Procurement of Information Technology and Canadian Municipalities

MPA Research Report

Submitted to

The Local Government Program

Department of Political Science

The University of Western Ontario

Umera Ali

November 2010

ABSTRACT

Local governments have been using information technology (IT) for a long time, but the level of information technology capacity varies across local governments. Based on a survey of the IT managers of Ontario municipalities (population:20,000-200,000), and three interviews, two with the information technology managers and one with a Chief Administrative Officer (CAO) of a small local government, this paper examines current trends for the procurement of information technologies and discusses barriers to the successful procurement of IT. Information technology is defined as the technology that helps to produce, store, communicate, manipulate, display and disseminate information (berry, 2010).

On the basis of a literature review, a framework is developed and the data from a survey questionnaire and interviews are analyzed in the context of this framework. It is observed that the municipalities of Ontario are satisfied with their IT projects for being on time, within budget and fully functional. Several barriers are still there for small local governments in the successful procurement of information technologies such as cost, time, involvement of multiple stakeholders, their ability to coordinate for most of their IT projects and lack of trained IT staff. Most of the municipalities are following the best practices described in the literature and sufficient measures are being taken by the municipalities for the successful procurement of IT. Innovative approaches have been adopted by small local governments such as forming partnerships with other small local governments to obtain economies of scale as well as to enable the acquisition of new technology without much delay.

Acknowledgements

I would like to thank a number of people who shaped this major research paper. I would like to thank Ann Bigelow, Robert Young and Martin Horak for their support and guidance for the completion of this essay. Special thanks are owed to those who allowed me to profit from their expertise through interviews and questionnaire responses.

Finally, I want to thank my family for their love, support and encouragement in the completion of this program.

Table of Contents

Tables:

Figures

Chapter1
Introduction

Our society is being transformed by a continuous evolution in technology that is changing the way we do things at the most basic levels, as individuals as well as throughout organizations. Information technology (IT) in particular, has taken huge developmental leaps since its introduction. It is defined as the technology that helps to produce, store, communicate, manipulate, display and disseminate information (Berry, 2010). It is becoming almost impossible for organizations to operate without the use of IT. Hence, both, public and private institutions have experienced an increase in the use of information technology over the past several years. Information technology has offered a great variety of solutions and benefits for organizations but like most things, it has its disadvantages too. Our increased dependence on IT has shed light on problems and concerns that organizations may come face to face with. Therefore, careful designing, planning and implementation of IT are required for efficiency and effectiveness in public and private organizations.

The Canadian information and communication technology (ICT) industry has been growing steadily for the last eight years. In 2007, the total Canadian ICT market was valued at US $78.2 billion and according to International Data Corporation Canada; the province of Ontario is one of the main suppliers of the research and development in IT (Palfi, 2007). Canada is leading the world in the use of IT in the public sector, especially in areas such as, internet enabled communications and information dissemination: service kiosks, smart cards, toll highways and electronic transactions i.e., tax filing (Kernaghan, Marson, Borins, 2005). Challenges faced by the Canadian public sector with the introduction of IT involve, the high cost of acquiring the technology, budget overruns and delays seen in the majority of IT projects (Borins, 2005).

1.1 Research Question

This study will answer the question, "What are the current trends and challenges faced by municipalities for the successful procurement of information technology?" Defining the success or failure of an information technology project can be difficult. Success or failure can also vary over the life of a project. For this paper, successful means: the project is completed on time, within budget, and fully functional. Through a literature review, a survey and a few interviews, this paper will examine the policies and practices involved in the procurement of IT, and try to find the key barriers faced by the Canadian municipalities in this area of their operations.

Procurement practices are an important way of putting a government's policies and priorities into action. An IT procurement process can exist, formally or informally, in every organization that acquires information technology. It involves all aspects of IT acquisition: competitive bidding, purchasing services and equipment, and an evaluation of the implemented system. This process is not simple and in most circumstances it will require the involvement of staff members throughout the organization: staff working in IT, the finance department, the legal sector, the purchasing department, and the end users in all other departments (Beaumaster, 2002). This multi-dimensional aspect of information technology makes its procurement more complex.

Within the last 15 years, the public has become more technologically savvy and society keeps up-to-date with the latest advancements in technology. Their expectations for more effective and efficient services have placed an enormous pressure on local governments to keep up with these advancements. However, at a local level, there are many problems governments face for the procurement and implementation of information technology; human resources (lack of trained and expert staff), limited funds, up-to-date IT knowledge, and the right expertise (Beaumaster, 2002). Larger municipalities are in a better position to overcome these problems as

they have more resources in terms of finance and expertise. So it is easier for large local governments to keep their IT up-to-date.

Chapter 2

Literature Review

2.1 Information Technology and Local Governments

Information technology is a major prerequisite for efficient and effective administration work of any organization. At the local government level, up-to-date IT systems are important in order to ensure that the government works in a more efficient and productive way and is responsive to the needs of the public in a timely fashion (Hashim, 2010). Computers offer productivity benefits to cities in terms of operational efficiency and service delivery. More accurate data, increased speeds of operations, savings in staff costs or other costs, and enhanced organizational management can be achieved with the introduction of IT in local governments (King, Kreamer, 1985). Benefits from the adoption of computers varies from one organization to another, and research suggests an understanding of the context in which this technology is adopted and used can help overcome problems that may come up unexpectedly (Danziger, Kreamer, 1986).

Several studies have shown evidence of a relationship between increased levels of IT use and smaller firm size, however, it does not apply to all organizations (Gulledge, Haszko, 1996; Brynjolfsson et al, 1994). Administrators in public organizations have realized that computers will replace manual systems and files, in turn, reducing staff working in these areas. A massive reduction in personnel has never happened in public organizations due to the intorduction of IT, but an increase in demand of technological savvy people can be observed (Stevens, McGowan, 1985).

Traditionally, the procurement of IT has been a process not much different from procuring other goods and services. However, now there is an increasing demand for

governments to differentiate the procurement process for IT from the process used for the other goods and services due to the importance and complexity of IT projects (Roy, 2003). To avoid problems with complex technology projects, a focus on accountability should be the number one priority. Roy explained three lines of accountablity originally provided by Armstrong, "accountability among partners, accountability within each governing body, and accountability to the broader set of stakeholders surrounding the partners" (Roy, 2003). In order to collaborate effectively, there should be a mechanism that shares accountability for all key stakeholders.

To address the areas of risk assessment and project management, several frameworks have been developed (Baril et al, 1995). A risk is any factor that can affect the successful completion of the project. For IT projects it is necessary to anticipate risk due to the complex nature of the project. This risk management should cover who is responsible for managing the risk, how it will be tracked and the contingency plan to avert that risk. By doing proper planning, a risk can be handled and projects can be completed successfully (Arkansas, 2003).

According to a study done by Standish Group in the USA, IT projects in the public and private sectors can be stratified into three categories, successful, compromised, and not completed or cancelled. In 1995 Standish Group had the following statistics about IT projects carried out in the USA: 16 percent were successful, 31 percent were canceled, and 53 percent were compromised either by going over budget, or because they were less functional than anticipated. In 2003, another study by the same group showed that: 33 percent of IT projects were successful, 17 percent were canceled, and 50 percent were compromised. While there was an improvement in the number of successful projects, these figures led the Standish Group to suggest that, in 2002, the US wasted $55 billion on canceled and overrun IT projects(Borins, 2007).

Technology is changing every day and it is not easy for local governments to keep up with these changes. This process can get more complicated due to unintended consequences and

the amorphous nature of IT projects (William, Thad, 2006). Several factors influence the public policy process and the adoption of a new IT system at the local government level. Some of these factors include, the degree of control by administrative authorities, the city mayor, the city council, the city manager, the provincial government, and legal and formal constraints. In addition to these constraints, the capability of the IT manager responsible for the planning, procurement, implementation, and maintainence of information systems is also an important factor in this whole process (Kim, Bretscheider, 2004).

Research shows that the public sector in general and small local governments in particular do not act proactively to adopt new information technology, which creates an IT lag time described by Kreamer, Danziger, and King. According to their research, large, wealthy and innovative local governments with professional and technical staff take 10 years to adopt new technology trends. The smaller local governments (that are managing cities with a population below 50,000) take about 15 years to adopt new technology (King, Kreamer, 1985; Kreamer, Danziger, 1985; King, 1982).

Literature on IT also deals with the difference between the adoption and management of IT in the public and the private sector (Bretschnieder, 1990; Perry, 2003; Pearce, 2003). According to the research, consistent differences can be observed in both, managerial activity and the organizational environment of the public and private sector (Bretschnieder, 1990). IT projects in the public sector are publicly funded, highly visible to the public and the media, more complex in nature, have mutiple aims and are interactive. Projects in the private sector are less visible to the public or shareholders, more open to risk taking, designed to limit damage, driven by competition, and focussed on positive financial outcome (Pearce, 2003; Bellamy, 2005). Public sector organizations often seek the help of private sector firms for their IT projects since all hardware and most software is manufactured by the private sector. In addition, having a partnership with the private sector allows the public sector to draw upon market based

efficiencies of the private firms and benefit from their research and expertise (Kankanhalli, Kohli, 2009).

Larger IT projects need a longer time period for completion. From the planning to the implementation stage, any changes in the political environment or office holders can cause shifts in the availability and prioritization of funds. Maintaining the focus and capacity for progressive development of the IT project from beginning to end is a challenge (Peterson et al, 2007).

In order to improve effficiency and minimize risk, municipalities are increasingly using a strategic planning process. Local governments do in fact benefit from the process of strategic planning due to the reason that the development of multiyear policy plans can present a picture with a more meaningful vision of the future. Berry and Wechsler define strategic planning as a systematic process in which organizations manage their present and future directions in relation to the environment and the demands of their external stakeholders (Wechsler, Berry, 1995).

Over the last two decades, many cities have tried some form of strategic planning. Almost 60 percent of U.S. cities with over 25,000 in population use some form of strategic planning (Poister, Strieb, 2005). Most cities use some kind of strategic planning for at least one of their departments. Only about 25 percent of these cities use it on a citywide basis. Poister and Strieb suggest that strategic planning can be "more useful and effective for major organizational units with a unified sense of mission rather than a fragmented municpal unit as a whole" (Poister, Strieb, 2005). This is due to the fact that strategic planning needs to involve all the key stakeholders from the organization and it is a time consuming process. So it is more realistic to adopt strategic planning in a few departments of the organization with a unified sense.

James Lightbody has provided his experience to strategic planning from a Canadian perspective. He comments on the fact that strategic planning in local governments is restricted due to their constitutional status as the creatures of provinces. There are many hurdles such as

provincial downloading of services, dependence on conditional grants, and lack of funds. All of these factors are playing a vitally important role in the limiting the strategic planning processes in municipalities (Lightbody, 1993).

Strategic planning for IT at the local government level can have several benefits, including the development of a formalized framework for the coordination of action, continual adjustment to meet the needs of IT end users, and adoption of new technology on an ongoing basis (Beaumaster, 1999). According to Beaumaster, strategic planning for information technology at the local government level is mostly affected by the continuous and steady change in the nature of technolgy. The need for updates to hardware and software is frequent within an 18-24 month interval, so it is hard for municipalities to make plans for a longer range (Beaumaster, 2002). Therefore, strategic planning for an information technology system must be flexible to cope with these changes in the system and to keep up to date with current trends (Beaumaster, 1999).

2.2 Information Technology and Canada

Information technology, the World Wide Web and networking of computers has changed the traditional policy and jurisdictional boundaries of the government. According to Accenture's annual international survey of e-government service delivery in 2005, Canada was ranked first for its e-government service delivery (Brown, 2007). From 1999 to 2006, the Government of Canada adopted a program called GOL, or Government On Line. This program was aimed at improving the way governments deal with the public and administrative functions. It was intended to promote World Wide Web based service delivery as a means of changing the relationship between the government and the public. The Government of Canada spent $4.6 billion in 2003-4 for the information technology infrastrurcture (Henry, 2008). It is expected that federal government spending on science and technology will have reached $11.7 billion in the fiscal year 2010/2011 (Stastistics Canada, 2010).

With advancements in IT, major changes were introduced to the relationship between Canada and the rest of the world. These changes include a transformation of international economic activity, national security and capital flows. Computer based systems for information handling can work more quickly and less expensively. For example, mailing a 42 page document from Ottawa to Tokyo is 720 times faster and 355 times cheaper over the internet than overnight delivery (Kernaghan, Cunraj, 2004).

Efficiency gains have become increasingly more evident since the development period of mainframe computing to the current use of advanced computing technology. With the deployment of information technology in the public sector, the provision of the service has become more convenient and faster (for example, through the internet anyone can access government websites from their home at any time of the day instead of having to visit government offices during their business hours). IT has encouraged participative leadership both, within and outside public sector organizations in two ways; more information is now available for people on the internet and people can now express their opinion by sending emails or participating in discussion groups (Kernaghan, Marson, Borins, 2005).

The Government of Canada adopted IT in order to reduce costs by substituting it for labour and to gain service integration and digitalization (for example, a digitalized library), allowing the government to store data in an efficient way with less chance of error. The use of email in the government sectors has become part of the daily routine since it is fast and inexpensive. Also, the general public can access government websites from the convenience of their own homes to get information like recent news releases, statements of government priorities, legislative information, various statistics, and business information. Moreover, electronic transactions are now possible and people can file their taxes from home. Similarly, businesses are paying their corporate income taxes through online access. This method of filing is easy and cost effective. Information about government contracts can also be accessed by going on the website

(www.merx.cebra.com) which is managed by a private firm under contract with the government. This process of streamlined bidding has saved the government $1.5 million per year in paper, postage, and labor (Kernaghan, Borins, Marson, ch,10, 2005).

2.3 Procurement of Information Technology in Canada

Sandford Borins is a Professor of Public Management at the University of Toronto and Scholar in Residence in the Ontario Cabinet Office. His research deals with the management of IT and innovation in the public sector. David Brown is an independent researcher and consultant based in Ottawa. Both of them have written a number of papers regarding IT in the Canadian public sector. According to their research, during the introduction and development phase of an information technology system in Canada, a different working relationship was created within the different levels of government and within the private sector in terms of communication. Almost all hardware and software was outsourced for major IT projects (Borins, 2005). In Ontario, hardware was leased for a three year term and there was a two year term contract for notebook leasing. The main supplier in Ontario for computer equipment was GE Capital. However, after payment problems arose, GE Capital gave an ultimatum that it would not lease additional equipment until their account payable account was cleared. This demonstrated a problem with the policy for leasing computer equipment which needed correcting. In 2005, the Office of the Chief Corporate Strategist recognized this problem and took the step described next to change the policy with respect to purchasing computer equipments (Brown, 2007).

It has been observed that buying computer equipment is beneficial as compared to leasing because the government can use the computers longer and even old equipment can be used either internally, made available to non-profit organizations or disposed of in an environmentally friendly manner. Unfortunately, despite the benefits observed for buying computer equipment, there was a conflict between buying and leasing hardware up until 2005. Microsoft remained the

main source for software at all government institutions. It was clear that Microsoft earned huge profits being the sole supplier of software to large private organizations as well as to government organizations. The government made an arrangement with Microsoft that saved them $42 million over three years. Six months later, the U.K. government signed a similar deal with Microsoft, and saved 84 million pounds, which illustrates that the government of Canada made an appropriate decision at the time (Borins, 2006).

In Ontario, the McGunity government took office under tight fiscal conditions and since public sector IT projects were not successful at the time; government relied heavily on private consultants who were hired at a high price. The Government of Ontario focused on improving in three areas in order to make IT projects more cost effective and efficient in service delivery. These three areas included the use of consultants, the management of large IT projects, and the overall budget (Borins, 2006). Regarding the high cost of consultants, the Government of Ontario was eventually put under pressure by the Public Service Employees Union to lower this cost. They argued that in many Ontario public offices these highly paid consultants were working side by side with permanent staff (of Ontario public offices) but were paid much higher salaries as compared to the permanent staff. The office of the Corporate Chief Strategist developed a framework to tackle this problem. Ministries were given approval to change the consultant positions into permanent staff and reduce their pay. By doing that, the Government of Ontario saved $73million during 2002 and 2003 (Borins, 2006).

While managing large IT projects, the Government of Ontario was faced with criticism for several cost overruns and delays in the completion of the project. Since these projects were initiated with great enthusiasm and promises for effectiveness and economies of scale, expectations were just as great. Dealing with major projects was more complicated in public organizations as more careful problem identification was required. Public organizations in Ontario faced one or more of the main three implementation failures with regard to information

technology; not meeting promised expectation, project being delivered late or project being over budget (Kernaghan, Marson, Borins, p.237, 2005). Other factors involved in the failure of projects were changes in technology, changes in requirements, new government in office, different parties having different priorities and the interest in the project of those in charge (Borins, 2005).

2.4 Procurement Process Framework

In gaining an understanding of the best procurement practices, J. Gordon Murray offers a framework for important steps that should be taken by municipalities for the successful procurement of information technology (Murray, 2009). This framework and several strategies are also described by Card and Ross, and Peterson in order to minimize the risk involved in IT projects and to enhance the chances of general success (Card, Ross, 2005; Peterson et al, 2007).

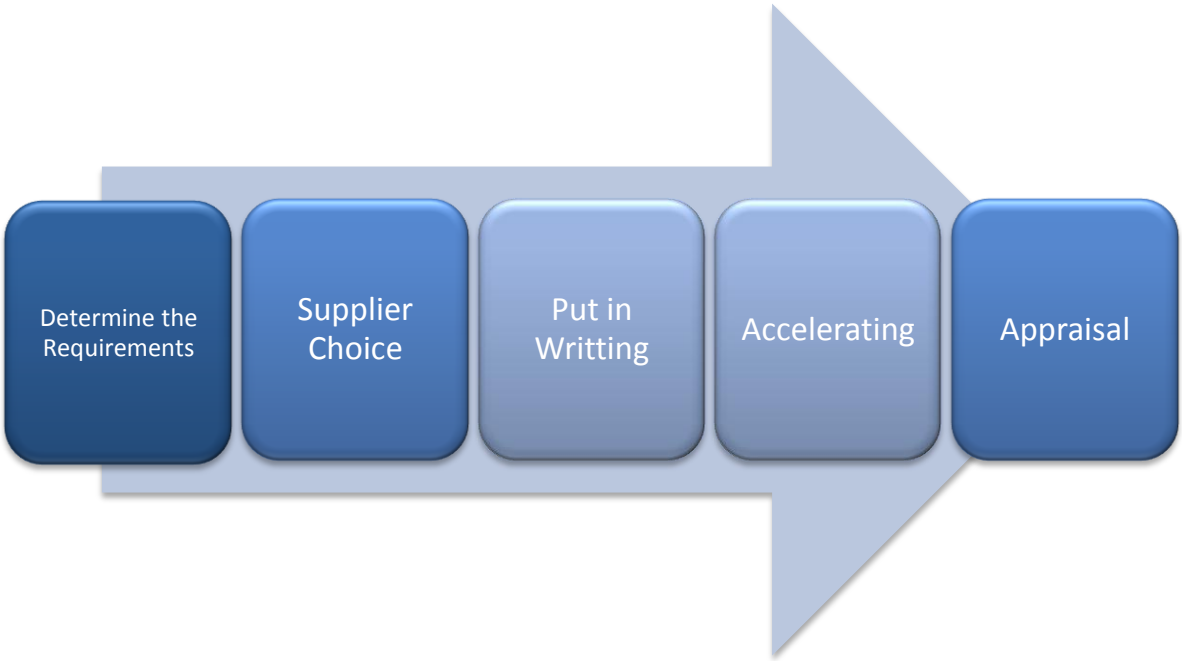

Figure 1: Framework for the Procurement of Information Technology

Preparation of the business case is the first step towards the success of any IT procurement process. An analysis of internal skills, limitations, requirements, and budget restrictions should be included in this process. All client departments should be included in the project at this initial stage (Card, Ross, 2005). After the initial needs analysis, a clearly written draft should be made with verifiable prospects of the project. A detailed plan describing the level of performance required and how the performance should be measured can be very helpful to avoid disputes and this will influence the success of the project (Card, Ross, 2005).

Choosing the vendor for an IT project is not easy. Different organizations will use different criteria and the scope of the project also affects the decision. One rule must be followed though, this process should be carried out fairly and without any bias. A clear written agreeement with all the defined specifications and requirements is essential. Clauses should be included in the contract that cover the responsibilities in the event of equipment break down and/or a defective project. Monitoring mechanisms should be included in the contract such as: a contract breach report, a performance audit, and meetings of the joint management committee (Card, Ross, 2005). The pace of the project is also very important to keep any IT project within budget because delays in the project can be costly for both parties (vendor and client organization). Appraisal of the IT project is very critical and testing is required to assess the success of any IT project (Murray, 2009). If all of these steps are taken carefully, the chance of successfully procuring of an IT system can be increased.

Chapter 3

Methodology

The research question was approached from three angles: a literature review, a survey, and three interviews with municipal IT professionals. The literature review lays out past research and current trends in the public and private sectors. It also considers a number of issues related to the introduction of information technology at the local government level and its effects on organizational structure. This provides a conceptual foundation that I relate my empirical findings to throughout the remainder of the report.

For the purpose of this study, 64 City web sites were considered when determining where to send the survey questionnaire. Population data used for city selection was retrieved from the Statistics Canada website according to a 2006 Census in Canada (Statistics Canada, 2006). There were 64 local governments that met the criteria for inclusion in the study. Of those, 55 local governments' websites provided the facility to find a relevant email address and contact info. Out of these 55 municipalities, 13 municipalities responded to the survey questionnaire, resulting in a 24 percent response rate. The population of the cities included in the study varied from around 20,000 to about 200,000. This range was chosen as it excludes municipalities too small to carry out information technology projects independently, and it also excludes large municipalities with many IT projects. According to Census Canada 2006, 52 cities of Ontario were between the range of 20,000 and 100,000. There were twelve cities within the population range of 101,000-200,000. Data collection from contacts with municipal staff was managed through e-mail contact or telephone calls. The e-mail contacts were determined by locating the local government web site and then searching for contacts identified as being in a department of information technology. If no IT department contact could be found, then other contact information was used such as general email address for the information technology department.

In order to obtain a maximum response rate, each person was contacted individually and almost every person was contacted on a name basis. In some cases, it was necessary to call the city and request a contact name for the individual best qualified to answer questions about IT. This individual was contacted directly, or if that was not possible, an e-mail was sent including an internet link to the survey with the description of the project and the method of responding to the survey. Prompt responses were encouraged.

The survey questionnaire was sent with a timeframe of ten days but due to a low response rate, this deadline was extended. After three days, the first reminder was emailed to those who had not already responded and a second reminder was sent after ten days in an effort to maximize response rate. Some of the questions in the survey were open-ended and required written feedback from the municipalities in order to make qualitative observations. These responses varied in length and most of them were helpful in finding and presenting an overall idea about the current trends of the procurement of IT as well as the key barriers for the successful procurement of the IT system. The survey questionnaire is attached in Appendix A. The responses were compiled into a data set in an excel format for the purpose of analysis and important comments to the open-ended questions are contained in the paper.

In the last question of the survey questionnaire, the respondent was asked if they would agree to a brief interview in order to discuss current trends and barriers related to the procurement process of IT. This stage of research consisted of a few interviews with IT professionals working at local governments to determine additional concepts, factors, and general information regarding IT needs and its procurement process. This would help identify the best practices and any challenges faced by local governments in the process of IT procurement. Questions were open ended to get valuable insights into why and how decisions are made at the local government level. A couple of questions were derived from a questionnaire employed in a study of local governments in 1999 (Beaumaster, 1999). Three interviews were completed. Two of these

interviews were completed by phone and both of these interviews were recorded with the agreement of the individual interviewed. These interviews were later transcribed. One of the interviewees agreed to answer interview questions in written format. Interview questions are attached in Appendix B.

Chapter 4

Survey Results

This survey questionnaire was sent out to fifty five municipalities in Ontario. Thirteen respondents completed the survey; a response rate of 24 percent. It is observed that at the municipal level, most of the information technology managers are male.

Table 1: Percentage of IT managers based on Gender

Answer Options	Response Percent
Male	84.6%
Female	15.4%

Almost seventy percent of the IT managers are working with the same municipality for more than seven years, while fifteen percent of the current mangers or directors are working between the ranges of five to seven years. Different job titles are used in different municipalities for IT managers including IT manager, the Chief Information Officer (CIO), MIS Manager, and Network Manager. Over 92 percent of the municipalities responding have more than a total of fifty employees and 61 percent of the municipalities have 0 to 5 employees working in the department of IT area.

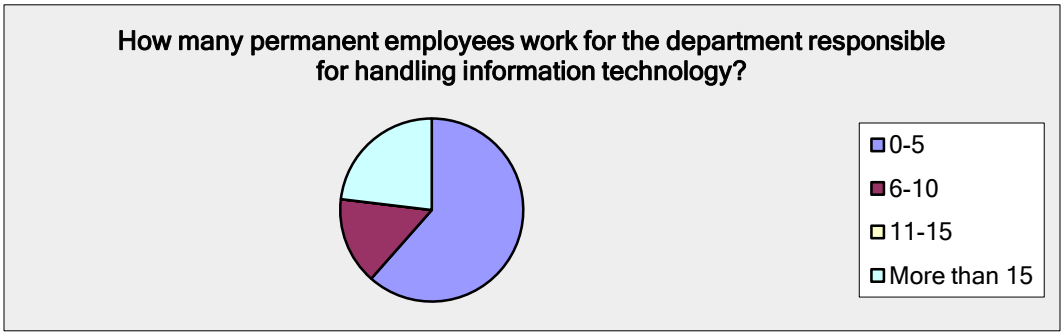

Figure 2: Number of Employees Working in the IT Department

The number of citizens the municipalities served ranged from 20,000 to 155,000 with a mean of 72,552. Almost fifty four percent of the municipalities that responded to the survey questionnaire were lower tier municipalities and 42 percent were single tier municipalities.

A strategic planning process for the use of, acquisition of, and implementation of IT is being undertaken in 69 percent of the municipalities whereas, 31 percent of the municipalities do not have a strategic plan for IT. Out of the 69 percent of municipalities with a strategic plan for IT, 66.7 percent have a formal planning process, a deliberate planned process, but not necessarily inflexible, while 33.3 percent have an informal process where changes are not planned, but rather, they arise spontaneously. When asked about the number of information technology projects handled within past five years the following data was collected:

Table 2: Number of IT Projects within Past 5 Years

1-5	7.7%
6-10	15.4%
More than 10	76.9%

When IT managers were asked about their satisfaction with the number of IT projects finished on time, within budget, and fully functional in the last five years, the following results were obtained:

Table 3: Success Rate of IT Projects: On time, Within Budget, Fully Functional

Answer Options	Projects finished on time	Projects finished within budget	Projects fully functional
Very Satisfied	30.8%	38.5%	25.0%
Satisfied	69.2%	61.5%	58.3%
Neutral	0.0%	0.0%	16.7%
Unsatisfied	0.0%	0.0%	0.0%
Very unsatisfied	0.0%	0.0%	0.0%

A mixed response was obtained about the criteria for the choice of information technology partners:

Table 4: Criteria for the Choice of IT Partners

Answer Options	Response Percent
Lowest price	38.5%
Size of company	15.4%
Reputation	46.2%
Local provider	7.7%
All of the above	69.2%

Municipalities were equally divided on the preferred type of partnership; long term versus short term. Municipalities preferred a letter of agreement in the form of a contract for the procurement process of information technology.

Table 5: Preferred Type of Contract

Answer Options	Response Percent
No written contract (informal agreement no written documentation)	16.7%
Partnership contract (an understanding that there will be a sharing of the profit and losses)	0.0%
Cost and Volume Agreement (the provider receives a sum in return for treating a specific number of cases)	8.3%
Letter of agreement (Formally set out terms and conditions for the project)	75.0%

Different municipalities showed variations when using a detailed plan for IT decisions. Forty two percent of the municipalities used a detailed plan in a few cases, thirty three percent of

the municipalities used a detailed plan in most cases and only 25 percent used a detailed plan for IT decisions in all cases.

When a comparison was made between the turnaround time/cycle for the procurement of information technology related equipment and non IT related equipment, the following results were obtained:

Table 6: Turnaround Time for the procurement of IT and Non IT Related Equipments

Answer Options	IT related equipment's turnaround time satisfaction	Non IT related equipment's turnaround time satisfaction
Very satisfied	33.3%	8.3%
Satisfied	66.7%	58.3%
Neutral	0.0%	33.3%
Unsatisfied	0.0%	0.0%
Extremely unsatisfied	0.0%	0.0%

There are 58.3 percent of municipalities that are satisfied with the response of vendors in case of a break down or nonworking/defective products procured by municipalities. Only 25 percent of the municipalities are very satisfied and seventeen percent remained neutral in this context.

Percentage of the operating budget allocated by municipalities can be seen as followed:

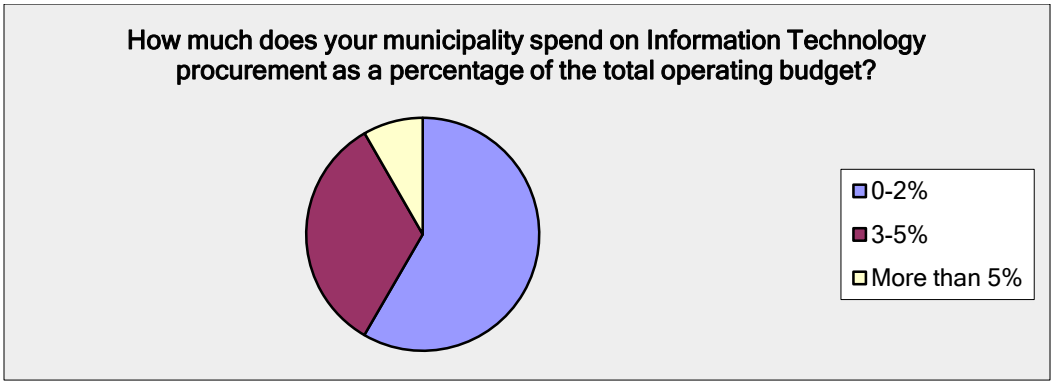

Figure 3: Percentage of Operating Budget on Information Technology

When municipalities were asked about whether there was a reallocation of staff to other functions or any reductions in staff positions following the implementation of IT projects, 41.7 percent answered yes, and 58.3 percent answered no. In order to avoid risks, several mechanisms have been developed depending upon the nature and scope of the IT project, 45.5 percent of municipalities used an A-Control Mechanism (action related monitoring), and 54.5 percent of the municipalities are using a P-Control Mechanism (prior assessment and own procedures).

When municipalities were asked about setting up a timeframe for the delivery of an information technology project, 58.3 percent said that they do this in all cases, 33.3 percent said that in most cases and 8.3 percent said that they do it in only a few cases. On the overall effectiveness of municipalities for the implementation of IT, 66.7 percent felt that they were successful, 25 percent felt that they were very successful, and 8 percent remained neutral.

On the question about the use of outside consultants for the planning and implementation of IT projects, twenty seven percent of municipalities did use them, nine percent did not use outside consultants, and sixty three percent used them only sometimes.

When asked about the main barriers encountered during IT procurement, municipal IT professionals said:

Table 7: Main Barriers for the Successful Procurement of IT

	Barrier 1	**Barrier 2**	**Barrier 3**
1	Tender Process	Knowledge of your requirements in detail	Describing the requirements correctly
2	Other business areas within organization	Lack of Communication	Timelines that are set by other departments
3	IT staff resources	Sponsoring department resources	Contractor Resources
4	Cost for new technology	Cost for staff training	
5	Lengthy procurement process	Slow process from decision and acquisition	
6	Learning new processes	Cost	Timing of projects
7	Time	Cost	Manpower

8	Length of approval time	Lack of experienced IT staff	Decisions are based on price rather on business needs
9	Cost of the projects	Municipalities cannot make multi-year policies	Short term relationship with vendors
10	Involvement of multiple stakeholders	Work with other departments for timelines	Competing with other projects
11	Cost	Time	Manpower

In considering the frequency by which barriers were listed by the municipalities, the most frequently encountered barriers were cost and manpower. The second and third most frequently encountered barriers were time and the involvement of multi-stakeholders in IT projects. There are a few other barriers mentioned by IT managers such as short term relationship with vendors, length of approval time, slow and lengthy procurement process. This is shown in Table 8.

Table 8: Main Barriers Percentage

Cost	Manpower	Time	Stakeholders Involvement	Others
22%	22%	19%	16%	21%

4.1 Additional Comments

Four participants chose to provide optional comments regarding issues and potential improvements in the procurement arrangements of municipal information technology processes. One participant stated that this procurement process could be improved if there was a better alignment with other departments and if all purchases were to go through the information technology department. Another participant wrote that the procurement processes are new and staff is still adjusting to this new process. He further expressed that once the system is

established, things will be more efficient. One of the participant's commented that his municipality has provincial pricing on the equipment and have a vendor of choice to minimize administration which is working extremely well. Another important comment was added, "budget resources for some projects are controlled by other departments/divisions, there are opportunities to centralize budget control so that multiple approvals are not required to make procurements, since most are only part of a whole solution and understanding at department level is usually limited".

Chapter 5

Discussion and Analysis of Research Findings

Overall, the findings of this study indicate that municipalities are doing well at procuring information technology. The municipalities are following strict guidelines provided by the provincial government in order to make informed decisions with the limited resources and manpower available. IT has become a very strategic process and with the involvement of multiple stakeholders in and outside of the organization, the job of IT managers has become even more complex.

According to a survey and a study carried out for small local governments in the United States, the lack of a strategic planning process was considered to be the most significant problem faced by information technology managers in the public sector (Beaumaster, 1999). The survey results here show that municipalities have now recognized the importance of strategic planning in obtaining information technology. Strategic planning ensures increased efficiency in current and future operations, and helps staff make more informed decisions while improving the overall performance of the organization is increased at the same time. According to the survey results, almost 69 percent of municipalities have a strategic planning process for IT in place and 66.6 percent of these municipalities have a formal strategic planning process: a deliberate planned process, but not necessarily inflexible, while 33.3 percent have an informal process where changes are not planned, but rather, they arise spontaneously. The data shows that municipalities have recognized the importance of strategic planning required in the acquisition and implementation of information technology in an organization. A formal planning process for IT can be helpful in identifying problems within the existing system and a step towards engaging

personnel at the different levels of the organization to speak distinctly about their needs for information and potential projects should be taken early.

Almost 77 percent of local governments have completed over ten IT projects within the last five years. Municipalities included in this study were between the population range of 20,000 and 200,000. Their number of completed IT projects show that even smaller local governments are investing in IT projects. Of the municipalities left, 17.7 percent had completed 5-10 IT projects within the last five years and only 8 percent completed less than five information technology projects within the last five years

The challenges faced by public entities in technology contracting are complex, significant and sometimes discouraging, however, they are still manageable. The history of public sector IT projects contains some highly publicized failures: E-health Ontario and the Integrated Justice System both experienced cost overruns and the Government of Ontario is still trying to correct deficiencies in the E-health project. There have also been various successful projects in the highly complex world of public sector IT contracting such as electronic kiosk and toll roads. According to this study, when municipalities were asked about the IT projects completed on time, the following results were obtained: almost 31 percent of the municipalities were very satisfied and 69 percent of the municipalities were satisfied. Completion of an IT project on time can be achieved through advanced research on the scope and requirements for the nature of that particular project. It seems that municipalities are avoiding being overburdened by IT projects and may be choosing to take a slower, systematic approach. This is understandable when the risks involved with such projects are put into perspective.

IT projects are notorious for cost overruns but when municipalities were asked about projects finished within budget, 38.5 percent of the municipalities were very satisfied and 61.5 percent were satisfied with the completion of projects in the given budget. This may mean that

municipalities are learning from their past experiences and from the experiences of other sectors and are now taking care in ensuring IT projects remain within budget. There may be several other reasons for wanting to keep the project within budget and a further analysis of the survey answers may help determine these reasons. Extensive research on the scope of the project in advance or accurate prediction of project cost might be reasons for this level of success.

Municipalities were questioned about IT projects that were fully functional, twenty five percent of municipalities were very satisfied with the number of IT projects fully functional, another 58 percent were satisfied and almost 16 percent of the municipalities remained neutral regarding this issue.

According to the literature review, a high degree of transparency, openness, and visibility is essential for IT procurement in the public sector. This is very challenging for public sector organizations but at the same time it is proving to be very helpful for the success of IT projects. One of the main characteristics of this process is the fairness required in the choice of a vendor. When municipalities were asked about choosing their partners, a mixed response was obtained. Reputation of the company was the most important criteria and forty six percent of the municipalities gave preference to it. Lowest price was the second criteria chosen by 38.5 percent of municipalities, and size of the company and local provider were the other two mentioned criteria. As municipalities were given the option to select multiple answers, sixty nine percent of municipalities chose their vendor on the basis of all of the mentioned criteria: lowest price, size of the company, reputation, and local provider.

When municipalities were asked about their preference for the type of partnership, they were equally divided between long term partnership that continues on an ongoing basis and short-term partnership that is limited to the completion of one specific project.

A letter of agreement with formally set out terms and conditions for the project was the number 1 choice of municipalities for the form of agreement; 75 percent of municipalities were adopting this approach. Another seventeen percent opted for no written contract but some sort of informal agreement would have to take place. Only eight percent of municipalities chose a cost and volume agreement where the provider receives a sum in return for treating a specific number of cases as a form of contract for the procurement process of IT. A written form of contract with all the details about the project including terms, conditions and clarity of roles is essential for the success of any technology contract. According to Duncan Card, a written form of contract can reduce chances of failure and ambiguities as it keeps the IT project more clear and precise (Card, Ross, 2005). Municipalities are following this rule in most cases, and it is one of the reasons that they have shown such a high amount of satisfaction with the number of projects completed on time, within budget and fully functional.

Technology decisions should be based on a sound understanding of customer needs and business issues. Involvement of a large number of stakeholders is common for IT projects in the public sector and as a result, it is essential to be selective when needed to use a detailed plan for IT decisions. Only twenty five percent of municipalities are using a detailed plan in all cases while the majority of municipalities are using it in a few cases. Time restriction can be a factor in making detailed plans a less favorable option because engaging several stakeholders at the initial stage can become very time consuming. The scope of the project may also play a part since some projects may not need a detailed plan. For example, when a project similar to a previously and successfully procured project by another municipality is to be used.

A shorter turnaround time is economically advantageous as it helps to achieve the desired results with a minimum use of resources, time and effort. Municipalities have shown satisfaction with the turnaround time of information technology related equipment. Managers of information technology departments are not involved in the procurement for non IT related

equipments so the information provided by them about their satisfaction related to non IT related equipments cannot be taken as authentic and correct.

The larger and more complex the IT project, the more likely it is that disputes and difficulties will arise at some point. It is recommended in the literature that the agreement with the vendor anticipate such problems and provide for an effective procedure for resolution (Peterson et al, 2007). Only twenty five percent of municipalities were very satisfied with the response of vendors in the case of breakdowns or non working/defective products procured by the municipality. Almost fifty eight percent of municipalities were satisfied with the vendors and seventeen percent remained neutral. Municipalities seem to have an overall satisfaction but there is still room for improvement. Like the ancient Greek saying goes, "men keep agreements when it is to the advantage of neither to break them" (Peterson et al, 2007). Hence, it is essential to adopt a balanced approach in this regard for an effeicent and long term relationship.

It was observed that almost fifty eight percent of municpalities were allocating 0-2 percent of their operating budgets to the procurement of information technology. Another thirty three percent of municipalities were spending 3-5 percent of their operating budget on the procurement of IT and eight percent of municipalities were spending more than five percent. Although a difference is observable in the actual amount municipalities were investing in IT projects, the ratio of the IT budget to total operating budget for each municipality was similar. Therefore, any differences in the numerical values of their budgets can be attributed to differences in their operating budgets most likely due to the size of the municipality (i.e. larger municipalities have more resources and therefore, larger budgets as compared to smaller municipalities).

The literature review indicated that IT will allow public organizations to reduce staff positions because of the automation of several services. (Stevens, McGowan, 1985). When

municipalities were asked about their ability to reduce or reallocate staff to other functions by the implementation of information technology projects, a mixed response was obtained. Forty two percent of the municpalities were able to reduce staff positions or reallocate staff to other positions while fifty eight percent of the municipalites confirmed the literature review; they were indeed able to reduce staff positions with the introduction of information technology.

There are a collection of tools, principles, and techniques that can be used to avoid risks and to achieve the desired effects of proper planning, procurement, and implementation of information technology. When municipalities were asked about their type of control mechanisms they currently use to avoid risks, forty five percent of the municipalities were using action related mechanisms. This type of mechanism is adopted for partners with weak financial strength for internal risk management and procurement procedures. In this mechanism, a high level of monitoring is preferred and there is limit on funding. Other fifty four percent of the municipalities were using prior assessment and own procedures to avoid risks in the projects related to IT. This type of mechanism is being adopted for the partners with strong financial capacities and they are allowed to applied their own procurement procedures and there is no funding limit and it has more flexibility (Commission, 2010).

A set timeframe is essential for the delivery of any IT project. It should be included in the contract to avoid delays which may contribute to cost overruns. Municipalities are recognizing the importance of setting up a timeframe for the delivery of an IT project and more than 58 percent of the municipalities are doing this in all cases while thirty three percent are doing this in many cases and only eight percent are adopting this policy in a few cases.

Municipalities were asked to rate their overall effectiveness of the procurement and implementation of IT and twenty five percent of the municipalites rated it as very successful, sixty seven percent thought that they were successful and eight percent remained neutral. This

maches with the responses of the municipalities when previously asked about the success of their IT projects with regards to the project being completed on time, within budget and fully functional.

Use of outside consultants for the planning and procurement of IT is not very prevalent in municipalities and it is not consistent with my literature review where it was stated that federal and provincial governments of Canada tend to use consultants for their IT projects (Brown, 2007). Only twenty seven percent of the municipalities were using consultants and 63 percent of the municipalities sometimes use consultants, while nine percent had never used consultants at all.

When IT managers were asked about the main barriers for the successful procurement of information technology, the following key barriers were identified: cost, manpower, time, and involvement of multistakeholders. Cost is considered problematic for municipalities because acquiring new technology is expensive, especially for small local governments that have limited financial resources. To add to their problems, acquiring information technology is not a one time expense. Due to its volatile nature, frequent upgrades are necessary. IT projects also require staff training to keep them up-to-date and ensure the system is properly maintained. Most municipalities are allocating about two percent of their operating budgets to IT but smaller municipalities, find it challenging to cope with the changing nature of technology and to deal with compatibility and standardization issues.

Manpower has been described as another most important barrier for municipalities with 22 percent of municipalities responding in favor. Lack of trained staff is also due in part to limited resources available to municipalities. Without trained IT staff, no system of information technology can work with full efficiency and effectiveness. Lack of trained manpower can also

contribute to additional expenses because municipalities may have to hire external consultants at higher salaries to operate their IT department.

IT projects are complex in nature and significant time is necessary to perform a need analysis, prepare a tender, choose a vendor, and negotiate the terms and conditions of the project. It is hard for municipalities to keep their projects running on time while concentrating on budget restraints and functionality issues of the project simultaneously. Almost 19 percent of municipalities considered this as another barrier for their IT managers. Current IT staff is so busy with the maintenance of current systems that it is hard for them to spare time for the tender process and analyze the needs of the organization, both of which are essential to increase the likelihood of a successful IT project.

Involvement of multiple stakeholders in the planning, procuring and implementation process for IT projects is considered to be another barrier by 16 percent of repondents. IT is not limited to one department of the organization and it has an impact on the whole organization. Large IT projects involve a large number of stakeholders and a lack of interdepartmental coordination and competition within departments can lead to inefficiencies in IT projects. Sometimes, it can cause delays in the planning of the project and one of the respondents explained, " large projects involve a large number of stake-holders, competing with other projects, i.e. working with Purchasing or other departments to meet timelines".

Finally, a few other barriers were discussed such as decisions based on price rather than business needs, and the long term relationship. Municipal budget are made annually, thus, preventing municipalities from being able to receive price discounts that normally require a multi-year commitment.

5.2 Conclusion

Based on the findings of this study, municipalities seem to be doing fairly well with the procuement of IT. Many of the municipalities resoponding were satisfied with their vendors and have developed good practices such as using detailed plans for IT projects, engaging in formal strategic planning, introducing mechanism controls to avoid risks, and using letters of agreeement with formally set out terms and conditions for projects, all of which are steps towards a successful procurement process. All these steps and measures enhance the ability of municipalities to acquire and implement IT systems successfully. Municipalities are getting the maximum positive effect by adopting all of these policies as they are helpful in achieving a more coordinated approach, an integration of all systems within the organization, less duplication of resources and more success to meet individual and organizational needs.

A few barriers are also mentioned by the IT managers of municipalities which can be overcome by a joint effort and with a considerable amount of investment in resources (time, money, and manpower). Involvement of top management is essential to make sure that support is available to engage multiple stake holders within the organization in planning, procuring and implementing information technology. Technology adoption is a risky and complex process in public organizations and it demands collective decisions by all of the individuals who are relevant to the project.

According to the initial set criteria of successful IT procurement projects, a project is successful if it is completed on time, within budget and fully functional. Municipalities are performing well for the successful procurement of IT projects and this can be observed by reviewing the survey results. IT should be taken as a strategic resource to be invested in; so municipalities should not take IT as a cost centre that should be maintained at a lower cost.

Although each public organization and every technology project has its own unique characteristics, there are a few aspects of the contracting process that apply to every technology project. It is suggested that municipalities should allocate a bit more of their resources to the planning and procuring of information technology to make this process faster and keep up to date with the volatile nature of IT.

Chapter 6

Interviews with the IT Professionals at the Local Government Level

Stage three of the research report involved interviews based on the review of literature and from the results of the survey. As has been mentioned in the methodology, most of the questions were open-ended. Interviewees were selected from among the IT professionals who responded to the survey questionnaire and volunteered to provide their insight and current trend information for IT procurement in their municipalities. These interviews were informal and conducted via email or telephone. All answers were put into a database to retrieve for review and analysis.

6.1 Municipality A

Information technology was defined as any technology that helps to produce, store, communicate, manipulate, display, organize, summarize and make reports. Municipality A perceives the role of IT as a strategic resource to increase accountability, service, service delivery, and reduce cost. Total value added and total cost of ownership were the important components and the basis of success for the procurement of the IT project. Most of the IT projects were judged in this municipality as being successful if cost and value balanced each other, and if costs exceeded value than the project was considered deficient or not completely successful. This interview yielded evidence that municipalities continually look to other governments, public organizations and private organizations for examples of information technology procurement. They look at what others with a similar project and situation are doing, what strategies others have adopted and what actions others have taken (Personal interview, Sep. 14, 2010)

Municipalities are highly regulated by provincial legislation with respect to the procurement process. Therefore, municipalities are required to meet provincial statues with respect to procurement since they do not have a free hand to make use of, or follow any model for the procurement of information technology. Municipalities have to remain in compliance with these provincial statues. Municipality A's IT manager feels that the planning approach for IT procurement is sufficient, effective and no additional steps are needed to enhance this process (Personal Interview, Sep. 14, 2010).

When discussing the biggest problem and key barriers faced by the municipality in the procurement of IT, the IT manager of city A said that the biggest challenge was accurately specifying the requirements for highly complex software. He elaborated this point by saying, " Imagine specifying the requirements for an office automation software program like Excel, for 150 users, that takes future requirements into consideration. It is very time consuming and expensive to conclude this accurately" (Personal Interview, Sep. 14, 2010).

When commenting on the progress and improvement in the IT capacity of the local government, he said that the progress of IT in an organization depends on whether it is viewed as a cost center to be managed for lowest cost, or as a strategic resource to be invested in. According to him, organizational resources play a large role in planning and procuring technology of all types, so the larger local governments with more resources and manpower are in a better position for planning and procuring technology of all types (Personal Interview, Sep. 14, 2010).

City A did not experience any pressure or requests from its politicians for the initiation of any information technolgy project. According to his comments, "Procurement process for information technology can be improved by adopting agile development and knowledgeable IT procurement processes". On the importance of auditing for the quality and procedural conformance of the project he said, " for this process to be effective and efficient, the domain

experts, system users and enterprise architects must be engaged from the beginning, and continually through the process"(Personal Interview, Sep. 14, 2010).

6.2 Municipality B

Information technolgy is playing an important role in municipality B. Due to information technology, municipality B is able to store and retrieve information to make much more informed decisions and can provide better responses to council so they can also make informed decisions. IT also helps the municipality staff in their day to day functions such as tracking anything from licensing to storage of information with respect to registration in sports programs, and leasing of ice rinks. Talking about the important components of IT procurement, the respondant from City B comments that all softwares should be compatible with hardware and they have to be useful and integrated to the municipal system. Training is also very important as without proper training, the staff won't be able to use the new technology (Personal Interview, Sep. 28, 2010).

An IT project can be called successful if the municipality is using the procured technology in a manner that it was perceived and designed for. The CAO (Chief Administrative Officer) of city B further explained that this process is not simple and extensive background research should be done according to the goals and objectives of the project. It is also important that any new technology (software/hardware) be user friendly and provide instructions for staff to follow (Personal Interview, Sep. 28, 2010).

While discussing the instances when the municipality felt that a particular IT project was deficient or unsuccessful, the interviewee said that in the past sometimes when the municipality purchased software and it did not work as planned, the municipality had to wait and rewrite the requirements again which turned people off from using the technology. Inspite of doing all the

research and homework with due diligence, sometimes the purchased product did not work in the way the municipality expected (Personal Interview, Sep. 28, 2010).

Sharing his views about the biggest problems for the procurement of IT he said that smaller municipalities are not able to actually go out and buy a specific piece of software due to their size. They are usually designed for the larger municipalities although some of the features may be used by smaller municipalities. Rapid change of technology is also a big hurdle since often after the procurement and implementation of a particular technology, an upgrade becomes available in the market. Compatibility of new technology with the existing system is also an important consideration. Keeping an up-to-date technology system at the small local government level is difficult and expensive. Sometimes this cost can be reduced by jointly purchasing of technology with other municipalities at the county level. In this way smaller municipalities can get a discount rate since the payment for license fee is based on the number of users. Common training, and a common use can help smaller municipalities to acquire new technologies at a reasonable cost. Therefore, municipalities should look at their counterparts and other levels of government for recommended approaches to an IT problem (Personal Interview, Sep.28, 2010).

With respect to the role of politicians, he said that they have very little to do with IT projects. There are exceptions when the council observes that another community is doing something interesting or useful, for instance, online ability to pay parking tickets, the council may request to make this facility possible for their citizens. In general though, their role is very minimal. As the survey shows, most municipalities are allocating about 0-2 percent of their operating budget to IT; a percentage this municipality is satisfied with. Municipality B has shown more interest in the purchase of software and hardware which have been used or are being used in other municipalities. He explained this fact by saying that a lot of times a company may give a discount on a technology or software that has not been tried anywhere else, but it might take a much longer time to learn about the effectiveness of that procured technology. Unfortunately

costs offset the benefits in this case since the time taken for the staff to learn the aspects of the new IT system and the effort that was put towards procuring the technology showed that it was not an advantageous economical option, especially when the technology did not live up to expectations in terms of functionality and needs of the municipality. Therefore, due to their scarce resources,smaller municipalities should adopt technology which has been tested somewhere else successfully (Personal Interview, Sep. 28, 2010).

In commenting on improving IT capacity at the local government level and its relation with the administrative authority, he said that small local governments' IT staff is way behind not because they do not have the right expertise but because they do not have time to carry out advance testing of the new technology. Lack of funds, and training is also a big problem smaller local government are facing. For quality assurance, it is important to make sure that the quality of the product meets what has been put in the proposal and that the product performs the functions it was intended to. Audits are important as they help to make sure that the vendor is meeting the quality standard that was requested and the IT project performed as planned. This process should be started from the very begining of the any IT project so a municipality does not have to go back two years later to the vendor company and complain about operational issues. This may cause the municipality to lose its bargaining power with the vendor (Personal Interview, Sep. 28, 2010).

6.3 Municipality C

Information technology is considered a performance enhancer in municpality C. It is providing assistance to other departments of the corporation in their selection of programs so they can do their jobs better with the help of technology in their day to day decisions. IT projects in municipality C are considered to be successful if they are within budget, save the corporation money and also involve long term savings for the Corporation. As IT helps to improve work and increase productivity, any IT project that helps to save time and resources of the corporation is

considered to be successful; it would be helping the municipality to increase efficiency in the provision of services (Personal Interview, 9/24/2010).

Municipality C mostly looks a tother organizations for examples of IT projects, especially, RFP (Request for Proposals) of other muncipalities, to keep their projects up to date and to get benefits from the expertise of others in the same field (Personal Interview, 9/24/2010).

When talking about the effectiveness of the IT procurement processes, Municipality C said that this process is pretty much legislated and procurement laws are in place which the municipality has to follow. Thus, it is a much defined process and any project over $ 35,000 needs to proceed with an RFP and a tender process. He further explained that the most important process necessary for successful procurement is the preparation of the RFP, or tender process where sufficient amounts of time should be spent in order to make sure that the expectations and requirements of a project are clear among all parties involved and it should be appear in the tender fully and accurately described (Personal Interview, 9/24/2010).

Talking about the differences between the procurement process of large municipalities with more resources and small muncipalities with comparatively less resources, the IT manager of Municipality C said that the process of acquiring IT is the same for all municipalities. It is required by the Province to follow a certain path during procurement. Large municipalities are in a better position as compared to smaller municipalities in a sense that they have more resources to draw upon. They have more people to work on the RFP process while smaller muncipalities have a small group of people working with the IT sector and also have numerous other duties besides working on the tender process. As a result, smaller muncipalities' lack of trained staff (due to limited budget allocation) for IT can be disadvantageous (Personal Interview, 9/24/2010).

The role of politicians is almost negligible in the whole process as almost all IT projects are initiated and delivered according to the requirements of the different sectors of the

corporation. There is only the possiblity that council may notice that another municipality is doing something new to improve the provision of services. Then they may suggest that the adoption of something similar, but most of the time they do not interfere in the planning and procuring process.

For quality assurance, testing of the product again and again is very essential especially, with software where the involvement of end users is very important. The IT department can help to solve such problems and provide solutions for any technical problem. According to this IT manager, IT projects have changed into end user implementation projects and a lot of testing is requied before the actual implementation of the new product or software can be commenced (Personal Interview, 9/24/2010).

Most municipalities have shown their satisfaction with their projects for being on budget, within time and fully functional through the survey questionnaire and when this was asked about this, the IT manager of City C, explained, " background research is very necessary and once we are done with our research and needs analysis, we strictly limit our project to those requirements and do not add further features into our initial requirements. This policy keeps our projects on time and within budget. If we keep on adding components to the project, it will be harder to keep a project on track with the cost and timeline"(Personal Interview, 9/24/2010).

For the larger IT projects, Municipality C has a steering team which keep track of timeliness and acurracy of the project and in this way, a project is not only being tested and monitored during the process but at the time of implementation too.

6.4 Interview Findings

All of the interviews show that IT is playing pivotal role at the municipal level in the efficient and integrated provision of services to clients and citizens. Most IT projects cut across

the departmental and organizational levels which contribute further to the already complex process of planning, acquisition and implementation of IT. All of the IT managers agreed that municipalities have to follow a strict guideline prescribed by the provincial government. Thus, small or large, local governments have to follow the same guideline provided by the provincial government. The difference between small and large local governments is found in their resources. Due to their resources, large municipalities can spend more time doing background research and on the RFP process which can be helpful in defining the organizational IT needs. More time is also available to negotiate with the vendor.

Contrary to my literature review, the role of politicians in the planning and procuring IT process is minimal. According to my interview findings, politicians do not interfere in the routine work of IT and there were a very few exception. Again, such an exception would be where politicians suggested the acquisition of technology which may help increase the innovation of the municipality.

The success criteria for IT projects in these municipalities was very similar to the success criteria established in my literature review: projects completed within budget, help the Corporation to save money, cost and benefit should balance each other, and the final project should work as designed.

All of the interviews reiterate the fact that IT projects cannot work in isolation and a collaboration of different departments is essential right from the beginning of the project. Detailed research and needs analysis should be done before signing a contract. There should not be any addition of features and requirments during the completion of the contract as it would delay the delivery of projects and can become a reason for cost overrun.

Different issues and difficulties were described such as the idea that small local governments are not able to carry out some of the projects alone and they have to strike a

partnership at the county level or with some other municipality to accommodate the acquisition within their budget limit. Another problem is that the ever changing nature of IT makes it hard to keep up to date. Making sure all updates are compatible with the older system is another issue. Lack of trained IT staff and the time consuming nature of the overall process is also a problem for small municipalities. For the quality and procedural conformance of the projects, interviewees gave their opinion for effective and efficient processes: the domain experts, system users and enterprise architects must be engaged from the beginning, and continually through the process. Testing should be done again and again before the actual implementation to make sure that the project is able to perform the function that is required from it and that it is meant to perform. A steering committee shoud be formed for large IT projects to ensure accuracy and timeliness of the project.

Overall finidngs of the interviews are consistent with the literature review. Small local governments are being creative in trying to find ways(such as partnerships with the other municipalities) to acquire IT. Provincial regulation and procedures are good in a sense that all municipalites have to follow a certain guideline. Although this makes the process more complex for municipalities but at the same time it is also proving to increase the success of IT procurement processes of municipalities.

Chapter 7

Research Findings Analysis and Procurement Process Framework

Procurement of IT is a complex process and there are a few steps which are helpful in the success of public sector IT projects. In the light of a framework of the best practices for the procurement of information technology provided by the experts, the research findings have been analyzed to determine how municipalities are doing in terms of IT contracting.

Accoding to the procurement process framework, the first step in any technology project is determining, analyzing, and documenting the organizational needs and business requirements. It is observed through the survey questionnaire and interviews with IT managers of municipalities that they are working hard and performing well in this regard. Most of the municipalities have strategic planning for IT (formal and informal) and they also develop a detailed plan for information technology. Due to the involvement of various stakeholoders, sometimes conflicting goals and agendas need to be resolved and this should be taken care of from the very start of the project. Interviews findings are consistent with the literature review because “technology itself is seldom the key or critical challenge in any IT project. Rather, it is how an organization prepares for, implements, and manages the change” (Peterson, 2007).

Finding a suitable IT partner is critical, it should be a fair choice. Municipalities were asked about the procedure for choosing a vendor for their IT projects and most of the municipalities chose their vendor on the basis of reputation of the company, and lowest price. It is also revealed in interviews that learning from colleagues at other public entities who have engaged in similar projects especially, during the preparation of the RFP happens often. Due to

this interaction, municipalities can make more informed decisions, be aware of potential pitfalls and be ready to address them.

All terms and conditions should be typed out in a written form which should describe the precise process that should be used and this can be done through the RFP (Request for Proposal). It is also the point where legal terms are included in the project. Requirement standards, licensing of software and software systems, scope of the project, assignment of personnel by the vendor for the service agreement, performance measurement, method of testing and verification all should be in included in the written form. The survey of municipalities shows that letter of agreement (fomally set out terms and conditions for the project) are being used in 75 percent of the municipalities. It is a very positive sign and it is proving helpful to municipalities for successful IT projects.

Municipalities are adopting various steps to avoid risks in IT contracts. Most municipalities are using prior assessments and own procedures for this purpose. According to Peterson, small wins and accomplishments should be shared and a permanent and positive relationship should be developed between the client organization and vendor (Peterson et al, 2007). Milestones should be evaluated regularly to keep the project running on time and according to one interview, it is essential for an IT project not to add additional features in the project as it can be drastic for the budget and timeliness of the project.

Testing and evaluation has been emphasized again and again by all of the interviewees. Before the delivery and application of the project, testing should be done not only by the IT staff but also by the end users since most IT projects are implementation projects to meet specific user needs. According to this analysis, municipalities have shown satisfaction with their IT projects for being successful. It is due to the adoption of good policies and procedures. Improvement can be made in the planning processes if more resources can be allocated were available.

7.1 Conclusions and Recommendations

Information technology is playing a significant role in the efficient provision of services in public organizations. Introduction of IT has brought about a few major changes in the existing systems due to its interactive nature. The literature review and reserch for this paper shows that procurement of IT cannot be done successfully without proper planning.

Resources are scarce at the local government levels so, with careful and extensive planning, a practical and innovative policy can be adopted. Price is playing an important role in the technology decision which can sometimes create inefficiencies in the acquisition of IT. A better choice can be made by spending a few more dollars. Decisions should be focused on the desired and expected economic outputs. Cost should be considered but other factors should also be given importance to lessen the risks of delivering the wrong final product.

Involvement of multiple stakeholders is not simple and most IT projects are not limited to one department of the public entity. High level executive sponsorship can play an important role in this context. It is important to establish good communication between the project team and the stakeholders. By maintaining these communication channels properly, many potential issues can be resolved well before they become insourmountable.

Staff training and learning is critical since IT is not limited to IT personnel. Resources should be spent on training and learning and should not be concentrated at a management level. This investment in training can bring improvement in productivity levels and increase effectiveness in the provisions of service delivery.

It has been observed that provincial regulations and standards are proving helpful for the successful procurement process in some ways. At the same time some municipalities are finding these regulations to be cumbersome and a reason for a longer planning process. I conclude that

due to the higher cost and value of IT projects, these rules are providing a good check on the policies of local goverments.

7.3 Study Limitations and Suggestion for Further Study

The sample size for this study may not be large enough, which could have impacted the results as large samples tend to provide more accurate results. Attempts were made to maximize the responses by sending two reminders to potential respondants, but when the survey questionnaire was sent out in the month of July, some of respondents were not available due to summer vacation schedules. A better choice of time may have increased the sample size.

As the survey questionnaire and interviews were based on the comments by the municipal IT managers, who, based in survey responses were generally working with the same municipality for more than 5 years, it is possible that they might be baised while answering some survey questions where they were being asked about success of their IT projects. According to White and Crawford, " Asking users directly is usually not reliable because they typically do not know the value of the information or are biasd towards overevaluating their own information" (White, Crawford, 1998).

In this study, I have tried to evaluate the current trends related to small and medium size municipalities, further study can be done on the trends of large local governments with more resources and manpower. It is also observed that quantitative data is helpful to figure out current trends of information technology in general, but the interviews provided more details about real problems faced by local governments and about the role of IT at the local government levels. So more detailed interviews can be helpful to better understand the actual problems of municipalities.

References

A, C. (2010, September 14). Information Technology Manager. (U. Ali, Interviewer)

Arkansas, S. o. (2003). *Best Practices for Managing State Information Technology Projects.* Arkansa: Office of Information Technology, http://www.cio.arkansas.gov/techarch.

Atreyi Kankanhalli, R. K. (2009). *Does Public or Private Sector Matter? An Agenda For IS Research in E- Government.* Singapore: Pacific Asia Conference on Information Systems, http://aisel.aisnet.org/pacis2009/9.

B, C. (2010, September 28). CAO. (U. Ali, Interviewer)

Barton Wechsler, F. B. (1995). State Agencies, Experience with Strategic Planning: Finding from a National Survey. *Public Administration Review, Vol. 55, No. 2* , 159-167.

Beaumaster, S. (1999). *Information Technology Implementation Issues: An Analysis.* Virginia: Virginia Polytechnic Institute and State University.

Bellamy, D. E. (2005). *Good Government, Toronto Comuter Leasing Inquiry* . Toronto: City of Toronto.

Berry, i. (2010). *http://iberry.com/cms/OCW2CS*. Retrieved 11 8, 2010, from http://iberry.com/cms/OCW2CS: http://iberry.com/cms/OCW2CS

Borins, S. (2005). A Holistic View of Publi Sector Information Technology. *JOurnal of E-Government, Vol. 1, No.2* , 3-29.

Borrins, S. (2006). What Keeps a CIO Awake. In K. K. Sandford Borins, *Digital State at the Leading Edge* (pp. 69-101). Toronto: University of Toronto Press.

Bretschnieder, S. (1990). Management Information Systems in Public and Private Organizations: An Empirical Test . *Public Administration Review, Vol. 50, No.5* , 536-545.

Brown, D. (2007). Government On-Line. In K. K. Sandford Borins, *Digital State At The Leading Edge* (pp. 37-68). Toronto, London: University of Toronto Press.

C, C. (2010, 09 24). Information Technology Manager. (U. Ali, Interviewer)

Canada, S. (2010). *Federal Government Spending on Science and Technology.* Ottawa: Statistics Canada, http://www.statcan.gc.ca/daily-quotidien/101013/dq101013b-eng.htm.

Canada, S. (2006). *Population and Dwelling Counts*. Retrieved June 18, 2010, from www12.statcan.gc.ca: http://www12.statcan.gc.ca/census-recensement/2006/dp-pd/hlt/97-550/Index.cfm?TPL=P1C&Page=RETR&LANG=Eng&T=301&S=3&O=D

Cats Baril, W. T. (1995). Managing Information technology Projects in the Public Sector. *Public Administration Review, Vol. 55, No. 6* , 559.

Commission, E. (2010). *Humanitarian Aid Guidelines for Procurement.* European Union, http://ec.europa.eu/echo/files/about/actors/DRAFT_Procurement_Guidelines_Sept2010.pdf.

Craawford, G. W. (1998, November). Cost and Benefit Analysis of Electronic Information: A Case Study. *College & Research Libraries* , pp. 502-510.

Duncan Card, M. R. (2005, July 05). Minimizing the Risk of IT Projects Failure. Toronto.

Erik Brynjolfsson, T. W. (1994). Does Information Technology Lead to Smaller Firms? *Management Science, Vol. 40, No. 12* , 1628-1644.

Hall, C. W. (2006). Implementing Information Technology Programs. *Journal of E-Government, Vol. 3, No.2* , 3-32.

Hashim, R. (2010, Vol. 6, No.1). Economic Issues In Information Systems Implementation In Local Government . *International Reiview of Business Research Papers* , 562-573.

Henry, C. (2008). *Information Technology in Government of Canada, IT Vision and Strategy.* Ottaawa : Public Works and Government Services of Canada.

J. N. Danziger, K. L. (1986). *People and Computers: The Impacts of Computing on End Users in Organizations.* New York: Columbia University Press.

Jhon Leslie King, K. L. (1985). *The Dynamics of Computing.* New York: Columbia University Press.

John M. Stevens, R. P. (1985). *Information Systems and Public Management.* New York: Praeger Publishers.

Keneth Kernaghan, J. C. (2004). Integrating Information Technology into Public Administration: Conceptual and Practical Considerations. *Canadian Public Administration, Vol.47, No.4* , 525-546.

Kenneth Kernaghan, B. M. (2005). *The New Public Organizations, chapter,10.* Toronto: The Institute of Public Administration.

King, J. L. (1982). Local Government Use of Information Technology: The Next Decade. *Public Administarion Review, Vol. 42, No, 1* , 25-36.

Lightbody, J. (1993). The Strategic Planning Components in the Policymaking Process for the Municipalities in Cnada . *Policy Studies Journal, Vol21, No. 1* .

Milton L. Peterson, N. G. (2007). Technology Contracting in the Public Sector. In B. Rocheleau, *Case Studies on Digital Government* (pp. 136-154). Hershey PA: Idea Group Publishing.

Murray, J. G. (2009). Towards a Common Understanding of the Differences between Purchasing, Procurement and Commissioning in the UK Public Sector. *Journal of Purchasing and Supply Management, NO.15* , 198-202.

Palfi, V. (2007). *Opportunities in Ontario's Informatiion Technology Corridor: ASA- Industry Sector Analysis.* United States of America, Department of Commerce.

Pearce, S. (2003). *Government IT Projects.* Londan, U.K.: Parliament Office of Science and Technology.

Perry, Y.-C. C. (2003). Outsourcing for E-Government: Managing for Success. *Public Performance & Management Review, Vol. 26, No. 4* , 404-421.

Roy, J. (2003). The Relational Dynamics of E-Governance: A Case Study of the City of Ottawa. *Public Performance & Management Review, Vol. 26, No.4* , 391-403.

Thames R. Gulledge, R. A. (1996). *The Information Technololgy Enabled Organization: A Major Social Tranformation in the U.S.A.* Fairfax, Va: Management of Social Tranformation (MOST), Discussion Paper Series- No. 14.

Theodore H. Poister, G. S. (2005). Elements of Strategic Planning and Management in Municipal Government: Status after Two Decades. *Public Administration Review, Vol. 65, Number. 1* , 45.

Appendix A:

Survey Questionnaire

The purpose of this questionnaire is to inform research into Information Technology procurement procedures in Ontario municipalities. **Please direct this questionnaire to a staff member responsible for information technology services for your municipality.** I would like to thank you in advance for your time. The findings of the survey will both provide knowledge about current arrangements for the procurement of information technology and inform the development of good practice guideline. Details of individual survey responses will not be used publicly and there is no intention to make critical comments about individual local authorities or provider organizations in any material for publication. Respondents are requested to make their survey responses in relation to their general experience and knowledge. The survey will take approximately 10 minutes to complete. A prompt response is appreciated. This survey is open till Friday, July 30, 2010.

Background

This study is being conducted for a research paper required for the completion of Masters of Public Administration program at the University of Western Ontario. Its purpose is to assess the process and procedure of acquiring Information Technology at the municipal level. Please answer as many questions as you can to the best of your ability. All answers are strictly confidential and neither you nor your municipality will be named as a participant in the study or identified in the report in any way. Click on the link below to fill out this survey questionnaire:

http://www.surveymonkey.com/s/W5MLKQ3

Contact Information

For more information or to request a copy of the results of this survey, please contact Umera Ali at uali@uwo.ca

Regards,

Umera Ali

Questionnaire

For most of the questions simply click on the answer that best reflects your opinion. For some questions, please type the answer in the space provided.

Please tell me about yourself

I am

(i) Male
(ii) Female

Job Title

Organization

1. How many years have you worked for this municipality?
   (i) 0-2
   (ii) 3-5
   (iii) 5-7
   (iv) More than 7 years

2. How many permanent employees work in your municipality?
   (i) 1-10
   (ii) 11-20
   (iii) 21-50
   (iv) More than 50

3. How many permanent employees work for the department responsible for handling information technology?
   (i) 0-5
   (ii) 6-10
   (iii) 11-15
   (iv) More than 15

4. Please tell me about your municipality
   (a) How many people live in your municipality?

   (b) This municipality can best be described as:
      (i) Lower tier
      (ii) Upper tier

(iii) Single tier

5. Does your municipality currently have a strategic planning process in place for the future use of, acquisition of, and implementation of Information Technology?

   (i) Yes

   (ii) No (If no, please skip to question 7).

6. If you answered yes to question #5, is your planning process formal or informal?

   Formal refers to a deliberately planned process, but does not necessarily indicate the process is inflexible
   Informal refers to a system where changes are not planned, but rather, they arise spontaneously.

   (i) Formal

   (ii) Informal

7. How many IT projects have been undertaken in your municipality in past 5 years?

   (i) 1-5

   (ii) 6-10

   (iii) More than 10

8. Are you satisfied with the number of IT projects finished on time in the last 5 years?

   (i) Very satisfied

   (ii) Satisfied

   (iii) Neutral
   (iv) Unsatisfied

   (v) Very unsatisfied

9. Are you satisfied with the number of IT projects finished within budget in the last 5 years?

   (i) Very satisfied

   (ii) Satisfied

   (iii) Neutral

(iv) Unsatisfied

(v) Very unsatisfied

10. Who has managed the Information Technology projects implemented over the past 5 years? (Title of individual or committee)

11. What criteria do you use to choose your Information Technology partners?

(i) Lowest price

(ii) Size of company

(iii) Reputation

(iv) Local provider

(v) All of the above

12. What type of partnership is preferred?

(i) Long term? (continues on an ongoing basis)

(ii) Short-term? (limited to the completion of one specific project)

13. What forms of contract does the organization have for the procurement of Information Technology?

(i) No written contract (informal agreement no written documentation)
(ii) Partnership contract (an understanding that there will be a sharing of the profit and losses)
(iii) Cost and Volume Agreement (the provider receives a sum in return for treating a specific number of cases)
(iv) Letter of agreement (Formally set out terms and conditions for the project)

14. Do you use a detailed plan for IT decisions?

(i) Never
(ii) In a few cases
(iii) In most case
(iv) In all cases

15. How satisfied are you with the turnaround time/cycle for procurement of

A) Information Technology related equipment
(i) Very satisfied

(ii) Satisfied
(iii) neutral
(iv) Unsatisfied
(v) Extremely unsatisfied

B) Non-Information Technology related equipment (light automobiles, furniture, interior materials, etc.)
(i) Very satisfied
(ii) Satisfied
(iii) Neutral
(iv) Unsatisfied
(v) Extremely unsatisfied

16. How satisfied are you with the response of vendors in case of breakdown or nonworking/defective products procured by the municipality?

(i) Very satisfied
(ii) Satisfied
(iii) Neutral
(iv) Unsatisfied
(v) Extremely unsatisfied

17. How much does your municipality spend on Information Technology procurement as a percentage of the total operating budget?

(i) 0-2%
(ii) 3-5%
(iii) More than 5%

18. Has your municipality been able to reduce staff positions or reallocate staff to other functions by implementing Information Technology projects?
(i) Yes
(ii) No

19. Which control mechanisms do you use to avoid risks? (It is a collection of tools, principles and techniques that achieve the desired effect of proper planning and implementation)

(i)A- Control Mechanism (Action related monitoring)

(ii) P- Control Mechanism (Prior assessment and own procedures)

20. Are you satisfied with the number of completed Information Technology projects that are working with full efficiency?

(i) Very satisfied

(ii) Satisfied
(iii) Neutral
(iv) Unsatisfied
(v) Very unsatisfied

21. What are the main barriers encountered in the Information Technology procurement process? Pleas describe three.

22. Do you set a timeframe for the delivery of an information technology project?

(i) In a few cases
(ii) In many cases
(iii) In all cases

(iv) Other, Please explain:

23. Please rate the overall effectiveness of your municipality's implementation of Information Technology

(i) Very successful

(ii) Successful

(iii) Neutral

(iv) Unsuccessful

(v) Very unsuccessful

24. Does your municipality make use of any outside consultants with regard to Information Technology planning and implementation?

(I) Yes

(ii) No

(iii) Sometimes

25. Please share any further views about issues and potential improvements in your municipality's Information Technology procurement arrangements.

26. Would you be willing to discuss your Information Technology procurement trends with me in a brief phone conversation?

Thank you for participating in this survey.

If you have any questions or comments about this survey, please contact me at uali@uwo.ca.

Umera Ali

Clicking finished will record your survey answers.

Appendix B

This study is being conducted for a research paper required for the completion of Masters of Public Administration program at the University of Western Ontario. Its purpose is to assess the processes and procedures of acquiring Information Technology at the municipal level. This interview will take approximately 20 – 25 minutes.

Interview Questions

1. I am defining "information technology" as any technology that helps to produce, store, communicate, manipulates and/or disseminate information. Would you agree with this definition, would you add to it or redefine it anyway?
2. What do you perceive as the role of information technology in your organization (Beaumaster, 1999)?
3. What are the important components for the procurement of information technology?
4. How will you define success for an information technology procurement process?
5. What kind of instances would make you consider a particular information technology procurement process not completely successful of deficient (Beaumaster, 1999)?
6. Do you look to any other government or public organizations for examples of Information technology planning and procurement?
7. Do you use examples from the private sector?
8. Does your organization make use of any model for the procurement of information technology?
9. Do you perceive your planning approach for the procurement of information technology as being sufficient and effective? If not, what additional steps can be taken to enhance this process (Beaumaster, 1999)?
10. What are some of the biggest problems you face while planning and procuring information technology?
11. What would you like to comment on the fact that improving information technology capacity of the local government depends on whether support from administrative authorities is available for the IT managers?
12. Do you see any difference in the planning and procuring processes of information technology between a small local government (less resources and men power) and a large local government?

13. Do you see any difference in the requirements (on time completion, within budget, fully functional) of an IT project which is initiated by the politicians VS by the municipal staff?
14. What is the best way to build quality assurance into the process, as opposed to inspecting quality after the fact?
15. What is the best way to drive supplier quality management systems?
16. What is the importance of audits for the quality and procedural conformance? How would you comment on the fact that this process should be introduced at the earliest stages of the requirement determination process?

1. Default Section

*** 1. Please tell me about yourself**
I am

- ◯ Male
- ◯ Female

2. Organization

3. Job Title

4. How many years have you worked for this municipality?

- ◯ 0-2
- ◯ 3-5
- ◯ 5-7
- ◯ More than 7 years

5. How many permanent employees work in your municipality?

- ◯ 1-10
- ◯ 11-20
- ◯ 21-50
- ◯ More than 50

6. How many permanent employees work for the department responsible for handling information technology?

- ◯ 0-5
- ◯ 6-10
- ◯ 11-15
- ◯ More than 15

7. Please tell me about your municipality
How many people live in your municipality?

5
6

8. This municipality can best be described as:

- ◯ Upper Tier
- ◯ Lower Tier
- ◯ Single Tier

9. Does your municipality currently have a strategic planning process in place for the future use of, acquisition of, and implementation of Information Technology?

- ◯ Yes
- ◯ No (If no, please skip to question 11).

10. If you answered yes to question #9, is your planning process formal or informal?
Formal refers to a deliberately planned process, but does not necessarily indicate the process is inflexible
Informal refers to a system where changes are not planned, but rather, they arise spontaneously.

- ◯ Formal
- ◯ Informal

11. many IT projects have been undertaken in your municipality in past 5 years?

- ◯ 1-5
- ◯ 6-10
- ◯ More than 10

12. Are you satisfied with the number of IT projects finished on time in the last 5 years?

- ◯ Very satisfied
- ◯ Satisfied
- ◯ Neutral
- ◯ Unsatisfied
- ◯ Very unsatisfied

13. Are you satisfied with the number of IT projects finished within budget in the last 5 years?

- ◯ Very satisfied
- ◯ Satisfied
- ◯ Neutral
- ◯ Unsatisfied
- ◯ Very unsatisfied

14. Who has managed the Information Technology projects implemented over the past 5 years? (Title of individual or committee)

5
6

15. What criteria do you use to choose your Information Technology partners?

- ☐ Lowest price
- ☐ Size of company
- ☐ Reputation
- ☐ Local provider
- ☐ All of the above

16. What type of partnership is preferred?

- ◯ Long term? (continues on an ongoing basis)
- ◯ Short-term? (limited to the completion of one specific project)

17. What forms of contract does the organization have for the procurement of Information Technology?

- ◯ No written contract (informal agreement no written documentation)
- ◯ Partnership contract (an understanding that there will be a sharing of the profit and losses)
- ◯ Cost and Volume Agreement (the provider receives a sum in return for treating a specific number of cases)
- ◯ Letter of agreement (Formally set out terms and conditions for the project)

18. Do you use a detailed plan for IT decisions?

- ◯ Never
- ◯ In a few cases
- ◯ In most case
- ◯ In all case

19. How satisfied are you with the turnaround time/cycle for procurement of Information Technology related equipment

- ◯ Very satisfied
- ◯ Satisfied
- ◯ Neutral
- ◯ Unsatisfied
- ◯ Extremely unsatisfied

20. How satisfied are you with the turnaround time/cycle for procurement of Non-Information Technology related equipment (light automobiles, furniture, interior materials, etc.)

- ◯ Very satisfied
- ◯ Satisfied
- ◯ Neutral
- ◯ Unsatisfied
- ◯ Extremely unsatisfied

21. How satisfied are you with the response of vendors in case of breakdown or nonworking/defective products procured by the municipality?

- ◯ Very satisfied
- ◯ Satisfied
- ◯ Neutral
- ◯ Unsatisfied
- ◯ Extremely unsatisfied

22. How much does your municipality spend on Information Technology procurement as a percentage of the total operating budget?

- ◯ 0-2%
- ◯ 3-5%
- ◯ More than 5%

23. Has your municipality been able to reduce staff positions or reallocate staff to other functions by implementing Information Technology projects?

- ◯ Yes
- ◯ No

24. Which control mechanisms do you use to avoid risks? (It is a collection of tools, principles and techniques that achieve the desired effect of proper planning and implementation)

- ◯ A- Control Mechanism (Action related monitoring)
- ◯ P- Control Mechanism (Prior assessment and own procedures)

25. Are you satisfied with the number of completed Information Technology projects that are working with full efficiency?

- ◯ Very satisfied
- ◯ Satisfied
- ◯ Neutral
- ◯ Unsatisfied
- ◯ Very unsatisfied

26. What are the main barriers encountered in the Information Technology procurement process? Pleas describe three.

5
6

27. Do you set a timeframe for the delivery of an information technology project?

- ◯ In a few cases
- ◯ In many cases
- ◯ In all cases
- ◯ Other, Please explain:

Other (please specify)

28. Please rate the overall effectiveness of your municipality's implementation of Information Technology

- ◯ Very successful
- ◯ Successful
- ◯ Neutral
- ◯ Unsuccessful
- ◯ Very unsuccessful

29. Does your municipality make use of any outside consultants with regard to Information Technology planning and implementation?

- ◯ Yes
- ◯ No
- ◯ Sometimes

30. Please share any further views about issues and potential improvements in your municipality's Information Technology procurement arrangements.

31. Would you be willing to discuss your Information Technology procurement trends with me in a brief phone conversation? (Contact Number) please.

32. Your email adress