may the organisation would gain has been stated by Basware in Figure 11 to be beneficial for the customers after the full implementation as general improvements such as: improving of accuracy and quality, reduction in invoices costs and eliminating the invoicing errors.

[4] http://www.basware.co.uk/

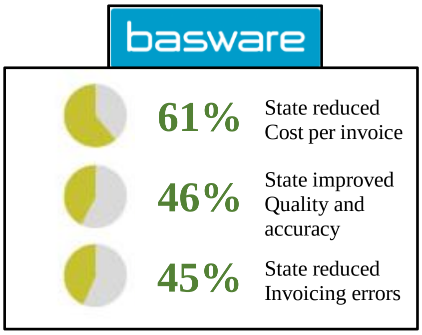


Figure 11: The current electronic platform provider beneficial. (Source: Basware website & data-base).

Basware is the global leader in providing purchase to pay and e-invoicing solutions. They empower companies and organisation of all sizes to unlock value across their financial operations and business networks in 13 countries including the United Kingdom as part of their technical and implementation support.

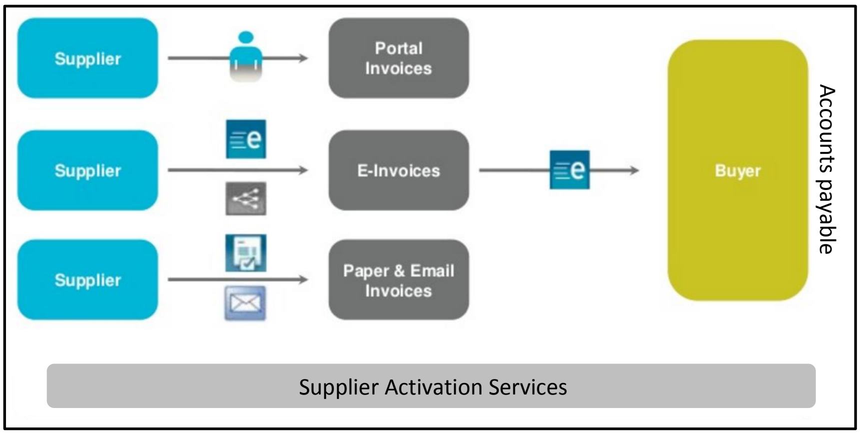


Figure 12: Supplier & customer electronic relations provided by the new implementation. (Source: Basware website & data-base).

This study has acknowledged that after completing the implementation process one of the internal layouts for communication between the organisation and the suppliers would be proceeded in same design as shown in Figure 12 to allow the procurement process to be handled internally alongside other systems. A detailed list of interview proposal and the intention was sent to the interviewees before the actual interviewees and is shown in the Appendix 1. Most questions were qualitative and open-ended, but some questions required quantitative data which they were obtained later upon request from the relevant participant, which helped to confirm the answers (Eisenhardt, 1989).

To further verify the information provided in the research, the informants were asked the informants to corporate documents and archival records, wherever possible (Yin, 2003).

The interview protocol was updated and improved as soon as new idea emerged (Eisenhardt, 1989). All interviews were taped and transcribed word for word. Following the grounded theory approach (Strauss & Corbin, 1990). The data were collected primarily based on the semi-structured interviews with the key informants. An interview protocol was initially developed based upon the literature and was later revised after pilot interviews with several managers in the department based on their relevancy.

4.4 Data collection procedure

The initial decision for finalising the case study choice was based on the size of the organisation. The reason to target a medium to large organisation was essentially based on the assumption that they are more likely to have the potentials of investing in e-procurement. This also can be supported by the studies that reported about the organisation’s size to be one of the important key drivers for the adoption of e-procurement system (Joo and Kim, 2004; Premkumar and Roberts, 1999). However, these type of factors and measures are likely to be different from one organisation to another. The initial contacts were made through telephone and e-mail to invite participates in the research.

Total of 25 people were participated based on the size of the organisation and at the same time, considering the data saturation limit (Glaser & Strauss, 1967, p. 70) with the number of interviewees. Prior to conduct the case study and starting the data collection, we have been well searched on the organisation’s staff database to find the most suitable person to contribute to this research based on the positions they were holding. Interviews were lasted about **1 - 1:45** hours and all have been tape recorded. Having completed the data collection phase given the depth and richness of the data-sets as well as the “marginal remarks” in the middle of the interviews (Miles and Huberman, 1994), then the interviews were transcribed and coded using QSR NVivo 10 to ensure that they were analysed in a rigorous manner.

The interviewees were among high ranks of staff and the executive members of the organisation such as: procurement specialists, senior suppliers, finance managers, procurement directors and officers who were involved in the decision making processes and adopting the system. The case study was carried out through one set of face-to-face interviews in the organisation. Semi-structured personal interviews have conducted using open-ended questions and they have regulated and structured by a set of key and fundamental themes in order to guide the interview process.

This phase was contained both interviews as well as, six to seven months of observations on the procurement operations; the main focus of these interviews were on the procurement process and the impediments and the benefits for the organisation's adoption of e-procurement in addition to its maturity level. The interviews were essentially concentrated on exploring the changes, both internally and externally, that had taken place regarding e-procurement.

This has helped our research stage to give a longitudinal perspective to this study (Arbin, 2008). In addition to the interviews and observations the secondary sources of data was used to reduce the risk of bias, such as documentation provided by the organisation and their publicly information were used to triangulate the data collected. For example, the organisation observations helped and facilitated to corroborate the stages in the procurement process in their daily work environment, and documentation was used to recognise the level of their maturity in actions and some information about the number of suppliers, size of the transactions, income and expenditures and savings. The following diagram depicts the sources and the methods of data collected in the research shown is Figure 13. The following section is describing the ways and methods used for collecting the data for the purpose of this study.

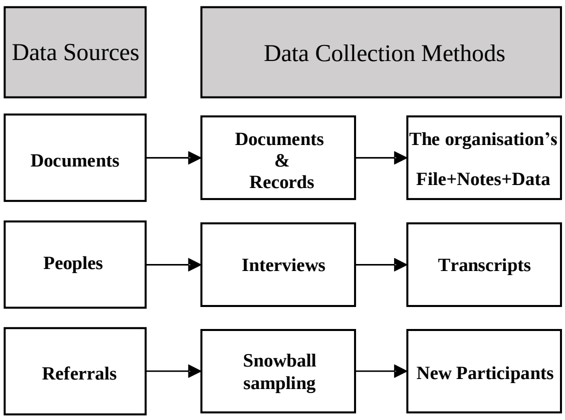


Figure 13: The data sources and collection methods in the study. Source: Self

There were multiple sources of data (Miles & Huberman, 1994) used to investigate the key questions. Following this, the appropriate semi-structured interviews were designed to explore more conceptual subjects. Furthermore, the data collection and analysis are described in more detail below. During each cohort, all interviews in the selected organisation were recorded and archived. Subsequently, analysis of the archived data were performed to explore the type of responses. Transcripts of the interviews were produced and then counted and sorted, until the "saturation of themes" have occurred (Miles & Huberman, 1994). Subsequent transcripts were analysed to see if they suggested new themes, which were added to the previous structure. Different qualitative data collected during the study were similarly collected at the same time. To answer this research questions in this study, we have conducted an exploratory a case study on a medium size organisation. We purposefully selected the participants of this inquiry given our goals we want to achieve and analyse. The logic of purposeful sampling lies in selecting information-rich cases for studying the phenomenon in depth (Coyne, 1997).

The initial contacts were made through telephone and e-mail to invite participates in the research and this has followed by an invitation letter and information sheet shown in (**Annex 1**). The interviewees have expressed wide-ranging views on how the procurement system functions are perceived and positioned within their organisation. Some experienced that procurement in their organisations was still perceived as an administrative function, which they were unhappy with as an organised manner. A total of 25 exploratory interviews were conducted people who were participated based on the size of the organisation and their title, considering the data saturation limit (Glaser & Strauss, 1967, p. 70) with the number of interviewees.

The interview protocol process was continued until all of the people who were aimed to be interviewed were responded. The reason behind this was that in the beginning of the data collection procedure it was clearly estimated about the interviewees and their relevancy to the type of the research and the questions that needed to be answered. This has also helped to save time during the collection and receiving useful information from the people who were in charge of the process at the time. The questions that have been designed to help this study to achieve its objectives were thoroughly sampled and considered by similar studies in the same filed to have an appropriate outcome in terms of the response rates (Doherty et al., 2013; Arbin, 2008; Croom & Brandon-Jones, 2007; Kothari et al., 2007; Tatsis et al., 2006; Puschmann & Alt, 2005; Carter et al., 2004).

Initially 25 people were selected from the university data base. The selection of the participants went through two stages of data collection. Firstly, they were considered by their **title** and their **position** they were holing and that was the only **primary information** that was available at the time, as the researcher moved on, the second stage happened which was the **snowballing** process that 5 of the participants have referred the researcher due to their lack of information about the organisation’s strategy and procedures to another relevant person as an **expert**, **specialist** or a **generalist** who has more knowledge about in this area within the organisation.

In this stage it was then clear that who to concentrate as a relevant person and who to request for participation. Then, the invitation stage proceeded through sending a separate e-mail and reasoning what was the research about and if they were agreed to participate they were confirm it via e-mail. Finally, in the interview session they were asked questions about the internal processes of the organisation following by a participant information sheet as shown in (**Annex 1)**. Overall, this study could reach with **the response rate of 60%** with **15** fully satisfied interviews. They are described below in detail as follows: The below statement was evolved from the first interview and the lack of collaboration between staff and inconsistency within the departments as well as No regular meeting are held within the internal system to improve the quality of the progress.

There were different types of data received in the process of collection because of participants availability and preference for providing of the information. In terms of the accessibility and the willingness of the interviewees to participate, due to the specific nature of the organisation which was an educational type, this had a positive effect for increasing the number responses intake and their accuracy because all of the participants were educated and being in an academic environment and more importantly were interested in the topic of the research. This had helped the research to move through an effective process phase to achieve its outcomes. The initial decision for choosing this case study was based on the size of the organisation. The reason to target a medium to large organisation was essentially based on the assumption that they are more likely to have the potentials of investing in e-procurement.

This also can be supported by the studies and literature that reported about the organisation's size to be one of the important key drivers and factors for the adoption of e-procurement system (Joo and Kim, 2004; Premkumar and Roberts, 1999). However, these type of factors and measures are likely to be different from one organisation to another. The following diagram depicts the sources and the methods of data collected in the research in (Figure. 5).

The following section is describing a review over the observed organisation's status prior to conduct the case study and starting the data collection, the search on the organisation's staff database have been started to find the most suitable person to contribute to this research based on the positions they were holding. Interviews were lasted about 1 - 2:45 hours and all have been tape recorded. Having completed the data collection phase, this has given the depth and richness of the data-sets as well as the "marginal remarks" in the middle of the interviews (Miles and Huberman, 1994), then the interviews were transcribed and coded using QSR

NVivo 10 to ensure that they were analysed in a rigorous manner. The interviewees were among high ranks of staff and the executive members of the organisation such as: procurement specialists, senior suppliers, finance managers, procurement directors and officers who were involved in the decision making processes and adopting the system. The case study was carried out through one set of face-to-face interviews in the organisation. Semi-structured personal interviews have conducted using open-ended questions and they have regulated and structured by a set of key and fundamental themes in order to guide the interview process.

This phase was contained both interviews as well as, 8 to 9 months of observations on the procurement operations; the main focus of these interviews were on the procurement process and the impediments and the benefits for the organisation's adoption of e-procurement in addition to its maturity level.The interviews were essentially concentrated on exploring the changes, both internally and externally, that had taken place regarding e-procurement. In addition to the interviews and observations the secondary sources of data was used to reduce the risk of bias, such as documentation provided by the organisation and their publicly information were used to triangulate the data collected.

For example, the organisation observations helped and facilitated to corroborate the stages in the procurement process in their daily work environment, and documentation was used to recognise the level of their maturity in actions and some information about the number of suppliers, size of the transactions, income and expenditures and savings. The next section describes the multiple indications that occurred to recognise the time to terminate the data collection process in this research using different sources of information.

4.4.1 Data collection criteria

There were several key informants include managers, senior managers, directors who were intimately involved with the deployment of the e-procurement system at the selected organisation. Individuals were from a range of academic, representative and managerial bodies were selected.

In addition, the key informants were carefully chosen. Those who were believed to be a representative of the samples (not in the statistical sense) of the organisation system.

The interviewee's opinions have been analysed and compared with one another in terms of the overall issues surrounding about the system.

4.4.2 Opting an expert in the field

An expert is someone widely recognized as a reliable source of technique or skill.
An expert differs from the specialist in that a specialist has to be able to solve a problem and an expert has to know its solution. The opposite of an expert is generally known as a layperson, while someone who occupies a middle grade of understanding is generally known as a technician and often employed to assist experts (Gobet, 2015).

The concepts of experts and expertise are debated within the field of epistemology under the general heading of expert knowledge (Gobet, 2016; Gobet & Chassy, 2008). In contrast, the opposite of a specialist would be a generalist or polymath.

An expert can be an authority if through relationships to people and technology, that expert is allowed to control access to his expertise. However, a person who merely wields authority is not by right an expert. In new media, users are being misled by the term "authority". Many sites and search engines such as Google and Technorati use the term "authority" to denote the link value and traffic to a particular topic (Gobet, 2015). However, this authority only measures populist information. It in no way assures that the author of that site or blog is an expert.

Potential key informants were considered by the author to be chosen as experts on the basis of their ability to fulfil all the potential, selection criteria and key informants satisfaction that suggested by (Tremblay, 1957; Campbell, 1955) as the “'ideal' characteristics” in the following manners:

- They were occupied with the roles that made them knowledgeable about the e-procurement introduction at the organisation (Campbell, 1955).
- They all had a formal role which exposed them to information about the relationship between specialists and general practitioners (Tremblay, 1957).
- They were all willing to co-operate, communicate and share their opinions during the interviews (Tremblay, 1957; Campbell, 1955).

Individual employees (who are the users of the e-procurement system) were not considered to be a unit of analysis because we did not collect data from the e-procurement systems user through the case study. Our intention was not to test a model of e-procurement acceptance in a statistical sense rather to discover the impacts of performance and maturity as perceived by the by an exploratory research in an educational organisation and identify how such factors influence the organisation according to the experts who were interviewed and other sources of data which was inserted in the study. As a result, we have relied on the use of key informants approach.

4.4.3 Terminating the data collection

The following describes that how the termination of data collection process has happened. It is an essential part of the research to realise when to stop collecting the data. The data saturation limit is when the opportunity of gaining more and new information has been reached to a certain point to start indicating for stopping the data collection (Guest et al., 2006), and also when there are enough details, data and information to replicate the research (O'Reilly & Parker, 2012). In addition to that it has also been stated that there would be a situation in which there are no more possibility for continuing of coding from the data received (Guest et al., 2006).

In this study, the data collected from the different sources has stopped when the data received was not helping the research any more in terms of the new knowledge and also spending more time and concentration on participants was not beneficial for the research. In Table 11 those reasons have gathered as an indication to terminate the data collection.

#	TERMINATION INDICATORS
1	Repeating & Reciting the common rules and regulations.
2	Meeting the objectives of the research.
3	Achieving the goal settings.
4	No further access to different sources of data.
5	No further relevant participants.

Table 11: The reasons to terminate the data collection. (Source: Self).

The first reason was because of the organisation's rules and regulations were coming from one common data base and most of the participants were referring to that and there were no new information to catch in that part and it was already saturated and reached to the end limit for the replication purposes. The second reason for stopping the collection was when the objectives of the research have been met and the questions of the research were answered accordingly. The third reason also was achieving the goal settings that have been formulated in the beginning of the research once they have been satisfied there were no more action has taken place for further collection. The fourth reason, was the ability to access no further different sources of data that have shown the time and the indication to terminate the data collection when information collected are rich enough to be processed to the further steps.

Finally, there were no further relevant participants as part of the information collection to be used in the research with holding the suitable position in the organisation. The next section is illustrating the data extraction stage of all types of information collected from different interviewees and participants in the organisation internally and also different statistics and background of the research.

4.5 Data extraction and sources

This study employed an exploratory case study approach – It mainly focused on the organisation's internal procurement process and the impact that the system may have to improve the procurement system in terms of the performance and maturity. The data collection involved in the semi-structured interviews of the key players and observations of the internal system within the organisation. The functions represented by those who were interviewed and their positions have gathered in Table 12, including the data sources used in the whole study. The invitations have been requested from the executives that were holding the positions such as: Finance managers and directors, procurement directors and managers, dean of the colleges, Senior managers and accountancy assistants.

Here as gathered below the sorts of information collected in this research where categorised and the sources with referring to the relative persons have been mentioned according to their positions they were holding. Among 25 participants that were interviewed, there were 13 persons that anticipated to be given three type of data (taped recoding, documents and data and the notes taken in the middle of the interviews). In the other hand, there were 7 participants that their information was limited to the documents and notes taken in the interview session. There were 5 other people who were only had the chance of providing documents such as: (financial reports, annual audit's report and other documents relating to the performance and their expenditures) and all have been thoroughly considered.

NUMBER OF PARTICIPANTS	RECORDED VOICE	DOCUMENTS & DATA PROVIDED	NOTES TAKEN	POSITIONS OF THE INTERVIEWEES
13	✕	✕	✕	• Finance managers • Procurement directors and managers • Dean of the colleges
7		✕	✕	• Department and college managers • Director of finance • Accountancy assistant
5		✕		• Senior Managers • Directors • Head of the departments • Accountancy assistant
TOTAL: 25		Field notes	Documents	Other materials
		• Interview notes • Observation notes • Conversation summaries	• E-mails • Internal operation documents	• Posters • Brochures • News from Webs-sites

Table 12: The number of interviewees, types of information provided and their positions holding. (Source: interviews, documentations and observations).

The interviews after the recording session have been transcribed and coded with QSR NVivo 10 software as shown in Figure 14. In addition to that the observation notes and other interview notes that have been recorded manually also transferred and added into Nvivo. This has helped to keep all the data and being able to see the whole image containing all other information pieces that have been collected in this study at one place.

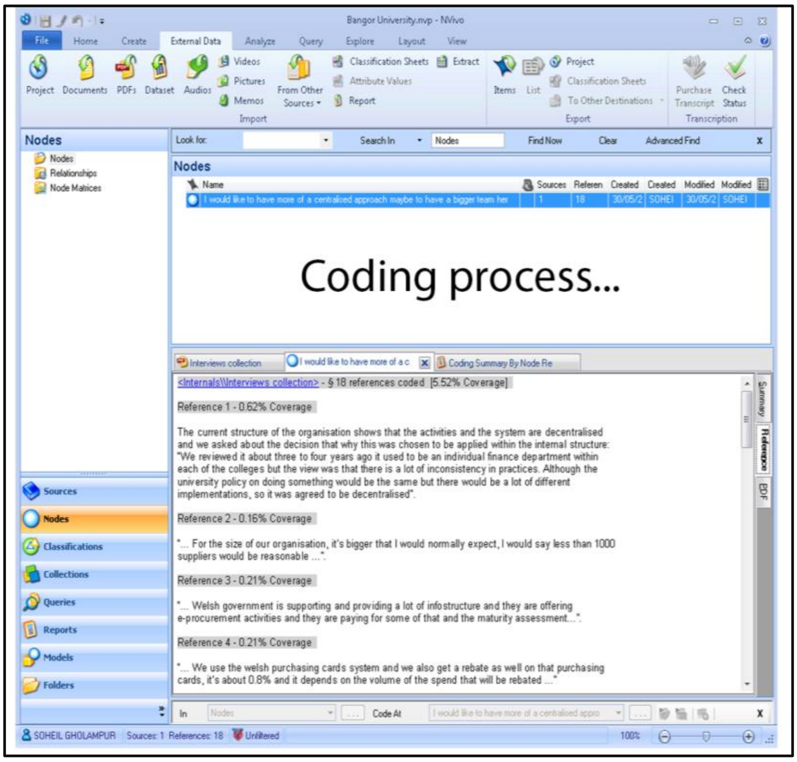


Figure 14: The coding process using Nvivo. (Source: QSR NVivo 10 software).

One of the features that was used through transcribing and codifying the interviews within the process was looking for the common words that have been repeated and used in the interview. Some of the words have been illustrated in Figure 15 indicating the type of the words it was collected in this research.

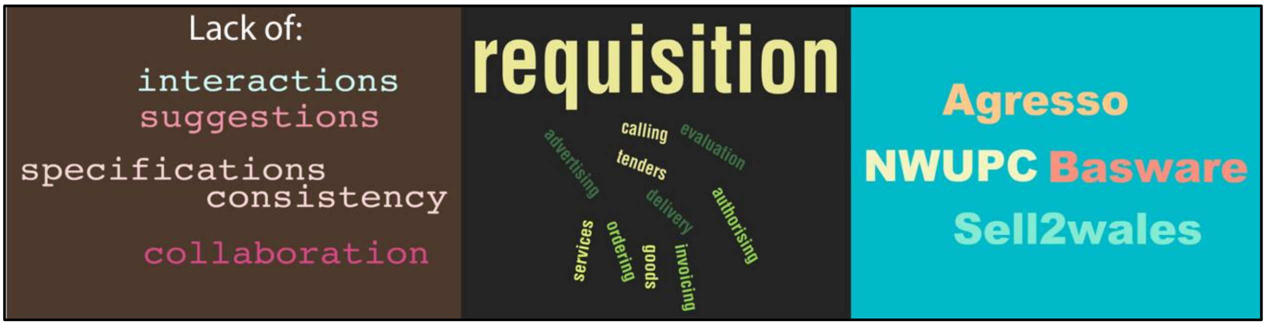


Figure 15: Creating word-cloud using Nvivo. (Source: QSR NVivo 10 software).

During of the stages of the data collection in the research, the organisation's relevant operations have been internally observed. The observation process have been individually performed by the researcher to compare the quality and the richness of the data collected. This has helped the research to be openly discusses of the internal process of the organisation in the data analysis as this have been fully discussed in the next section. In spite of the fact that the organisation is classified as a medium size built, but we have identified and observed the range of the suppliers that have been dealt with is around 3000 per year which was a surprising amount as part of

their external connections and activities. This also has been asked from one of the directors and has been clarified that:

"... For the size of our organisation, it's bigger that we would normally expect, I would say less than 1000 suppliers would be reasonable...".

The data collected through interviews and other documentations have shown that the size of the organisation varies in respect to the educational and official scales here in Table 3 and Table 4 , the difference have been elaborated and discussed.

With regards to the definition of SME's and organisations in the United Kingdom regulations and referring to the sections 382 and 465 of the Companies Act 2006, stating that the different organisations must follow a certain criteria to be placed within these size categories to be recognised officially as collected in Table 13. The selected organisation sample in this study

SIZE	NUMBER OF EMPLOYEES	FINANCIAL TURNOVER
SMALL	50	No more than: £ 6.5 million
MEDIUM	250	No more than: £ 25.9 million
THIS STUDY (LARGE)	2339	£ 142 million

Table 13: The selection of organisation's size categories. (Source: The official data base of UK legislation).

According to the Department for Education (DfE) the size of the educational organisations are defined as small, medium and large-sized with refers to their number of current students as shown in Table 14 . By following this measurements the organisation that has selected in this research lies within the categories of medium-sized organisation in general.

SIZE	NUMBER OF STUDENTS
SMALL	Less than: 5000
THIS STUDY (MEDIUM)	Between: 5000 – 15,000
LARGE	Over: 15,000

Table 14: The selection of educational organisation's size categories. (Source: DfE - Department for Education data base).

The above categories may vary according to the future plan of the organisation's internal strategy in the future in terms of the number of employees and the budget limits.

4.6 The time-line and evolution of the themes

Here, this part of the research represents that there was a very thorough formal process that took place in the evolution of the interview themes section. This happened after-when the collection and the saturation point reached to the substantial level and abled the researcher to carry on with the analysis stage, as well as, showing how the time-line allowed and this also helped to proceed further with the data evolution as part of the research investigations. The statements below are showing the evolution of the themes out of the interviews and provide the details that how the codes have emerged and evolved after a thorough and independent transcripts synthesising and summarising. Some of themes and factors have been coded, some other as shown in Table have been observed inside the organisation's system which later on was matching the transcript at the same time as the codes were emerged to support the data.

4.6.1 Findings

Having reviewed all the data from different sources of audio recordings, transcripts, and the notes from the selected organisation as well as the semi-structured interviews that helped to provide a wealth and depth of the information addressing the research questions posed in this study. The participants expressed wide-ranging views and salient quotations that are used to illustrate major themes that arose. The following shows the themes that evolved from this thorough research process in different sections.

Alongside the findings for this specific organisation, the general reasons for other cases have also been discussed to be able to have an overall comparison. The findings are as follows: The specific internal barriers as well as in general, different levels of maturity and performance have been illustrated such as: Data analysis, sourcing level, transactions and payments. In addition to that there were other themes that have evolved such as: specific pitfalls, internal barriers, specific structural and cultural point. Finally, drawing a conclusion to combine the outcome. To start of the description, the specific pitfalls and their impact on the organisation and staff have been collected in Table 15 as shown below and continues within the rest of the paper along other themes.

Themes	Impacts on the organisation and staff
The Specific pitfalls	
	1) Some staff are loaded with too many responsibilities.
	2) Lack of enough staff to handle the works. (cause to slow down the processes).
	3) Lack of consistency of approach and specifications.
	4) No regular meeting are held within the internal system to improve the quality of the progress.
	5) The rules and regulations for procurement have been established and distributed online but staff are not fully aware of them to be able to follow them.
	6) Lack of collaboration between staff and inconsistency within departments.
	7) Not involving everybody in goal settings and administrative inefficiency.
	8) Staff do not have much interactions with each other.

Table 15: The Specific pitfalls and category of the themes.

4.6.2 The specific pitfalls in the organisation

The interviewees have expressed wide-ranging views on how the procurement system functions are perceived and positioned within their organisation. Some experienced that procurement in their organisations was still perceived as an administrative function, which they were unhappy with as an organised manner.
Initially 25 people were selected from the university data base. The selection of the participants went through two stages of collection.

Overall, this study could reach **the respond rate of 80%** with **20** fully satisfied interviews. They are described below in detail as follows:
The below statement was evolved from the first interview and the **lack of collaboration between staff and inconsistency within the departments** as well as **No regular meetings are held within the internal system to improve the quality of the processes** have been noticed from the data collection within the research.

(The Director of Finance) :

" ...There is a lot of inconsistency in practices. Although the organisation's policy would be the same but it would be different implementations...".

He also added that:

"... We get something about 50,000 to 60,000 invoices that we process every year. And we would probably be avoiding at least 20,000 of them in that way. And at the moment we do only 25% of our purchasing fully electronically and we are trying to get to 50% . and this is in numbers terms, if you do it in values terms it would be about 95% traditionally on paper and 5% electronically... ". and he **further continued** the conversation that:

"... I would like to have more of a centralised approach maybe to have a bigger team here in procurement that we can actually run the exercises. or tender exercises on behalf of the departments. So then we can come to a professional resource, we make sure that we abiding by all of the welsh government rules and European regulations and keep control of that better if that's centralised ...".

(The Director of procurement)

The second and the third element **No regular meetings are held within the internal system to improve the quality of the progress** and **Lack of having enough staff to handle the works (causes slow adoption pace)**.

"... One of the problems from my perspective is that we have a devolved structure, we tend to find in different colleges and different departments that they all trying to do procurement in different ways. Even though we try to set a guidance in the middle, we probably find that some departments still think to do it in different way. Because they think is better to set it in their own ways ...". she also added that :

"... The other difficulty we have is trying to get the information out, again because we have so many people involved in the contracts come on board is how we actually disseminate that information. In my mind there are just too many people sort of placing orders and doing procurement and to chain all of them It's quite a major undertaking ...".

The next theme was evolved from the forth interview and it had also repeated in the same way to be able to codify the theme. Here it shows the procurement officer that makes a statement about the centralised system of the organisation as well as the limited amount of relationships between staff in the same department.

(Procurement Officer)

"... We centralise some of the processing. So, within finance structure where we have it, as it's called finance hubs, the areas that people provide a servicing, processing, purchase orders, traveling and expenses claims, pinks forms and requisitions ...". The next 4th and 5th participants also were covering the materials in the same concepts.

(The Accountancy assistant)

"... It's an area that we could do better and we are keen to pursue the electronic procurement route because that's the next step and everybody moving towards that ...".

(Purchasing officer)

"... There are just administrative inefficiencies, but the way that people deal with processing, requisitions, goods or services and the way they decide, what they want and where they want to get it from or how they arrange for it to be delivered or what is the exact specification? And the way it ends up being invoiced and processed and paid, everybody sort of doing it slightly differently not necessarily wrongly just differently I would say lack of consistency in what we buy and who we get it from ..."

(Finance Manager)

The next interview collected information from the finance manager and his key points were also comprisable between the 7th and the 8th person in the same row.

"... I would like to have more of a centralised approach maybe to have a bigger team here in procurement that we can actually run the exercises. or tender exercises on behalf of the departments. So then we can come to a professional resource, we make sure that we abiding by all of the welsh government rules and European regulations and keep control of that better if that's centralised ...".

(The vice-Chancellor)

"... Some of the problems can occur when the relations among the staff are limited and occasionally to some extent they are not dealing with each other regularly...".

(Head of the departments)

"... The university has a clear guild-line toward the regulations but sometimes they are not fully followed and understood...".

(Dean of the law school & chairman of the Institute for competition and procurement)

"... We centralise some of the processing. So, within finance structure where we have it, as it's called finance hubs, the areas that people provide a servicing, processing, purchase orders, traveling and expenses claims, pinks forms and requisitions ...".

(Director of Business Management and Marketing)

"... Welsh government is supporting and providing a lot of infostructure and they are offering e-procurement activities and they are paying for some of that and the maturity assessment...".

(The College Manager)

"... The changes and modifications in our department are supported by the head of the school and it needs to be verified to start the process. ...".

(Senior Supplier and Procurement Specialist)

"... The other difficulty we have is trying to get the information out, again because we have so many people involved in the contracts come on board is how we actually disseminate that information. In my mind there are just too many people sort of placing orders and doing procurement and to chain all of them It's quite a major undertaking ...".

(Database Co-ordinator and Learning Technologist)

"... There are limited amount of staff in our department who sometimes are doing multi-task jobs at the same time ...".

4.6.3 The specific internal barriers

The specific barriers that the organisation is facing have collected in Table 16 as well as the impacts of them on the organisation and staff.

Themes		Impacts on the organisation and staff
The specific international barriers	**1)**	Suggestions only come from the top management and staff are not involved in the decision makings.
	2)	Lack of enough staff to handle the works (causes slow adoption pace).
	3)	Internal budget limitations.

Table 16: The specific internal barriers.

4.6.4 The specific internal barriers in general categories

The specific barriers in general have collected in Table 17 as well as the impacts of those factors on the organisation and staff.

Themes		Impacts on the organisation and staff
Specific internal barriers in general from the observation	**1)**	Departments are decentralised.
	2)	No resistance to change of internal/external system towards e-procurement.
	3)	Compliance with the organisation culture but is not yet levelled and levitated to the full adoption phase.

Table 17: The Specific internal barriers in general.

4.7 Findings (Evolution of the themes)

In this section the researcher describes the **time-line** and the **evolution of the themes** from the interviews and the coding scheme process. Having reviewed both **audio recordings**, **transcripts**, and the **notes** from the selected organisation. Semi-structured interview methods that helped to provide a wealth and depth of the information addressing the research questions posed in this study. The participants expressed wide-ranging views and salient quotations that are used to illustrate major themes that arose.

As described before in the methodology the selection of the participants were describes about each individual participants who have participated in the study and their titles of the positions they were holing. Firstly, they were considered and initially selected by their title and their positions they were holing based on the university data-base and that was the only primary information was available at that time of the exploration in the research and as the researcher moved on to the second stage, it was when the snowballing process developed, since **five of the participants** have referred the researcher due to their lack of information about the topic and the area of research to a relevant person as an introducing to an **expert**, **specialist** or a **generalist** in this area within the organisation. For instance the researcher has interviewed the vice-chancellor of the university as a generalist who has an overall overview of the processes in the university but he would not be an expert in that practise because he is not personally involved in the tasks. The experts could be classified with those who were involving in the procurement department of the university. In this stage it was then clear that who to concentrate on as a relevant person and who to request for participation. There were three major themes that have evolved by the researcher described as follows:

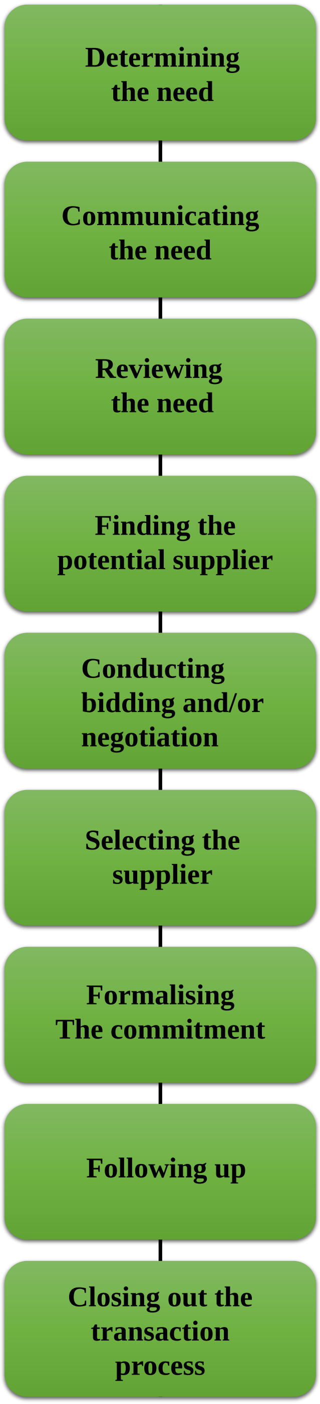
4.8 Data analysis

To answer the questions our investigation exposed through the case study and using the data that identified what parts of the system they supposed to feel the changes and have the most potential to be influenced.

What is the current level of maturity and the impacts on the performance after adoption?

Besides, considering their optimum level of readiness, maturity and performance they supposed to reach. Therefore, four levels of maturity have been recognised in this organisation. Hence, an in-depth observation and data collection carried out to also answer, how e-procurement can possibly change and influence an educational organisation’s trend. Similarly, their intended and the impacts after the full adoption have been reviewed. The information below designates the different levels of improvements to be recognised such as: sourcing, transactions, payments and analysis level. The information provided below and the collected points in Table 18 reveal the current and indented sourcing level plan in the organisation.

SOURCING LEVEL



Here is the current process of sourcing stages in the organisation that has illustrated in 9 steps. This has been achieved after a thorough observation in this study before the complete.

CURRENT

- The improvement is underway
- Sourcing is only covering between 6-30% of the procurement.
- limited resources allocated to e-sourcing services and activities.

INTENDED PLAN

- The plan of achievement is to reach of 61-80%.
- The majority of tenders will be carried out using rather than paper forms.
- E-sourcing will be used in most parts of the organisation.
- <u>Planning for including the following in the system</u> :

E-tendering, e-evaluation, e-auction and using e-catalogues for ordering the goods.

Table 18: The current sourcing level and the intended plan to accomplish. (Source: interviews, documentations and observations).

TRANSACTIONS LEVEL

The transactions cover the following internal activities: creating, issuing and receipt of goods as well as the final transaction approvals. The collected points in Table 19 illustrated the current and indented transactions level plan in the organisation.

CURRENT	INTENDED PLAN
• The e-procurement system is in place and integrated with internal finance system. • Only 31-60% of core e-transaction are activated such as: Electronic requisition, purchase orders and goods receipting.	• Researching up to 61-80% of the electronic transaction capacity. • E-transactions are used in all parts of the organisation internally and externally.

Table 19: The current transactions level and the intended plan to accomplish. (Source: Observations, interviews, documentations).

Moreover, as expounded in the above table the current and the intended plan of actions for the organisation's improvement has been pointed out according to all the available sources of data after the collection process and they have been categorised appropriately. This would describe their procurement system within the existing structure and the ways that it would be beneficial to be changed for higher efficiency. The current system within the transactions level has been categorised in terms of the internal finance system and their electronic transactions that are not yet fully adopted to the intended plan of the organisation. This plan will increase the efficiency of the system after the complete implementation process for the use in the e-transactions internally and externally.

PAYMENTS LEVEL

The payments cover the following essential activities: receiving, matching and payment of invoices. The collected points in Table 20 clarified the current and indented payment level plan in the organisation.

CURRENT	INTENDED PLAN
• The e-procurement current only covers between 10-30% of the annual procurement which carried out electronically. • The procurement strategies are in place, but the system is not fully integrated with the internal finance system.	• Researching up to 61-80% of the electronic transaction capacity. • E-transactions are used in all parts of the organisation internally and externally.

Table 20: The current payment level and the intended plan to accomplish - (Source: Observations, interviews, documentations and observations).

Here as the table above explains about the intended plan of the organisation, to be able to reach to these levels, it would also depending on the internal strategy of the organisation to be achieved and it needs to be completely moving parallel to that to be recognised and attained. The points that discussed in Table 20 would categorises their current process through the volume of their transactions annually and strategies that need to be paid attention to in order to be fully implemented within the internal system of the organisation as a whole changing process.

ANALYSIS LEVEL

The analysis are based on the level of data availability and how frequently they are produced and used. The collected points in Table 21 shown the current and indented transactions level plan in the organisation.

CURRENT	INTENDED PLAN
• The data and spend analysis are getting done manually throughout the organisation internal process.	• Reaching to the level that the spend analysis is all generated and analysed electronically and systematic across all the organisation sections. • Enabling self-service reporting in the organisation administration department.

Table 21: The current analysis level and the intended plan to accomplish. (Source: Observations, interviewees and documentations).

All other types of maturity levels observed within the organisation structure were also supported by the other documentations collected as part of the investigation. The last section concludes the paper outcomes and summarising the results in the study.

On the grounds of all investigations, this study can posit the following results that come from the interviews and other sources of data throughout this specific organisation's case. Some of the results from the observation also indicated that the structure and the culture between the staff are still remained immature. However, due to the support of the government for higher educational organisations some of the systematic and financial concerns have been compensated in this way. This may also eradicate the concerns of the organisation about the implementation costs of the system which is one of the main factors in the adoption phase, because the government is prepared to provide the necessary facilities and financial support towards it. For this reason some outcomes have been finalised according to the available data that were collected. The main results fall into three categories of pitfalls, barriers, structural/cultural layout of the organisation that have been covered in this research. The following points as shown in Table 22 has reflected from the interviewee's opinions and their engagement within the organisation in their daily working-time. The 8 points that have been collected to describe the difficulties they had in the organisation and those have been introduced to the researcher in the collection process. The status of the organisation with regards to the factors that causing trouble in achieving a positive result has also illustrated with their respond rate in the following bar chart to be clarified in Figure 17.

#	SPECIFIC PITFALLS	RESPONDS
1	Some staff are loaded with too many responsibilities.	A
2	Lack of enough staff to handle the works. (causes slow adoption pace).	B
3	Lack of consistency of approach and specifications.	C
4	No regular meetings are held within the internal system to improve the quality of the progress.	D
5	The rules and regulations for procurement have been established and distributed online but staff are not fully aware of them to be able to follow them.	E
6	Lack of collaboration between staff and the departments.	F
7	Not involving everyone in goal settings.	G
8	Staff do not have much interactions with each other.	H

Table 22: The participants' opinions about the internal difficulties they faced. (Source: Data collected from interviewees).

The subsequent graph as shown in Figure 16 is representing the number of responses versus the types of pitfalls that exist in the organisation. There are 8 points that have been collected and ranked in an ascending order to emphasis the importance of each. As concluded, having many responsibilities at the same time has about 60% of the responses and the lowest in the row was the interactions of staff with each other as showed in point 8 (H) to be emphasised by the participants.

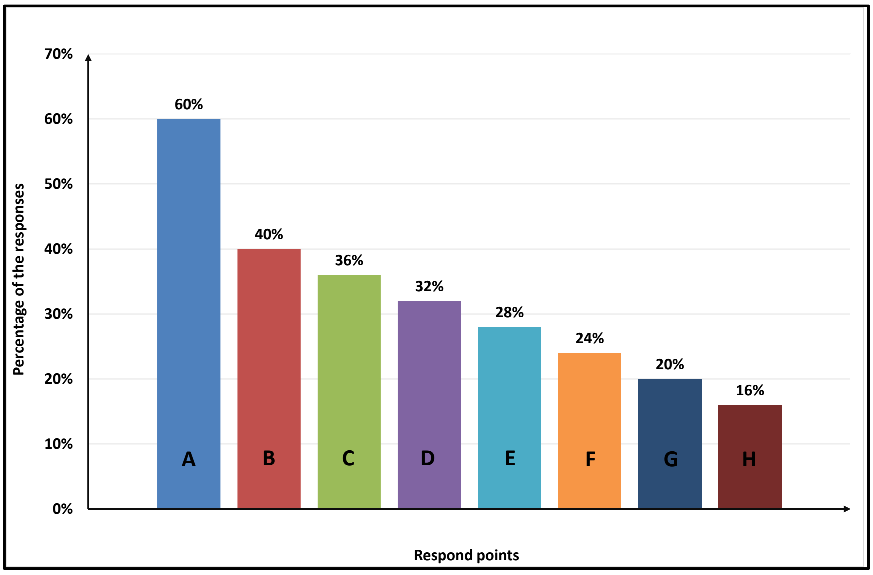


Figure 16: The demonstration of respond's rates in bar chart. (Source: Data collected from interviewees).

In addition to that, some of the important and specific internal barriers have also been noticed and categorised in Table 23 to describe the barriers within the organisation. The three point mentioned below are the most concentred barriers that the people who have been interviewed were elaborated at their interview sessions.

#	SPECIFIC INTERNAL BARRIERS	RESPONDS
1	Suggestions only come from the top management support, staff are not involved in the improvements.	A
2	Some of procurement directors are not involved in the decision making meetings because of the structure of the organisation's hierarchies.	B
3	Internal budget limitations.	C

Table 23: The specific internal barriers found in the organisation. (Source: Data collected from the interviewees).

As discussed above, the percentage of the respondents illustrated in Figure 17, to categorise the differences in respond rates that has been collected in the research.

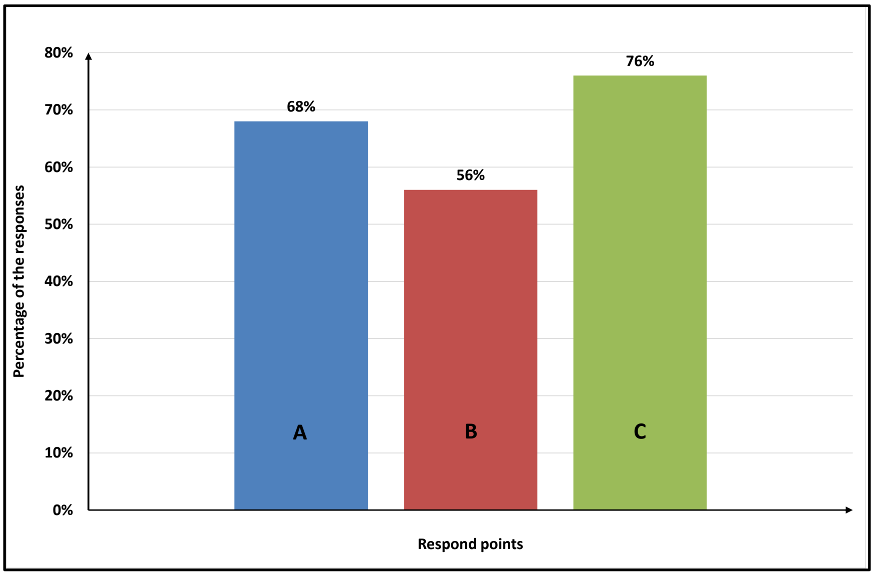


Figure 17: The Organisation's internal barriers. (Source: Data collected from the interviewees).

Furthermore, there are some general barriers in the e-procurement adoption in large organisations that have already covered in the literature to combine the previous knowledge with this current study, this has been observed to a certain extent that these 7 common barriers as collected in Table 24 and they do not exist in this non-profit educational organisation as this research has revealed.

#	SPECIFIC INTERNAL BARRIERS IN GENERAL
1	Upper management support
2	Lack of IT security
3	Company culture
4	Implementation costs
5	Inadequate technological infrastructure in the organisation
6	Lack of skilled personnel
7	Inadequate technical infrastructure

Table 24: Summary of common barriers of e-procurement among large organisations. (Source: Angeles and Nath, 2007; Frohlich, 2000).

To continue with the discussion about the three categories as the results of this study. From the observation part of this research, it has been noticed that the following points shown in Table 25 do exist in the organisation as part of its structural and cultural nature.

#	SPECIFIC INTERNAL STRUCTURAL AND CULTURAL POINTS
1	Departments are decentralised.
2	No resistance to change of internal/external system towards e-procurement.
3	Compliance with the organisation culture but is not yet levelled and levitated to the full adoption phase.

Table 25: The specific internal structural & cultural points found in the organisation – based on the observations noticed. (Source: Data collected from the interviewees).

4.9 Conclusions

"The transformation is everybody's job" (Deming, 1986, p. 24)

In conclusion, while electronic procurement technologies in organisations and other businesses have become increasingly pervasive and comprehensive still there have been little amount of academic research to realise the processes specifically in the educational sector.
The procurement system in order to succeed requires efficient processes in both, the internal workflow level and the supplier purchase relationship (Klabi et al., 2016; Teo et al., 2009; Teo & Tan, 1998). The are four levels of maturity with regards to the adoption and performance that have been observed. The expectation of each changes have been discussed in different levels. On the grounds of this investigation, the study posits the impacts of e-procurement performance after the adoption stage that comes from difference sources of data throughout this study.

Respectively, it is important to point out that e-procurement may be very influential and beneficial; however, if the organisations do not have clear visibility of costs and benefits, they are unlikely to invest and succeed. This is one of the main reasons preventing some of the companies and organisations from implementing e-procurement. This research has shown that there is no cultural resistance as part of this system as well as being serious financial concerns about the implementation costs; besides, some of the barriers and resistance have already been passed and resolved due to the educational nature of this organisation and the level of knowledge about the technologies they have.

This study was an exploratory based research and had the main goal of identifying the impacts of e-procurement in an educational organisation grounded on the qualitative data collection to give a significant insight into the given case. This study does not assume that the observation of this research is truly representative of all similar situations but may also cover some perspectives of the educational organisations with similar nature of structure, size and other values. There were internal observations that helped to collect some factors that need to be paid attention to in general within an organisation. This is for the purpose of improvements such as: collaboration of the staff with each other, having more consistency when choosing their approaches, considering everybody in the goal settings, regulating their internal system and reducing of workload from some staff and distribute it within other members, in addition to having full knowledge about the rules and regulations of the establishment.

On the other hand, having enough IT equipments and sufficient skilled personnel is another advantage of this organisation along with the supports from the government. This is important to argue that it is inappropriate for an educational organisation to assume that the adoption of e-procurement can only be decided and made by the senior managements. This is also need the acceptance of all the employees in the internal organisation's system. This is because it may make an imbalance relationship between the organisation and the user level.

From the research perspective, a complete knowledge from of the impacts and the acceptance of e-procurement could be useful in this research and this could be achieved through an exploratory case study to observe and combine the whole system with the relevant documents and data that have been collected in this study for a better insight. The future research in the e-procurement and organisations area would be advisable to carry out the same sector but in a broader range of universities to be able to generate a research model and consequently to be applied in a separate study.

CHAPTER 5 DISCUSSION AND IMPLICATIONS

The final chapter draws conclusions on the study and finding. The specific pitfalls and their impacts on the organisation and staff have been fully notified with convincing reasons to be adopted in this aforementioned educational organisation. It begins by presenting answers to the research questions, followed by an examination of the quality of findings and research limitations. The contribution of the work and areas for further research are then reviewed. The thesis concludes with some final thoughts.

The results obtain from this research provide an oversight from the chosen organisation management system with using their overall procurement structure with a broad strategy and knowledge from their usage and implementing of e-procurement system. This thesis has presented the findings of a study exploring e-procurement effects from a non- profit educational organisation perspective on performance and maturity.

There were some specific internal barriers that could impact the organisation's performance throughout the whole process. Those reason have been found through a thorough and detailed, observation within the internal system using different sources of data and documents provided by the university. Alongside the investigations and data collection some themes have evolved throughout the process that was the main objectives of this case study to be found and met.

There were four level of maturity emerged from the performance of the system that evolved in different categorise as follows: Sourcing – Transaction – Payments – Analysis. Each of them have been fully observed and analysed according to the limit of data and documentations given in this research. Here the four different level of findings and results have been discussed as below:

Sourcing Level: The improvement in the organisation is underway and is currently covering between 6-30% of the procurement activities. There were some limited resources observed to e-sourcing services and activities. The plan for the level of achievement is to gain up to 61-80% of the e-procurement benefits in the system. In addition to that, creating a condition that most of tenders be using electronic platforms rather than traditional paper forms. Consequently, E-sourcing applies to most parts of the organisation at different levels. Hence, planning for applying different formats of electronic systems such as: E-tendering, e-evaluation, e-auction and using e-catalogues for ordering the goods have been planned.

Transactions Level: The current level of the usage observed that e-procurement system is in place and integrated with internal finance system but only 31-60% of core e-transaction are activated such as: Electronic requisition, purchase orders and goods receipting. The aim is reaching of up to 61-80% of the electronic transaction capacity as well as having electronic transactions implemented in all parts of the university internally and externally.

Payments Level: Currently e-procurement only covers between 10-30% of the annual procurement which carried out electronically within the internal system. Furthermore, the basic procurement strategies are in place, but the system is not fully integrated with the internal finance system. The developments are in progress and is aimed to reach up to 61-80% of the electronic transaction capacity and maturity. Moreover, maturity level is expected to extent and be facilitated E-transactions to be used in all parts of the organisation internally and externally.

Analysis level: In the current system the data and spend analysis are processing manually within the organisation in the internal process. Reaching has been aimed to the level that the spend analysis is all generated and analysed electronically and systematic across all the organisation sections. Additionally, enabling self-service reporting in the organisation administration department using electronic supported platform systems.

Following the observations and alongside the investigation, some themes have also evolved from the different interviews that have been organised from the relevant member of staff. The scripts have clearly revealed the main specific internal barriers for the adoption and how those affect this organisation culturally and systematically, those themes have been fully described in chapter Four. The topic has been discussed widely from the department structure in the organisation to the support from the top management and their internal strategies, the general barriers of adoption in other originations regardless of their activity and the ways that decisions are being made in the exampled organisation.

5.1 Research Implications

From a theoretical standpoint, this study has several academic and managerial implications. Based on the results of this study a larger sample size would increase the generalisability of the research as well as collecting from other educational organisations in the U.K. to expand the overall outcome. The increased number of selected participants would escalate the accuracy of the results. This also could be achieved by taking other theoretic and rationales into consideration. The results suggest that the managerial attention and staff collaboration is a must to direct the organisation toward excelling on each dimensions and play dominant role in the e-procurement process. First, this study documents the results of examining the e-procurement process using an exploratory lens of performance and maturity level within a specific educational organisation.

Second, this study found evidences of the important role of management plays in today's technological environment, specifically in the procurement structure. Future research can examine other parts of the supply chain management using other theoretical frameworks within different organisations in the U.K. or perhaps with comparison to other countries.

Third, this study represents an attempt to examine the dimensions of maturity and performance level only in the e-procurement arena which is increasingly becoming more commonplace. Hence, the notions of performance and maturity remain as important as ever, the metrics to assess them and examine their impact on performance keeps changing with the times in different types of organisations structure. This study was a small step in the direction of understanding the role of e-procurement impacts in educational organisation context.

5.2 Limitations and recommendations

It is essential to discuss the limitations of this research. First, this study has only considered and focused on a single educational organisation and their internal relations within a specific structure and a bounded structure within their internal system. The assumption about the credibility and accuracy of the information collected have been already assessed as part of the evaluation process by the organisation, because of the data sources used.

Second, there are other limitations of using a case study which would be in terms of the generalisation of the concept for all cases. Third, it's conceivable that there are many other dimensions of e-procurement performance than the ones have been covered in the study to be considered in this area by other researchers. This selection only represents a qualitative data based on the chosen case study as well as the discussions with procurement managers and executives. The future study might consider exploring the maturity aspect in a broader range of educational organisations or in different industries with a higher number intake which is suggested as an area for the further research. Correspondingly, further examining the e-procurement performance from a theoretical perspective using a research model between various variables.

CHAPTER 6 CONCLUSION AND FUTURE RESEARCH

"The transformation is everybody's job" (Deming, 1986, p. 24)

6.1 Introduction

The research objectives are met. The purpose of this section is to draw together the conclusion of this study and to provide a summary of the necessary gaps and expand the contributions followed by other chapters in relation to electronic procurement. The results of the study, presented in this thesis, provide a further set of significant contributions to the literature by delivering important new insights into the factors that affect the uptake and application of electronic procurement technology within an educational organisation as an example for other organisations with regards to the consideration of the maturity and performance level.

6.2 Gaps in the literature

The literature has reviewed over the course of conducting this research and was primarily focused on the non-profit educational organisations, and it identifies a number of potential factors that might affect the adoption of e-procurement within the educational sector in terms of the adoption. However, it has become apparent from this review, that there were a number of significant gaps in the current literature in relation to the uptake and adoption of e-procurement adoption and implementation.

More specifically, the following important gaps have been identified:

- The current studies of e-procurement more tended to use qualitative data collection using surveys and secondary data rather narrow definitions and conceptualisation of e-procurement in an exploratory manner. In addition to that and more importantly, exploring two factors of performance and maturity measurements were not been emphasised.

- There have been no studies which explicitly focused on the educational organisation in the U.K. and other countries in terms of considering the adoption and implementations. The educational organisations are now aware of the benefits of the system and are gradually tending to travel into this path and some have adopted successfully, but as an area of study there has not yet been covered.

- The third gap is about the geographical location that most of the investigations have been done in the USA and less in developed countries such and U.K.

6.3 Conclusions

There are numerous perceived benefits can be achieved through the IT systems such as accountability, fast and easy access to information, reduction of information gaps among (organisations, government, contractors, suppliers and citizens) as well as avoiding unnecessary middle persons and easy monitoring and tracking records. The key and main objective of this research was to explore the impact of e-procurement on organisation from the performance and maturity aspects within one case study about an educational organisation.

Based on the observations and the data collected from this specific organisation it's been shown that there are four levels of maturity level with regards to the adoption and performance that have been noticed. On the grounds of the investigations, the research posits the impacts of e-procurement performance after the adoption stage that comes from difference sources of data throughout this study.

Respectively, it is an important point to be mentioned that e-procurement may be very influential and beneficial; however if organisations do not have clear visibility of costs, benefits and plans, they are unlikely to invest. This is one of the main reasons preventing some of the companies and organisations from implementing e-procurement. This research has shown that there is no cultural resistance as part of this system as well as being serious financial concerns about the implementation costs, besides some of the barriers and resistance have already been passed and resolved due to the educational nature of this organisation and the level of knowledge about the technologies they have.

This study was an exploratory based research and had the main goal of identifying the impacts of e-procurement in an educational organisation grounded on the qualitative data collection to give a significant insight into the given case. This study does not assume that the observation of this research is truly representative of all similar situations but may also cover some perspectives of the educational organisations with similar nature of structure, size and other values. There were some internal observations that helped to collect some factors that needs to be paid attention to in general within an organisation for improvements such as: collaboration of the staff with each other, having more consistency when choosing their approaches, considering everybody in the goal settings, regulating their internal system and reducing of workload from some staff and distribute it within other members, in addition to having full knowledge about the rules and regulations of the establishment.

On the other hand, having enough IT equipment and sufficient skilled personnel is another advantage of this organisation along with the supports from the government. The structure of the organisation is decentralised and this seems to be suitable for their construction and framework. The case study approach, although time consuming, but was helpful in identifying the issues from the perspective of managers making decisions in leading organisations in the sector. Most empirical research in the field of e-procurement is based on the USA data and to a lesser extent on the data from other large economies such as the U.K. So, this research was a great opportunity to show the potentials of educational organisations in this country. The general satisfaction with fully adoption of e-procurement systems and readiness of the culture and facilities have been noticed.

Organisational strategy is also really important to be considered, because it can provide the overall direction of the entire organisation and guides the operations and supply chain strategies of an organisation. Hence, the operations and supply chain strategies need be consistent with the organisational strategies. On the latter, the effective and successful adoption and implementation of e-procurement leads to potential benefits, which include the reduction of transaction costs, operational efficiencies, and a better foundation for decision making. We hope that this research spurs further interest to examine and study other pathways which e-procurement technology can bring to businesses and organisations vales.

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ANNEX 1

COLEG BUSNES, Y GYFRAITH, ADDYSG A GWYDDORAU CYMDEITHAS
COLLEGE OF BUSINESS, LAW, EDUCATION AND SOCIAL SCIENCES

PRIFYSGOL BANGOR UNIVERSITY

April, 2016

I'm a PhD student in Bangor Business School and writing to invite you to take part in a research that is going to be done in the Bangor University, about the current procurement system of the university in contrast to the e-procurement system. This also helps to validate my research model throughout this investigation as a live case study in Bangor University.

I would be grateful if you could participate in my research interview which could take around 20 minutes of your time to allow me to achieve some results to evaluate for this research.

Any information you share would be treated as strictly confidential and you would not be identified in any outputs arising from this work. All information is for the purpose of the research only, and will be treated in confidence and anonymised in any subsequent papers.

This research forms as part of a doctoral research programme and is in partial fulfilment of the requirements for the PhD degree and is supervised by Professor Kostas Nikolopoulos and Professor Bernardo Batiz-Lazo of Bangor Business School.

Thank you for taking the time to read this letter and look forward to hearing from you.

Yours sincerely
Soheil Gholampur

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COLEG BUSNES, Y GYFRAITH, ADDYSG A GWYDDORAU CYMDEITHAS
COLLEGE OF BUSINESS, LAW, EDUCATION AND SOCIAL SCIENCES

PRIFYSGOL BANGOR UNIVERSITY

E-procurement adoption impact on organisations "Performance and Maturity": An exploratory case study: Bangor University

PARTICIPANT INFORMATION SHEET

Introduction:

I'm a PhD student in Bangor business school and YOU are being invited to take part in a research project looking at *the E-procurement adoption impact on organisations "Performance and Maturity": An exploratory case study in Bangor University*. Before you decide whether or not to participate, it is important for you to understand why the project is being done and what it will involve. Please take the time to read the following information and discuss it with your colleagues if you wish.

What is the purpose of the study?

This study seeks to:

1. To examine the traditional procurement versus the electronic procurement (E-procurement) as a new solution for procurement systems in supply chains for institutions and organisations such as Bangor university.

2. Exploring, observing and testing its benefits in Bangor university procurement system and to validate our research model through the system.

3. To investigate the benefits and barriers of the system that may bring to the university as an educational organisation.

4. To observe the degree of using e-procurement and how the implementation of the system has been done within the university.

Why have I been chosen?

You have been chosen as one of the key members of staff in Bangor University because of the information and knowledge you have about the process of university procurement system.

Do I have to take part?

It is up to you to decide whether or not to take part If you decide to take part you should contact Soheil Gholampur at Bangor University by simply sending an e-mail to confirm your consent, then we will arrange an interview time.

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What will happen if I decide to take part?
You are invited to take part in a **confidential** interview to talk about your experiences within the system and the process of procurement in Bangor university. The interview is face to face and will take around 60 minutes of your time.

*The interview will be completed in English. The interview may be recorded, with your consent and the interviewer will take some written notes.

Will my taking part in this study be kept confidential?
Yes. Your contact details will be stored on a **confidential** database. The information you share will be treated **in confidence**. You **will not** be identified in any reports or publications. **(The data and recorded minutes of the interview will be encrypted and kept safe in "M Drive" within the university**

What will happen if I don't want to carry on with the study?
You are free to withdraw from the study at any time without giving a reason.

What will happen to the results of the study?
The findings from this study will be the subject of academic analysis and inform a doctoral thesis and subsequent academic papers.

Who is organising and funding the research?
This research is in partial fulfilment of the requirements for the PhD degree and is self-funded by the student.

What happens if I have any concerns about this project?
If you are concerned about any aspect of this project and would like to speak to someone please contact Professor Kostas Nikolopoulos Director of Research for the College of Business, Law, Education and Social Sciences. His email address is kostas@bangor.ac.uk and his telephone number is 01248 38 3796.

Contact for further information:
If you would like more information, please contact Soheil Gholampur by email (**Soheil@bangor.ac.uk**).

Next steps:
If you decide that you would like to take part, please reply back to my invitation e-mail for arranging the interview time.

Thank you for kindly taking the time to read this information.

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Questions of the Interview:

The First wave:

With reference to the situation of the university, Please share your experiences/views (if possible with some examples on the following questions:

1) What is the size of this organisation? (Small, large or medium)?
2) What type of organisation is this? Is this a profit or non-profit organisation?
3) How is procurement defined in Bangor University?
4) Please comment on the degree of procurement involvement in the Bangor University.
5) How many people work in the procurement department in the university?
6) What is your current procurement process layout?
7) Who is the top manager of this team?
8) Please describe the top management's role and vision in the procurement process within the university?
9) Who makes the final decision to confirm the purchase order? And at what management level are they?
10) Is (his/her) vote or support necessary for purchasing and placing an order? Or anybody is able to make it on his or her own?
11) How many suppliers do you currently deal with and what do they supply you?
12) How do you currently communicate with the suppliers?
13) How is the commitment between you and the (suppliers/providers/partners) within the contracts you make?
14) What are your purchasing strategies? And what are the procedures? How many steps do you take to place an order?
15) How do you measure and rate your suppliers and at what basis? What are the requirements of the University to select their suppliers and continue with a supplier or not?
16) What are the rules to follow to insure effective communications with your suppliers?
17) What do you normally purchase through your (daily,monthly,yearly) purchases for the university?
18) Do you collaborate with other universities in the UK for your procurement needs?
19) Does top management, support the use of new technologies rather than the old-fashioned procurement system (by paper documents, telephone, mails, Fax and personal connections,...)?
20) What tools do you use to keep track of progress on your order?
21) What techniques do you use to accelerate progress on your Purchase order?
22) How does the procurement system associate with the university performance?
23) What are the challenges and problems you have in your current systems?
24) Who/Which department has the right to choose a different supplier or veto a supplier/Partner?
25) What is the level of the security of this kind of procurement system?
26) How do you define cost savings in a way that will be embraced by executive management?
27) **What needs to be changed in the current procurement process? And How? Describe your solutions please.**
28) **How do think the current situation of university will perform better and what needs to change in this regard?**

The second wave

To identify the degree of e-procurement usage in the University of Bangor regarding the performance and adoption of the system:

1) Please describe the extent of IT integration in the University?
2) Have you ever considered using internet and networking systems for your current procurement purchasing?
3) Does Bangor University currently use e-procurement to purchase any of its necessary stuff?
4) If yes, have you joined to a specific consortium or organisations to access your suppliers?
5) If you have not adapted to e-procurement do you intend to adopt this technology in the future?
6) What kind of products would you like to procure online?
7) Have you ever considered to estimate the costs of its adoption?
8) How much budget has been specified for this change?
9) What elements do you think is necessary for adoption of e-procurement in the university?
10) For implementation of e-procurement do you prefer selecting an e-provider or building your own system or out-sousing the activity?
11) Are the employees of the university equipped with the right facilities to use?

The third wave

Detailed and specific questions about the research model:

1) What factors do you believe is important for adoption and implementation of e-procurement system?
2) What Organisational Factors do you believe is essential in the adoption process?
3) What Technological Factors do you believe is essential in the adoption process?
4) What Environmental Factors do you believe is essential in the adoption process?

With regards to the Implementation:

5) What may be the barriers?
6) What may be the benefits that Bangor University would gain?

Important Factors:

7) Do you believe that Trust is an important factor? And how do you believe it can be built?
8) Do you think that accuracy in e-procurement system would be essential for the university? And on what specific matters?
9) Do you reckon that enough security is essential in this system? And at what level?
10) Do you believe that communication is vital between university and suppliers relationships? And what type of communication would you like to have?

And one important question I would like to ask you in the end:

What would you like to see as the final results of the E-procurement performance? (After adoption and implementation phase)

(Such as Cost saving/Time reduction/more transparency/Better delivery, etc.....)

What other source of information/Document/Data that may relate to my research you could provide me.

What other important points or hints you would like to tell me that have not been covered here?

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2 November 2015

Dear Soheil

Re: The factors influencing the adoption and performance of e-procurement system in the large organisations

Thank you for your recent amended application to the CBLESS Research Ethics Committee.

The committee has considered your application and I am now able to give permission, on behalf of the CBLESS Research Ethics Committee, for the commencement of your research project.
I wish you well with your research.

Yours sincerely

Dr. Diane Seddon
Chair, College Ethics Committee

cc – Professor Kostas Nikolopoulos

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