A Citizen Benefit Perspective of Municipal Enterprise Resource Planning Systems

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Abstract: Over the past three decades, Enterprise Resource Planning (ERP) systems have been adopted by businesses with increasing frequency to improve organisational efficiencies and to remedy fragmentation of information systems across company functions. In the public sector as well, many governments, especially at national and regional levels, have also been recognising the benefits of ERP systems. This paper reports on a case study of a large metropolitan municipality. Qualitative methodologies were employed in the form of in-depth interviews amongst selected respondents in the selected case. The study used hermeneutical principles of qualitative data analysis to elicit the findings. The research determined that, in addition to improving internal business processes, there are clear benefits to the citizen when public institutes like municipalities implement ERP systems. This study identifies a number of resultant and potential benefits as well as the management practices that are being employed by the municipal management to ensure maximum ERP system benefit to the citizens. These are, in fact, both indirect benefits which are found generically in any ERP system as well as direct benefits to citizens that are visible. The findings indicate that ERP systems promote financial sustainability, lowers overall ICT operational costs, reduce communication costs, enables an efficient budget and results in better overall governance of local governments.

Keywords: ERP benefits, Information and communication technology, Information systems, Enterprise Resource Planning, ICT benefits management, municipal ERP system

1. Introduction

In the last eighteen years of democracy in South Africa, the degree of change in the lives of South African people has not equalled the magnitude of the hopes and expectations, particularly of the poor and historically marginalised communities. There are continuing problems at local government level, including protests against poor service delivery, financial mismanagement, and an unacceptably high number of qualified audits from the Office of the Auditor General (South Africa, Department of National Treasury, 2010). Many underlying issues are attributed to these problems and so measures are being sought to rectify the problems. The role of Information and Communication Technology (ICT) in improving the ability of local government to support and improve service delivery, for example, is one such measure clearly deserving of attention (Diga *et al*., 2013). The question concerning how modern ICT supports and facilitates the mandate of local government to ensure citizen benefit is important, with benefit being broadly defined as "an advantage on behalf of a stakeholder or a group of stakeholders" (Ward & Daniel, 2006). In this study, we frame an ERP-derived citizen benefit as an advantage provided to citizens resulting from meeting the overall ICT utilisation objectives.

In general, modern organisational performance and survival depend on the successful implementation and use of an ERP system (Markus *et al*., 2000). Over recent years, we have witnessed a number of municipalities in the developing world investing in ERP systems to assist and augment their ability to effectively manage resources across corporate walls and business functions through an integration of information and operations. Scholarly researchers who explored the identification and management of ERP system benefits, both theoretically and practically, informed this notion (Samira *et al.*, 2013). Examples of studies investigating the general nature of ERP system benefits include the following: Rosemann and Wiese, 1999; Legare, 2002; Murphy and Simon, 2002; Shang and Seddon, 2000; 2002; Kallinikos, 2004; Koch, 2007; Stratman, 2007; Schubert and Williams, 2009; 2010; 2011; Kaniadakis, 2012; Clegg and Wan, 2013; and Hwang and Min, 2013.

The objective of this study was to assess how citizens benefit from ERP system implementation at local government level. The research was motivated by what appears to be increasing frustration in many communities with service delivery, and various sources (e.g. Stratman, 2007) who report difficulty in finding documented evidence of quantifiable benefits from the implementation of ERP systems. Schubert and Williams (2010:470) noted that the existing academic research "pays little attention to the locus of the benefit

and to whom the benefit applies". Their study recommends that further investigation be undertaken to understand the beneficiary, and more specifically, exactly how far the customers benefit.

2. Background to the research problem

The context of this study is rooted in a typical local government setting. When the ERP concept was introduced in the 1990s (Davenport, 1998, Al-Mashari, 2003) as cross functional systems, it centred on integrating core operations and processes such as accounting, human resources, and project and inventory management. The aim was to integrate all the above with all other functions of the organisation, taking advantage of robust and efficient networking technology now available. However, because of this 'internal' focus, coupled with the high cost of system implementation, organisations have a tendency to lose sight of how their core customers derive benefits, and what those benefits are. Notwithstanding, because there is a degree of certainty that customers benefit, strategic business units are now paying more attention to ICT and its benefits when making decisions (Basahel & Irani, 2010).

An important question in the realm of a local government, then, is: "how does the high expenditure on an ERP system benefit the citizen?" This question is especially relevant when one considers that the budgets of local governments are derived, in the main, from citizens' taxes and rates.

The City of Africa (Due to the confidentiality agreements with the respondents, this research will refer to the case study as "The City of Africa".) served as the case study for this research. It manages above a million invoices for a population of three and a half (3.5m) million residents (South African National Census, 2011). It employs more than 25 000 staff who serve its population across a 2 400 km^2 area. This city is a major destination for immigrants and expatriates coming to South Africa, making it one of the most multicultural cities in the world.

This provided the impetus to investigate, from an internal management perspective, issues relating to both the planning and operationalisation of the city's ERP system. Given that internal reports assured us upfront of internal benefit of the ERP system to the city, the key question we sought to understand was how the ERP system was benefitting the city's citizens. It is against this background that the value of ERP system investments in terms of benefits derived by citizens is explored.

3. Literature review

Scholarly researchers, who have previously explored the area of ERP benefits identification and management from both theoretical and practical perspectives, informed the notion of ERP system benefits in this study. The most important development in the use of ICT in the corporate sector in the 1990s was the ERP system (Davenport, 1998). Accountability is the main component of any business thus findings by Mahesha and Akesh (2013) confirm the accounting benefits of adopting an ERP system as an important factor. Tian and Xu (2015:39) in addition, argue that ERP systems have a "risk reduction benefit" which is crucial in public enterprises. Business benefits are accrued in the post-implementation period (Staehr *et al*., 2012), thus ERP system usage failure affect the bottom line implementation success when the expected benefits are not extended to the stakeholders. Table 1 below provides a synopsis of selected studies which have investigated the general nature of ERP benefits.

An assessment of the studies below indicate that the extant literature has not focused on ERP system benefits as they accrue to stakeholders external to the organisation, and that the focus of research has instead been on benefits internal to the organization. This therefore reinforces the value of a study which assess ERP benefits to external stakeholders, which in the frame of this research, is the citizen (or customer) of the implementing organization.

Table 1: ERP benefits research between 1999 and 2013

Research reference	Specific issue investigated about ERP systems
Rosemann and Wiese (1999)	Measuring the Performance of ERP system
Legare (2002)	The Role of the Organizational Factors in Realizing ERP system benefits.
Murphy and Simon (2002)	Intangible benefits valuation in ERP system projects.
Shang and Seddon (2000)	A comprehensive framework for classifying the benefits of ERP system.
Shang and Seddon (2002)	Assessing and managing the benefits of enterprise systems: the business manager's perspective.
Kallinikos (2004)	Deconstructing information packages organizational and behavioural implications of ERP system.
Koch (2007)	An ERP system as a moving target.
Stratman (2007)	Realising benefits from ERP system:
Schubert and Williams (2009)	Comparing Expectations and Realized Benefits of Enterprise Systems Implementations.
Schubert and Williams (2010)	Realising Benefits from Current ERP and CRM Systems
Schubert and Williams (2011)	Identifying and Understanding Enterprise Systems Benefits.
HassabElnaby *et al*. (2012)	The impact of ERP system implementation on organisational capabilities and firm performance
Kaniadakis (2012)	ERP implementation as a broad socio-economic phenomenon
Beaubien (2013)	Technology, change, and management control: a temporal perspective.
Clegg & Wan (2013)	Managing enterprises and ERP system
Zeng and Skibniewski (2013)	Risk assessment for ERP system implementations

3.1 Defining Enterprise Resource Planning (ERP) systems

Klaus *et al*. (2000) note that there is no agreed definition for ERP system. Nevertheless, a number of researchers have derived working definitions for an ERP system. Based on the several definitions found in the studies by researchers (such as Davenport, 1998; Holland & Light, 1999; Klaus *et al*., 2000; Kumar & Van Hillegersberg, 2000; Gattiker & Goodhue 2005), the following definition is derived for the purpose of this study:

> *An ERP system offers organisations a comprehensive and integrated solution for managing services (such as financial revenue, human resources, maintenance, procurement, leasing and customer care, amongst others) on a single integrated software system. At the core of an ERP system is a centralised data repository that acquires information from and supplies information to the fragmented applications operating on a universal computing platform. This organisation-wide system of interconnected solutions is primarily related to the business processes.*

3.2 ERP system background and capabilities

Since the 1980s, ICT has been a facilitator of change in the business world, advancing processing speeds and the capacity to store and share information through seamless integration of an organisation's processes and systems (Davenport, 1998) irrespective of time and distance. By the mid-1990s, ERP systems addressed all core functions of an enterprise. Beyond corporations, governments and non-profit organisations also began to employ ERP systems. A number of authors and practitioners have introduced several approaches and methodologies, according to Holland and Light (1999). ERP systems give organisations competitive advantage (Al-Mudimigh *et al*., 2001) by exploiting business opportunities and creating new organisational competencies (Peppard *et al.,* 2007). Koch (2007) advises that there is need to study the continuous technological change on a lifecycle-oriented basis because these systems are complex and thus difficult to conceptualise.

According to Holland and Light (1999) and Stratman (2007), organisations generally expect to realise benefits from their ERP system in operational efficiency and productivity, mainly through automated transactions and better decision-making (Al-Mudimigh *et al.,* 2001). In fact, ERP systems are now considered the "price of entry" for running a business, and also for being connected to other enterprises in a network economy (Kurmar & Van Hillegersberg, 2000; Wu & Wang, 2007).
ERP system derived benefits include the following:

- Most ERP systems can now facilitate the **flow of information** across all business processes internally and externally (Simpande & Javokljevic, 2003). Consequently, it is cheaper for the organisation to run its day-to-day tasks using shared and coordinated resources. This enables efficiency and **greater control over inventory** and its distribution (Nah & Lau, 2001).
- Liimatainen (2008) emphasises that **interoperability** in organisations enables some centralised governance structures which are helpful in evaluating the benefits of enterprise-wide systems. Interoperability enable sharing of information, especially through customer data integration (Themistocleous & Irani, 2001).
- Nafeeseh and Al-Mudimigh (2011) aver that an ERP system enables **unification** of fragmented business units and operations. Shin and Lee (2013) note that the ERP implementation provides the basis for a continuous auditing system that eventually assists both internal and external auditors. When organisations automate basic processes, it results in **cost saving** through fast and accurate transactions (Teltumbde, 2000). An ERP system enables the ability of corporate accounting to consolidate the books more efficiently because all inventory and order status information is on one database, rather than on numerous independent systems (Gattiker & Goodhue, 2005).
- ERP systems provide a platform for a merger or acquisition through **centralised monitoring** of functionally segmented operations (Kallinikos, 2004:9). Equipped with adequate and **accurate data**, enabled by automated audits (Shin and Lee, 2013), the authorities can make informed decisions.
- Finally, as a single, **common user interface** that can hook to other systems outside its design (Klaus *et al*., 2000), web-enabled ERP systems can facilitate self-service usage and link organisations in the supply chain management and thus obtain increased performance benefits (Chen, 2001).

Based on the above summary several salient and unique characteristics of ERP systems are identified. Firstly, it has a complete set of integrated software modules (e.g. production, logistics, finance, human resources, and output design). Secondly, it has cross-functional and integration software (intra-organisation). Thirdly, it has configurable software that suits different needs. In addition, as a single and common, enterprise-wide database, it spans across enterprise business processes (inter-organisation). Finally, the focus of an ERP system is on the integration of organisational systems for corporate computing to accomplish everyday tasks.

Generally, ERP systems positively influence businesses' financial performance (HassabElnaby *et al*., 2012). In spite of the above-listed advantages, ERP system implementation seems to be challenging. This is evidenced by the high failure rate that is well documented. In terms of the literature which was reviewed, previous studies focused on the general capabilities of ERP systems. Those studies which delved into benefits, tended not to focus on how benefits accrue to external stakeholders. Nevertheless, this gave the researchers a broad frame of understanding of ERP system benefits, and which was the point of departure for the research design.

3.3 ERP system implementation in the public sector

Although it is not well documented, public organisations mainly aim to improve the quality and performance of public service delivery, or to attain a more efficient and effective public sector with a high "citizen value" (Nafeeseh & Al-Mudimigh, 2011). Unlike businesses, public organisations such as municipalities are not profit driven. According to Liimatainen (2008), the objectives of a public organisation include improving the quality and performance of public service delivery and attaining a more efficient and effectively run public sector. Better service delivery is the main impetus for the decision to commit public funds to what many consider as "just a computer system". Morganwalp and Sage (2004) suggest that a government can only justify the costs and resources it incurs through positive effects. In addition, Kallinikos (2004) argues that an ERP system can be used to promote an organisational vision. As indicated above, the role of ERP systems in municipalities becomes clearer and more critical, given the comparison that citizens naturally make with other organisations with which they interact in daily business transactions in the private sector. In other words, businesses deliver, so citizens expect government to deliver as well. However public organisations appear to lag behind the growing expectation of citizens.

The challenge is that the benefits derived from ERP systems are primarily intangible (Murphy & Simon, 2002), realised only indirectly by various stakeholders. Even so, all benefits must be noted, measured and appreciated (Murphy & Simon, 2002). An intangible benefit is no less valuable than a tangible one. An ERP system is an abstract concept to the general citizen, making it even more difficult to reach an agreement with all

stakeholders who often pursue their own, sometimes different, interests (Yeo, 2002). Unlike in the private sector where all stakeholders adhere to a unified agenda of maximising profit, stakeholders in public sectors must aim at value-for-money service provision (Ward & Daniel, 2006). Again, goals for privately owned organisations are usually profit driven. And as business goals are different than private sector goals, this difference calls on all public sector stakeholders to aim to ensure that public funds are utilised not only for the right causes but also in the best possible ways for the citizenry.

An ERP system takes the transformation dimension framework for ICT investments where it changes the business processes (Al-Mudimigh *et al.,* 2001). It is agreed among researchers that the cost of implementing and adopting an ERP systems is the biggest obstacle (Remenyi *et al.,* 2000). This problem is exacerbated by the fact that benefits are gleaned only later while costs are incurred immediately.

4. The South African public sector context

The South African government has emphasised the development of an ICT sector through the formation of a national ICT strategy that addresses ICT penetration and adoption in all sectors (South Africa, Department of Public Service and Administration, 2011). According to the Department of Trade and Industry, the South African Information Technology Industry Strategy (SAITIS) has been formulated as a bilateral project between the South African government and the Canadian government. This initiative seeks to contribute to sustainable economic growth, "social upliftment" and empowerment. Apart from SAITIS and the Info 2025 Vision that have been assigned responsibility for building ICTs infrastructure, there is also the Information Technology Council, responsible for local and provincial government information technology functions.

The ERP systems implementation project is aligned with the government's plans to improve the service delivery to the citizens (South Africa, Department of Public Service and Administration, 2011). Moreover, a number of objectives of the Batho Pele principles support the ERP systems implementation (Roberts & Hemson, 2008).

5. Research Design

5.1 Frameworks and models for ERP system Assessment

One of the initial steps in the research design was an assessment of the extant literature to identify an appropriate theoretical framework for the study. This literature assessment took into account that the key question of the research concerned ERP system benefits to external customers (or citizens in this case) in a governmental organisation context. Table 2 provides an overview of the assessment.

Table 2: Assessment of research frameworks

Framework/Model	Reason for non-adoption in the Research Design
The Bailey and Pearson Instrument *(Bailey & Pearson, 1983)*	User information-satisfaction targets users.
The Miller-Doyle Approach (Miller & Doyle,1987)	This approach assumes that the organisation is already rating the ERP's performance, which is not the case.
The Balanced Score Card (Kaplan & Norton, 1992)	Lacks focus on intangible factors; citizen benefits are possibly intangible.
The Task-Technology Fit Model (Goodhue & Thompson, 1995)	This model targets system designers and not necessarily implementers.
The Mirani and Lederer Instrument (Mirani & Lederer, 1998)	This framework is insufficient to cover public organisations as it focuses on internal processes, i.e. intangible benefits only.
Shang and Seddon Framework (Shang & Seddon, 2000)	This framework is biased towards management as it emphasises better decision making whereas this study is focussed on assessing how the citizen benefits.
Resource-Based View Model (Ravichandran & Lertwongsatien, 2005)	This model places the emphasis on competitive capabilities; this does not apply in public organisations.
The exp-ben Framework (Schubert & Williams, 2009)	This framework does not cover the actual management of benefits, but concentrates on the assessment only.
Framework for Strategic Plans and Annual Performance Plans *(South Africa. Department of National Treasury, 2010)*	This framework is too broad: it lacks the technical aspect of the ERPs, especially at the assessment part. It would need another framework to use for assessment.

Table 2 summarises the identified theoretical frameworks, providing a succinct explanation of each as to why it, independently, did not provide an appropriate theoretical framework for this study. Nevertheless, these frameworks or models provided the guidelines to the approach that was finally adopted by this study.

5.2 Research methods

This research adopted an interpretivist approach as the underlying epistemology. Using a case study design, qualitative methods were employed in the form of fifteen (15) in-depth interviews amongst purposively selected managers and information technology specialists within the municipality. In addition, secondary data in the form of the municipality's website, newspaper articles, legislation, policy documents, and official memos and reports were analysed. The evidence was analysed using hermeneutical principles of qualitative data analysis with the aid of qualitative data analysis tools. *Hermeneutics* involves the science and understanding of interpreting text-analogue (Klein & Myers, 1999). The interpretation attempted to make sense of the object of study, text-analogue. The empirical evidence and the associated relationships are represented diagramatically in Figure 1 below.

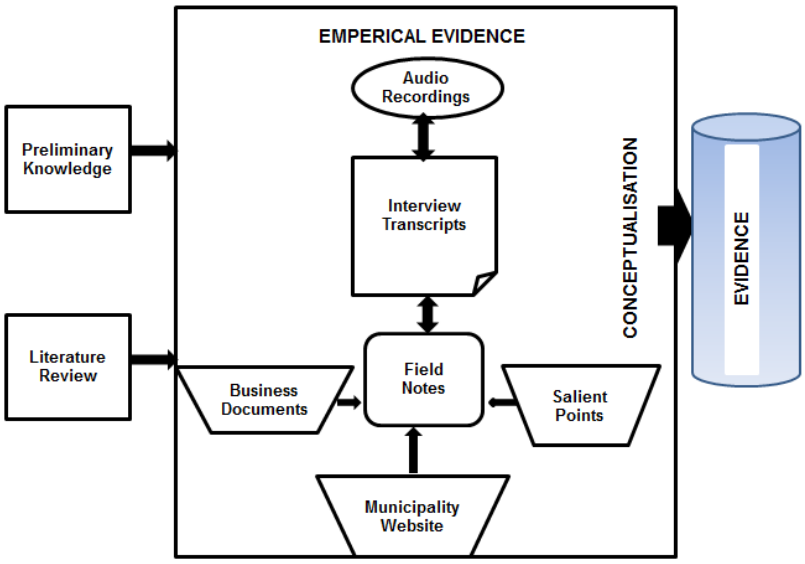

Figure 1: The sources of evidence

The overall qualitative data analysis can be summarised as followed:

- The transcripts and field notes were read through several times to obtain an innate understanding of the data as it pertains to the main research question. During this process, important concepts deemed relevant were identified.
- Every identified concept was labelled. Each label, chosen so that the name of the concept was explanatory, served as the basis for coding the data. The coding process was facilitated by the use of Atlas.ti.
- During cycles of examination of textual evidence and introspection of data, relationships between concepts were identified. Related concepts were then grouped into categories. One concept could be linked to more than one category.
- Further reflection and analysis of links and relationships amongst the categories resulted in further synthesis, and higher order themes were formulated.
- The themes that emerged formed the basis of the findings.

6. Findings and discussion

From the interviews and subsequent data analysis, several ERP system benefits were determined to be either directly or indirectly linked to the citizen. Moreover, ERP benefits which were reported in the literature were identified. Also, a number of benefits related to the sustainability of local governments were noted in detail.

7. The current ERP status

In investigating the critical success issues affecting ERP system implementation, there was a dirth of academic literature on ERP benefits in the public sector. However, many of the benefits identified in the literature were also identified in the case study. This thus underscores that there are ERP benefits which are generic and which are neutral to the organization context. The Municipality under study however, is still working towards extending more citizen benefits that are aligned with e-citizen expectations. One of the respondents attested to this when he said:

> *"The ERP system benefits are limitless but we will keep adding more functionalities to ensure that more benefits are available to the citizens" (Interviewee 1, 2012).*

Given the evidence at hand it was not possible to assess this potential future value. Thus it is only in time that an assessment could be made as to the benefits which will be yielded by these added functionalities, and whether they will be delivered within a sustainable cost framework. One concern however, is the ERP system has not been extended across all functional areas, Health being one of them. This is a major concern as the concept of "integration" is not satisfactorily accomplished if other departments still operate as a stand-alone within the Municipality.

8. Benefits management

The investigation assessed both tangible and intangible citizen benefits. The study has ascertained that the Municipality does not have a formal citizen benefits management strategy. The Municipality focuses its efforts on a system management perspective of ERP system, thus assuming downstream citizen benefits as consequential benefits without proper frameworks to plan, nurture, assess and sustain them. Proper benefits management should be targeted at sustainably maximising citizen benefits and their accessibility.

The issue of benefits management is further complicated by the fact that in a public organisation it is important to convert the indirect benefits, such as improved internal processes, into tangible service delivery benefits. This however, happens over time as indirect or intangible benefits accrue as soon as the ERP is implemented. Tangible or direct benefits will only emerge as a result of proper benefit management. An illustration of the above scenario is depicted in Figure 1.

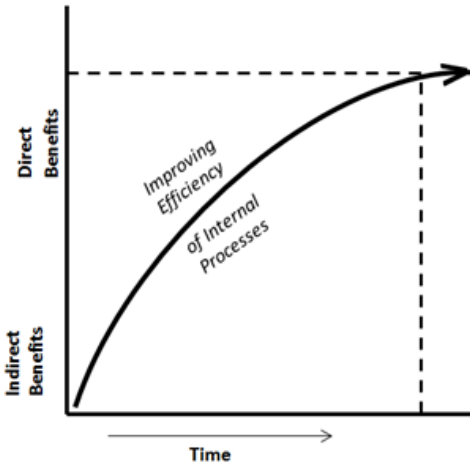

Figure 1: Direct benefits to the citizen will accrue over time

Figure 1 illustrates that the Municipality has accrued the indirect benefits, such as the improvement of internal processes, and given the time lapse is now at the stage of enabling the direct benefits. As soon as the Municipality is able to bring on board the external functionalities, such as web-based service interfaces, direct benefits to the citizen will be realised. However, proper management within a benefits framework, will be needed to sustain all the benefits. More so, if consideration is given to the fact that the tangible benefits will

not replace the intangible ones but augment them. The net result will be a better overall position of both the organisation and the citizens at large.

9. Efficient and effective use of public money

The ERP system provides unlimited opportunities for the City of Africa to explore and ensure the sustainability of the city for the benefit of all citizens. Here are examples of improvements brought about by the implemention of an ERP system: 1) The fact that the municipality has stable financial control will indirectly benefit the citizens as the city's plan for better services will be successfully implemented. 2) The ERP system now effectively supports revenue collection, enhancing financial stability. 3) The system further supports efficient financial management and reporting, undergirding the success of any organisation, especially within the public domain. 4) Continuity and sustainability will be enhanced, as citizens will want to pass on the city to their relatives and future generations without compromising the quality of life. The ERP system upholds the sustainability of the municipality.

Given the foregoing, the reality at the City of Africa municipality today is that almost all the key business processes are supported by the ERP system, more than four hundred business processes in fact. These range from rubbish bin collection to payroll to emergency vehicle dispatch. Thus, the ERP system acts as the backbone of this organisation. If the system goes down, then not only will crucial functions such as revenue collection cease, but so will all other business processes, even pothole patching, because each process has to be informed by the system. Therefore, the ERP system has become the strategic application in this organisation. This is what an operational ERP system can enable, resulting in the sustainability of the benefits associated with its implementation. Some individuals are comfortable with the 'legacy system' and wish to return to the older disintegrated systems. Nevertheless, the ERP system is able to overshadow such aspirations by realising and maximising more and more benefits.

Managers of the City of Africa are concerned with the quality of service delivery. Attaining quality is becoming more complex as people have access to more information, especially with regard to what the can reasonably expect. Citizen awareness levels are increasing, partly by education and partly by high levels of interaction with citizens in our 'global village'. Residents are better informed by the Internet, news agencies, researchers and so forth. Consequently, the city managers took a pro-active approach and planned to extend functionalities in line with technological developments. They decided to join with other organisations and adopt an ERP system to support business processes.
The key benefits which were anticipated from the ERP system are as follows:

- ERP system promotes financial sustainability of the city;
- ERP system lowers overall ICT operational costs;
- ERP system reduces communication costs;
- ERP system enables an efficient budget for the city; and
- ERP system results in better overall governance.

10. Financial sustainability of the City of Africa

The benefits made available to the City of Africa thus far will continue to extend over the medium to longer term. The objective to improve the service delivery is being sustainably achieved because of the ERP system implementation with a ninety-eight percent (98%) accuracy on the itemised billing system.

The foregoing attests to the fact that sustainability of the city is at the centre of the ERP system implementation, supporting improved accounting efficiency. The only way the city management can ensure that the legacy of the city is maintained is by establishing both solid asset management processes and accurate accounting processes. This is where the ERP system comes in, supporting these processes with high efficiency. Other issues that support the sustainability of the city are improved governance and efficient budgeting, both of which are also supported by the system.

11. Lower IT operational costs

The ERP system ensures that business processes are executed in a disciplined manner. The municipality, as a public institution with a diversity of stakeholders, is extremely sensitive to costs. The administrators of public

funds are able to lower costs in transparent and consistent ways. The economies of scale benefit citizens when IT resources, such as the repository database, are shared. Instead of having a database server for each department, the ERP system integrational capacity enables the city to share a common database manned by a single administartor, thereby ultimately reducing the costs. The foregoing is supported by the fact that networked societies specifically support resource sharing in organisations. The municipality is no exception to this. Sharing of resources begins with very small gadgets like printers and scanners in offices. The reduction of overall IT costs is greater if more functionality is enabled by the use of the ERP system in the key business processes.

12. Reduced communication costs

An important feature of the ERP system is that it enhanced the availability and accessibility of information at a lower cost to both the citizen and the city. With the use of free calls, the city has a mandate to limit the duration of each service request call. This is made possible by the enhanced information accessibility: information can be recorded and accessed by a single click on the system interface. The efficiency of accessing details recorded on the ERP system further lowers the overall costs as well. For example, if all citizens can submit their meter readings through the portal, there will be a significant saving on manpower. Increased productivity results in lower operational costs.

By reducing the dependency on individual employees and replacing them with ERP system modules, the municipality enhances sustainability not only of IT costs but the general operational costs. However, budget cutting is not a clearly visible immediate benefit, as it is delayed and intangible, often shrouded behind the high initial cost of the ERP system. Nevertheless, in the long run, the implementation of an ERP system eventually results in lower operational and maintenance costs, mainly because ERP system running costs are constantly declining. The ERP system is sustainable as it works 24/7, offering services without human interaction: this makes it the best asset the city can count on – available and dependable. The system also reduced running costs in numerous other ways such as eliminating data duplication that in turn led to reduced storage space costs, and by the sharing of resources. However, these cost reduction strategies supported by the ERP system must be achieved while still maintaining the quality of services.

12.1 Budget efficiency

Money matters are always of interest to stakeholders. The ERP system enables not only revenue increase but also cost containment. Poor accounting methods which result in financial problems for organisations are eliminated. Though the benefit of an efficient budget appears only indirectly, efficient collection of revenue translates to high service levels, as the municipality will have a sufficient reservoir of funds to provide the required services. The municipality is now using the ERP system to plan revenue collection and consequently meet revenue collection targets successfully.

Besides creation of financial value through strict and consistent policies, the ERP system is now able to charge individuals selectively according to their capacity to pay. The ERP system helps to identify those citizens who are privileged with higher financial position and determine appropriate rates as calculated by the ERP system' complex formula including the size of the property, amount of utilities consumed, size of the building and the largest factor, the location of the property. For example, those staying in the affluent suburbs are targeted to pay higher rates than those residing in locations for the equivalent size of property or equal consumption of utilities.

The issue of efficiency also affects spending by the municipality. Having successfully collected the revenue, the ERP system then supports the best pattern of spending. Resource allocation is efficiently executed with the support of the ERP system. If all the information is available, determination of the needy areas and resource allocation will then be easily conducted. The efficiency of the budget is a result of an efficient collection of payments that results from consistent decision-making and accurate transactional recordings. This is all enabled by the ERP system as it provides up-to-date information in real time within the entire municipality.

12.2 Improved governance

The system by which organisations are directed and controlled in terms of management by a web of relationships among the stakeholders is referred to as *corporate governance*. Insofar as municipalities are

concerned, a key stakeholder is the citizen. The governance structure of a public institution determines its efficiency and directly increases operational efficiency of the whole organisation.

12.3 Unqualified audits

Public organisations often fail to account thoroughly and meticulously for expenditures as stipulated in the national Constitution. With the use of the ERP system, the municipality repeatedly received unqualified audits. This bolsters confidence, not only of the residents who are paying rates regularly, but also donors and sponsors as they are assured that their funds will be put to good use. This will benefit *all* citizens.

The ERP system has resulted in a near-perfect governance structure that makes almost all day-to-day decisions promptly with a very high level of precision. An example is the level of interaction between the citizens and the city whereby the ERP system prescribes the course of action in terms of decision-making without human intervention. This one area was emphasised by the informants as having made a substantial improvement over the way the municipality previously operated. The ERP system gives the municipality the effectiveness that is lacking in most public institutions.

Most governance issues are related to internal processes, making them indirect benefits that are not directly visible to the stakeholders. The community involvement in service provision is greatly promoted. Therefore, the respondents did not elaborate much in this section. Nevertheless, this does not trivialise the governance issue as governance contributes to the overall value for the citizen.

13. Summary of the findings

In summary, the benefits identified in this section contribute immensely to the sustainability of the city. Given that efficient business continuity of the city is every stakeholder's expectation, it is therefore beneficial for an ERP system to support such an important goal, despite the initial costs of implementation. If the costs of running the day-to-day business activities and use of ICTs is reduced and rendered consistent, then the city will budget efficiently. This will eventually result in excellent governance and improved business operations.

The benefit of sustainability is particularly crucial in public organisations as there is no expectation of closure to any municipality. The citizens – as clients – are *always* there and *always* need the municipality services. This is different from private-oriented objectives whereby one can establish an enterprise to capitalise for a fixed duration and abandon or even prematurely close down by choice. For example, there were projects that ran specifically to target and service the World Cup but which stopped immediately thereafter. On the contrary, once a municipality is established, it will carry on indefinitely.

Tangible citizen benefits are the benefits that each and any resident can witness even though frequently the residents are unaware of what has enabled them. A high value for the citizens results when the citizens are afforded the benefits discussed above. As one example, when a meter reading is entered, the ERP system process that follows will clearly indicate the waiting period until the personal bill is received. The involvement of citizens is strictly monitored by the ERP system, enabling an accurate audit of all transactions. This is evidence that the municipal ERP system contributes to a higher value for the citizen. ERP system = citizen benefits = higher value for the citizen.

14. Integrated view of benefits

After reflecting on the findings, the important issues that emerged concerning benefits and the management thereof are as follows:

- The direct benefits both from the citizen and the city management perspectives are the ones emphasised in the business case and sound inimitable. The financial sustainability, effectiveness and efficiency of the municipality are at the core of the ERP system implementation.
- The sustainability benefit is within a pool of tangible benefits (e.g. accurate profiling of citizens and improved service delivery, for example). These are dependent on intangible ones (e.g. business process configuration, organisational transformation). In other words, front-end depends on back-end operations.
- The intangible benefits are an integral component of the ERP system benefits (e.g. the integration of disparate systems and control of corruption, for example) which propelled the municipality into

implementing the ERP system to glean the benefits of financial sustainability for the city as well as other tangible benefits.

15. Implication for ongoing systems management

Given that citizens have limited choice regarding municipal services, the city should not take advantage but must realise the necessity of implementing a sustainable environment in which citizens wish to live and cherish to leave for their children and grandchildren. The research exposes that there is a difference that widens as the comparison is made of direct benefits, as these are not necessarily the focus in private organisations while they are in public organisations such as the municipality. It is recommended that the municipality undertake the following:

- re-configure the ERP system to accurately profile citizens at an individual level according to income level, wealth and cash flow;
- implement a 'benefit management framework' that will identify, create and assess the benefits available to citizens;
- incorporate more modules that are vital to the benefit of the citizenry;
- undertake awareness campaigns to ensure that all citizens are aware of available benefits;
- distinguish between ERP system implementation objectives and benefit management objectives and then focus on the latter for sustainable improvement of citizens' lives; and
- ensure that every citizen is accurately profiled in the ERP system. This could include linking profiles of citizens to the South African population database.

This study ratified the planning aspects of the ERP system and found that it is the implementation and management phases that are found wanting, as expounded above. If these phases are handled in a manner that more strongly recognises the citizen as the main stakeholder, then more value could be gleaned from the ERP system. This should be the intention.

16. Conclusion

Figure 2 is a diagrammatic representation of the key findings. It highlights citizen benefits and emphasises the importance of conceptualising the benefit management framework during the system planning stage. This resulted in "direct benefits" that are visible to the public and "indirect benefits" that can only emanate through the implementation of effective benefits management practices or if they are converted through direct benefits.

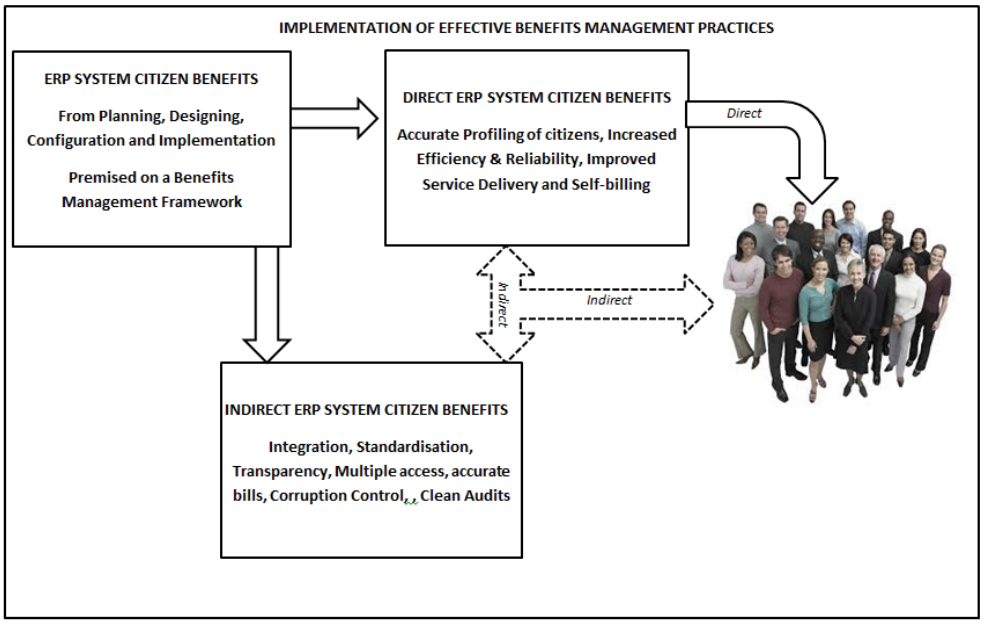

Figure 2: The conceptual framework for ERP system citizen benefit

Following a review of the literature and consultation with industry practitioners and academics, this research contributes to the on-going debate regarding ERP system benefits. Since the topic of ERP system benefits has not been receiving the attention it deserves within the public domain, this study brought ERP system benefits under the spotlight. The purpose of this study has been to investigate if public ERP system are being fully utilised to extend maximum benefits to the citizens. While a number of benefits are already extended to the citizens, there is a gap between the potential benefits and the actually enabled benefits. This study also investigated if the ERP system is perceived as a strategic tool to enhance service delivery by enabling a vast array of benefits that result in enhanced value for the citizen, as the citizen ultimately pays for the implementation. The findings show a vast array of citizen benefits that are potentially extended by a public ERP system. This study detailed a number of available and potential benefits as well as management practices that are being employed by the municipal managers to ensure maximum ERP system benefit to the citizens. This calls for the need to emphasise the difference between potential and enabled benefits, and direct and indirect benefits, especially to the municipal management, which is in control of special and expensive projects.

An inquiry into the latter resulted in the findings reported herein. Consequently the recommendations that the municipalities should not only extend and manage both direct and indirect benefits but also raise awareness as part of the "citizen benefits" strategic management plan. The benefits of the ERP system need to be highlighted and citizens made aware and given guidance on how to access and enjoy the services in a sustainable manner. Only when all potential benefits are are extended and accessed by the entire citizenry can the municipality claim to be utilising the ERP system to extend maximum benefits to the citizens.

The paper contributes towards improved management and utilisation of ERP system at a local government level through the identification and development of a pragmatic and usable ICT implementation and adoption framework. It therefore contributes to an enhanced understanding of how maximum benefit for the citizen is derived through an effective 'benefits management' approach where ERP systems are concerned.

In addition ERP systems are generally considered to be systems used to integrate internal government (G2G) and government to business (G2B) operational business processes and yet have rarely been considered for connecting government to citizen (G2C) systems. The citizen interface with an ERP system is largely via third party products and channels; the ERP system itself provides the centralised database that integrates the government information, allowing other value-adding systems such as case management systems and citizen portals such as self-service facilities (e.g. checking payments and tracking requests, etc.).

This study should therefore be appreciated as a contribution to the greater understanding of ERP systems in public enterprises. It can be concluded that ERP systems are essential to our modern municipalities, and their value can be greatly enhanced through more effective planning for and management of benefits. The bottom line: the *visible problems* of poor service delivery experienced in most municipalities due to *invisible problems* of financial maladministration can be rectified by ERP system implementation.

17. References

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