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An investigative study into the perceived factors precluding auditors from using CAATs and CA

Abdelfatah Tumi *

***Abstract:** This paper aims to investigate the reasons why auditors in Libya may not make use of computer assisted audit techniques (CAATs) or continuous auditing (CA) on a larger scale. This research was carried out by applying the unified theory for acceptance and use of technology (UTAUT) developed by Venkatesh et al. (2003) and utilising concurrent triangulation through questionnaires and interviews.*

In line with UTAUT, the results indicate that although auditors believe that CAATs and CA can have positive impact on the audit function, CAATs are found to be underutilised and CA is rarely used. The lack of facilitating conditions and high costs involved can be seen as major factors to preclude auditors from using CAATs, while the late appointment of the auditor and a lack of infrastructure are found to be the main reasons for the limited usage of CA.

Key words: IT acceptance, CAATs, CA

1. Introduction

As the current audit environment intensifies the need for auditors to utilise techniques which may reduce their workload, develop audit effectiveness and efficiency, and lead to competitive advantage, it is important to comprehend the factors affecting an auditor's unwillingness to implement recommended technologies which may positively impact upon both the business, and the practice of auditing. Auditor acceptance and use of CAATs and CA are particularly worth discussing, as research done in this area highlights the importance of auditors adopting these techniques, as they cannot be useful if they are not used (Ahmi and Kent, 2013; Curtis and Payne, 2008).

According to Chang, Wu and Chang (2008) auditing remains a manual process in some organisations, and even those organisations which have adopted computer auditing techniques have not, so far, attained full effectiveness and efficiency. Regarding Generalised Audit Software (GAS), for example, Ahmi and Kent (2013) report that although there is strong justification for auditors to adopt GAS, the evidence suggests that they often decide against doing so. In their survey of small and medium size AFs in the UK, they found the utilisation levels of GAS among the surveyed AFs to be very low. In addition, Curtis and Payne (2008) concluded that CAATs are also under-utilised in public accounting firms. Thus, it is expected that CAATs and the CA are expected to be underutilised in a developing country such as Libya. Thus, the researcher has investigated the reasons why auditors may not make use of computer assisted audit techniques, or continuous auditing on a larger scale. This paper will begin by introducing CAATs and the CA, and a review of the literature on auditors' acceptance and use of CAATs, followed by Methods and Results sections and a concluding summary and recommendations.

Computer assisted audit techniques

Generally, CAATs are defined as techniques utilised in conducting auditing procedures that use

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the computer as an audit tool (Debreceeny *et al.*, 2005). According to Lin and Wang (2011: 777), CAATs refer to “*various tools, technologies, and software that help auditors to conduct control and confirmation tests, analysis and verification of financial statement data, and continuous monitoring and auditing*”. CAATs are used to enhance both audit effectiveness and efficiency and to help auditors to overcome the challenges of rapid advances in client IT usage (CIPFA, 1998; Curtis and Payne, 2008; Janvrin, Bierstaker and Lowe, 2008a). For example, CAATs may automatically execute audit tests which had previously been manual in nature, reducing audit hours for the task, making it possible to test the entire population rather than a sample, and thus greatly increasing the reliability of conclusions based on that test (AICPA, 2001).

CAATs can assist auditors in conducting control and compliance tests, the analysis and verification of financial statements data, and in CA (Lin and Wang, 2011). Lin and Wang (2011) point out that auditors can become more independent by using CAATs in financial auditing, and less reliant on information and financial personnel. CAATs enable auditors to shorten the auditing hours required, and achieve better cost effectiveness. SAS No.94 states that auditors should use CAATs when testing automated controls in certain types of IT environment (Cerullo and Cerullo, 2003). The main types of CAATs discussed in the literature, in addition to GAS are test data, integrated test facilities, embedded audit modules and parallel simulation.

A GAS is the most common software used by auditors and is a set of packaged software that allows auditors to interrogate a variety of databases, software applications and other sources and then to analyse and test the extracted or live data (Debreceeny *et al.*, 2005b; Sayana, 2003). GAS provides data extraction routines for many computer environments, and its functionality comprises data investigation, statistical tools and sampling techniques. In addition, GAS can perform tests on missing sequences, statistical analysis and calculations (Debreceeny *et al.*, 2005a; Sayana, 2003). GAS can assist auditors in detecting misstatements in financial statements and achieving the general audit objectives of validity, completeness, ownership, valuation, accuracy, classification and disclosure of the system outputs Ahmi and Kent (2013).

Examples of GAS include Audit Command Language (ACL), Interactive Data Extraction and Analysis (IDEA) (Arens and Loebbecke, 2000; Braun and Davis, 2003; Lin and Wang, 2011; Romney and Steinbart, 2009), Focaudit (Lin and Wang, 2011), Panaudit Plus (Debreceeny *et al.*, 2005b), AutoAudit, and ProAudit Advisor (Lungu and Vatuiu, 2007). These packages contain general modules to read existing computer files and to sophisticatedly manipulate data to perform audit tasks. GAS packages have user-friendly interfaces which capture users’ audit requirements and transform them into programme code, which is done by interrogating the clients’ file systems or databases and carrying out the required programme steps (Debreceeny *et al.*, 2005b; Sayana, 2003).

The auditors’ acceptance and use of CAATs

In general, some studies have focussed upon the impact of demographic factors in the use of IT, while other studies have developed various theoretical models, with their roots in information systems, psychology, and sociology, which aimed to explain the variance in individual intention and use of technology. These studies include work by Davis (1989), Ajzen (1991), Taylor and Todd (1995), and Venkatesh *et al.* (2003).

Several studies have investigated the use of CAATs, including those by Braun and Davis (2003); Debreceeny *et al.* (2005a); Curtis and Payne (2008); Janvrin, Lowe and Bierstaker (2008b); Janvrin, Bierstaker and Lowe (2009); and Ahmi and Kent (2013). However, only

two of these studies utilised Venkatesh *et al.*'s (2003) model, which is used in the present paper; thus, the present paper aims to add to the findings of these two studies.

In the first study, Braun and Davis (2003) studied governmental auditors in the US and their usage of available CAATs, and their results showed that, while auditors understood the potential benefits of CAATs, they showed lower confidence in their technical skills to use them.

Debreceeny *et al.* (2005a) qualitatively investigated the actual use of GAS in substantive testing in audits of banks in Singapore, using an in depth interview method. They sought to understand the possible reasons for limited usage of GAS in auditors' substantive testing. Their study concluded that IAs in banks use GAS, but only to a limited extent, for the purposes of the extraction of samples and the verification of the completeness and accuracy of data although GAS is frequently used in special investigation audits. Auditors were found to be more concerned about testing the compliance and effectiveness of IC compared to substantive testing. Difficulties in using GAS, along with concerns about its cost-effectiveness, were found to hinder its use. However, it was also found that external auditors tended not to use GAS due to the perceived inapplicability of GAS to the nature of investigating financial statement assertions or the extent or quality of computerised ICs maintained by banks in Singapore (Debreceeny *et al.*, 2005a).

Janvrin, Bierstaker and Lowe (2009) investigated the factors influencing the use of computer-related audit procedures in the US and reached a similar conclusion. Their results suggest that the complexity of a client's IT system has an impact on the nature of the chosen form of audit testing. In complex IT settings, where auditors relied on controls, the auditors were more likely to use computer-related audit procedures. The results also suggest that auditors from the big 4 firms were more likely to use computer-related procedures than those from smaller or local firms.

Ahmi and Kent (2013) investigated the utilisation of GAS by external auditors in small- and medium-sized audit firms (AFs) in the UK, utilising a web-based survey, after developing a framework to study the factors influencing the application of GAS in AFs. Their results suggest that the utilisation of GAS among the AFs surveyed was very low, and that the main obstacles to adopting GAS were the perceived high cost of the implementation, the effort required to obtain the necessary skills, and the technical difficulty of using GAS, each of which factors influences auditors towards preferring traditional manual audit methods instead.

Based on an experimental case study of participants at one of the big 4 accounting firms, Curtis and Payne (2008) used UTAUT to examine the factors affecting the implementation of new technology on an engagement. They modified the model to incorporate two external factors which were considered relevant to audit setting: the length of the budget and performance evaluation period and the influence of a remote superior, in addition to individual differences in risk acceptance and perceptions of budget pressure. Their results suggest that firms are able to influence the implementation of new technology by using longer budget and evaluation periods and by getting the necessary support and approval to use software from senior staff. If firms cannot provide such intervention, the individual auditors' risk-aversion and perceived budgetary pressure are found to determine the implementation decision.

Janvrin, Lowe and Bierstaker (2008b) applied UTAUT to investigate auditors' acceptance and use of CAATs, based on a field-based questionnaire involving 181 auditors from the big

4 and national, regional and local AFs. Their results showed that performance expectancy and facilitating conditions were the most likely predictors of acceptance of CAATs, and they suggest that to increase usage, AF management may need to look at training programmes to *facilitate use*, and may also need to boost their organisational and technical infrastructure supporting CAATs.

The continuous auditing (CA)

IT developments have had a great impact on financial reporting, and have impacted on the usual audit mode, shifting it more towards CA (Elliott, 2002; Flowerday and Von Solms, 2005; Hunton, Wright and Wright, 2003; Rezaee, *et al.*, 2002; Chan and Vasarhelyi, 2011). In other words, real-time financial reporting is expected to require CA (Flowerday and Von Solms, 2005). CA is defined by AICPA and the Canadian Institute of Chartered Accountants (CICA) as “*a methodology that enables the auditor to provide assurance on a subject matter simultaneously with, or shortly after, the occurrence of the events underlying the subject matter*” (Study Group, 1999: 5). CA is defined by Rezaee *et al* (2002: 150) as “*a comprehensive electronic audit process that enables auditors to provide some degree of assurance on continuous information simultaneously with, or shortly after, the disclosure of the information*”. As shown by these definitions, it covers the three main services provided by external auditors, *i.e.* assurance, attestation and audit services (Omoseto *et al.*, 2008).

CA is increasingly regarded as a tool to supplement the external audit (Kuhn and Sutton, 2010; Harkness and Green, 2004). The term ‘continuous accounting’ has historically meant the use of software in either a real-time or near real-time environment, to detect auditor-specified exceptions from among all the transactions which have been processed (Helms and Mancino, 1999).

Traditionally, due to the cost of gathering information needed to produce financial reports, reliable financial reports could only be produced on a periodic basis. Thus, reports have often been published months after the incidence of transactions they report. Auditing in such cases is a backward-revising exercise, testing the accuracy of reported numbers (Rezaee, *et al.*, 2002). These constraints can be resolved by utilising the evolving technology, enabling management to publish financial reports on a real-time basis, or soon after the occurrence of transactions; and enabling auditors to conduct CA to provide the timely assurance which decision makers require.

Advances in IT and communication technology have made the technical capability of continuous reporting available to firms, regardless of their sizes. It has become technically and economically possible to commence preparation and publication of financial statements on at least a monthly basis (Hunton, Wright and Wright, 2003; Pathak, Chaouch and Sriram, 2005), and many companies have already started to release their financial and operating information online (Harkness and Green, 2004). In today's fast paced business world, Rezaee *et al.* (2002) suggest, standardised financial statements can be produced on a real-time, online basis; CA is therefore required in order to increase the sustained reliability of this financial information (Flowerday and Von Solms, 2006) and to enhance the efficiency and effectiveness of the audit process (Chan and Vasarhelyi, 2011).

The transformation of business processes that has eliminated traditional sources of information has necessitated the formation of new audit procedures to carry out financial audits and, in certain entities, most accounting data and evidence are obtainable only in electronic forms which may exist at a certain period of time and may not be retrievable after that time has passed as shown in the literature. For this reason, SAS 80 and the literature suggest that auditors set substantive tests and tests of controls, where applicable, at different times during the year under audit, to gather the required EAE which will support their

conclusions (Chan and Vasarhelyi, 2011; Helms, 2002; Rezaee *et al.*, 2002). In addition, with the purpose of verifying the reliability and accuracy of the financial information provided by the real-time accounting system, it is suggested that tests of controls must be carried out simultaneously with substantive tests of transactions (Rezaee, Elam and Sharbatoghlie, 2001; Flowerday and Von Solms, 2005, Flowerday and Von Solms, 2006).

Murthy and Groomer (2004) suggest that, due to a lack of confidence fuelled by the dramatic collapses of Enron and WorldCom, investors, regulators and creditors will increasingly request that information pertaining to financial performance is not only delivered on a more timely basis, but that it is provided through CA by external auditors. The literature has given great attention to the importance of CA and models through which to conduct it (e.g. Vasarhelyi, Alles and Kogan, 2004; Murthy and Groomer, 2004; Du and Roohani 2007; Omoteso, Patel and Scott, 2008). For example, Omoteso *et al.* (2008) investigated current views of the application of CA in the UK, and their results suggest that the perceived advantages of CA include its capability to reduce errors and fraud, and enhance investors' and stakeholders' confidence in online financial reporting by providing close to real-time access to audited statements. They also found that independence is considered the main issue due to overfamiliarity with the clients' systems and the need for clients' cooperation. However, the literature has not provided considerable evidence about the reasons why auditors may not use the CA on a larger scale.

2. Methodology

The intent of this mixed methods study was to investigate the impact of the use of IT in organisations may have on the methods auditors choose to deal with such clients, and the study utilised triangulation in different aspects of its investigations. This study collected data from different sources, which was then and analysed both quantitatively and qualitatively.

The questionnaire sought to identify any perceived positive impact of CAATs and the CA on the audit function, and to investigate the major reasons precluding auditors from adopting two integrated ways to deal with IT based accounting systems, namely, the use of CAATs and the CA. Conducting interviews at the same time was deemed to be important in raising the validity and reliability of the findings, by minimising the bias of either of these methods alone. Another reason for combining both quantitative and qualitative data and methodology is to reach more participants and better understand the problem, through a convergence of both quantitative, broad, numeric trends, and the detailed views offered by qualitative research

155 questionnaire sheets were distributed, 82 participants completed a questionnaire which was sent to them either by email or by hand; 56 of them were auditors working in AFs, while the other 26 were auditors working for the Libyan Audit Bureau (AB). 21 interviews were conducted with a random sample of internal auditors of banks and oil and gas companies, in addition to a sample of academic staff in accounting, stock broker agents, and external auditors who were willing to be interviewed. The data was then analysed quantitatively using SPSS and compared with qualitative analysis of the qualitative data collected by the interviews.

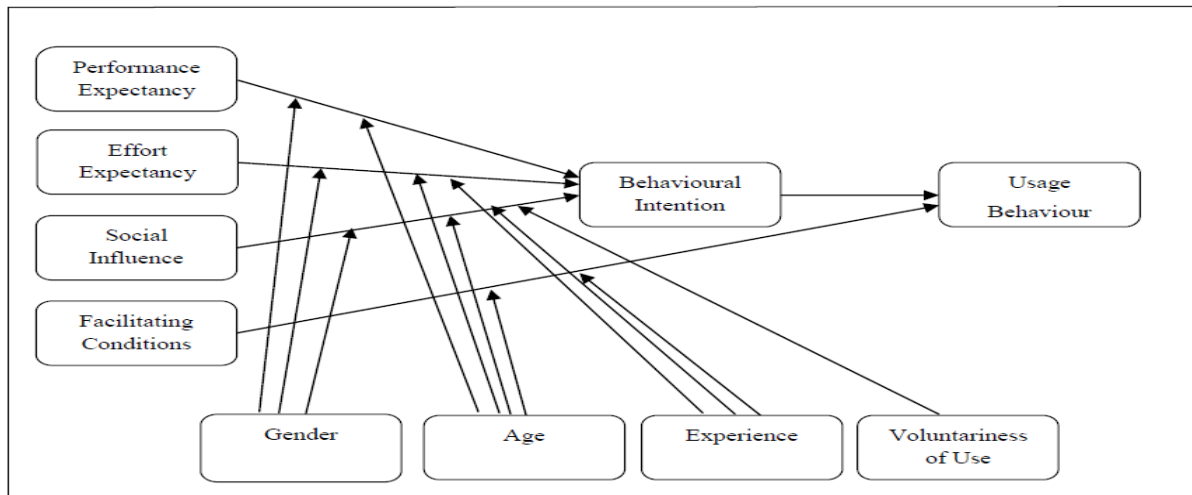


Figure 1 Factors influencing the acceptance and use of IT

Source: Venkatesh *et al.* (2003)

UTAUT posits that performance expectancy, effort expectancy and social influence are the main determinants for behavioural intention, while intention and the facilitating conditions are the direct determinants of usage behaviour. Some of these determinants are expected to be moderated by gender, age, experience and voluntariness of use (see: **Error! Reference source not found.**). In the light of UTAUT, this paper investigates the main reasons why auditors do not use CAAT or CA, but does not aim to validate the model in a Libyan auditing context.

3. Results

The interview responses and documentary data suggest that in Libya no auditing standards have been developed to deal with the fast changing business environment, including IT, and auditors have not been required to use certain methods, or tools to audit financial reports prepared by IT-based accounting systems. This has led the Central Bank of Libya and the Libyan Stock Market to adopt the international accounting and auditing standards. Otherwise, it seems that auditors are left to their own judgement to decide on what is relevant and sufficient audit evidence that supports their opinion. Regulations in Libya, mainly Tax Law and Libyan Stock Market regulations, are pushing towards timely provision of financial reports, which may call for near real-time reporting and continuous auditing.

The results suggest that around three quarters of auditors in the AB and AFs agree that lack of infrastructure negatively affects the use of IT tools and techniques, and the average responses also suggest that the lack of infrastructure the auditors experienced is seen as the main factor precluding them from using CAATs in performing their audit tasks. This result is supported by the interviewed IAs. An IA who said he works with a bank which has a well-developed IT-based accounting system, said that: "Our bank pays for thing that should be done by the government. For example, we have the optical fibre cables linking the bank branches in different cities: the bank has installed it" (IA1). This is also supported by the responses from interviewed academic staff and auditors, as lack of infrastructure appears the main perceived reason precluding these auditors from using CAATs. This result is in line with the World Economic Forum's (2012) statistics, which show that Libya's ranking in terms of technologies readiness is very poor; for example, in terms of the availability of latest technology Libya is ranked 125 among 144 participating countries. This result is also in line with Ahmi and Kent (2013); Janvrin, Lowe and Bierstaker (2008b); Shibl (2013); Venkatesh *et al* (2003); Zmijewska and Lawrence (2006). For example, Janvrin, Lowe and Bierstaker (2008b) investigated auditors' acceptance and use of CAATs in the light of UTAUT, and

found facilitating conditions to be one of two most likely predictors of acceptance of CAATs.

Results suggest that effort expectancy, represented by difficulties which auditors face when implementing CAATs, is thought to have a negative impact, to some extent, on the use of CAATs. This result is in line with Ahmi and Kent (2013); Alshehri *et al* (2012); Abushanab and Pearson (2007); Davis (1989); Venkatesh *et al* (2003) and Wong and Russo (2013). In addition, the high cost associated with employing knowledgeable auditors and the high cost of efficient software available negatively affect the use of CAATs; however, it is noted that this effect does not differ significantly with different sizes of AF. A smaller impact is due to the perceived complexity of CAAT and difficulties associated with the use of these techniques, and voluntariness of use. However, performance expectancy and social influence were not found to have any negative effect

With regard to CA, results suggest that auditors have good expectations of CA, but they have no clear opinion on the impact CA may have on their independence. Results show that more than 80 per cent of auditors from AFs agree that late appointment of external auditors is precluding them from using CA, and 74 per cent of auditors in the AB and 60 per cent of those in AFs think that lack of infrastructure is precluding them from auditing continuously. The correlation suggests that small AFs are found to be more affected by the lack of infrastructure than larger firms. However, difficulties in gaining clients' permission to get to their systems are also likely to slightly affect auditors' intention and use of CA.

Table 1. Correlation between perceived negative impact of lack of infrastructure on conducting CA, and AF size

				CA is not used by The AF, because there is no enough infrastructure available for the AF that support CA
Spearman's rho	Audit firm	Number of qualified auditors in the office (firm)	Correlation Coefficient	-0.288*
			Sig. (2-tailed)	.043
			N	50

* Correlation is significant at the 0.05 level (2-tailed).

4. Conclusion

The current paper has attempted to investigate the reasons behind auditors' unwillingness to use computer assisted audit techniques (CAATs), or continuous auditing (CA) on a larger scale. As discussed, the literature suggests that CAATs and the CA can bring several advantages for the audit practice and auditors. These results suggest that auditors in Libya have good expectations for both CAATs and the CA, although they have no clear opinion on the impact CA may have on their independence.

The findings have a number of important implications for future practice. In line with previous literature and related standards (AICPA 2006; Curtis and Payne 2008; Janvrin *et al.*, 2008b; Omoteso *et al.*, 2008), this paper suggests that using CAATs and CA could significantly contribute to increasing audit efficiency and effectiveness, as CAATs will help auditors extract information with specific characteristics for further investigation, and help in testing the whole population instead of a sample, and obtain evidence about control effectiveness and develop audit quality in general. CA thus helps in quick detection and therefore investigation of error and fraud issues.

However, auditors in Libya perceive the lack of infrastructure as the main reason which precludes them from using CAATs, followed by the high cost of efficient software available and costs related to deploying knowledgeable auditors, effort expectancy and voluntariness of use.

Auditors in Libya also perceive late appointment of the auditor and lack of infrastructure as the main reasons for auditors not auditing continuously. Small AFs were found to be more affected by the lack of infrastructure. This result may encourage individual auditors to practice the profession in larger group AFs.

This paper suggests the Libyan Accountants and Auditors Association, the AB and practicing AFs to give more attention to encouraging the auditors' use of CAATs to enhance audit quality and efficiency. Most of audit clients' accounting systems in Libya have not reached the phase of a continuous reporting system, thus it is also important to consider the use of CA, when applicable, or auditing on a more frequent basis, to increase the reliability and therefore usefulness of financial information, especially for those companies registered in the newly established Libyan Stock Market. However auditors should also be aware of the impact CA may have on their independence. In addition, while it is useful that auditors carry out their audits on a more frequent basis, they need to consider the applicability of CA from time to time, as IT applications spread in the business environment, and CA-supporting IT applications evolve.

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Knowledge-Managing Sustainable Energy Schemes - An Innovative Approach

Anthony Ayoola*

Abstract: Sustainable energy management systems continue to evolve, adding layers of complexity and functionality. The paper presents an innovative approach that deals with the application of complex systems formalism and contemporary knowledge management techniques for the purposes of assuring more effective delivery of sustainable energy schemes.

Knowledge-Managed Sustainable Energy (KMSE) systems leverage energy knowledge assets optimally, and with greater flexibility, to enhance energy management performance. The KMSE scheme developed adopts a multifactorial approach for sustainable energy-related knowledge acquisition, aggregation and diffusion, within managed environments.

The paper presents a structured framework for developing effective KMSE systems, and discusses their applicability to a range of renewable energy management projects, with the ultimate aim of fostering continuous energy management performance improvement and sustainability.

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High-Tech M&As: Accentuated challenges of IT & Operations-based value creation

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***Abstract:** Technology driven industries have seen fast moving technology changes, higher complexity and reduced product life cycles. These emerging trends present challenges for companies in industries where technology is at the forefront. The extant research deals with 'low-tech' industries and majority of findings are not applicable to the high-tech industry; in fact this industry has many additional challenges. In this study, we aim to explore the process of M&A in the high-tech industry by drawing on extant literature and empirical field work. The paper outlines a research project in progress which intends to provide theoretical, empirical and practical contributions in answering the research question: what role does Operations and IT play in creating value in high-tech M&As? The research adds a needed perspective on M&A literature by unveiling unique challenges and opportunities faced by the M&A teams in this sector. The phenomenon is studied from multiple perspectives: integration team, acquiring group and the company being acquired.*

1. Introduction

Over the past decade, technology-driven industries have seen fast moving technology changes bundled with higher complexity and drastically reduced product life cycles in both the consumer and enterprise sides of the market. These emerging trends present challenges for companies in industries where technology is at the forefront. They continuously need to build their core competitive advantages and competencies, while simultaneously counting on the management teams to utilize and modify, creating value while acclimatizing to the changing milieu around them (Teece et al., 1997; Prahalad and Hamel, 1990).

2. Literature Review

A trend has emerged in recent decades in technology-driven industries: established, dominant technology firms such as Cisco, Microsoft, IBM, and Oracle have increasingly employed acquisition strategies to extend their enterprises with external technologies and operational capabilities (Vanhaverbeke, et al.2002; Kale and Phanish 2004; Desyllas and Hughes 2008). The computer hardware and software industries, along with the networking and electronics industries have most actively utilized M&A. According to Cloudt (2005), companies source externally to obtain value-creating advantages from this technological complexity. However, the activity of sourcing and then absorbing technology innovation from outside is a highly complex process, and acquiring firms vary greatly in their ability to conduct such activities as serial or single acquisition companies (Puranam and Srikanth 2007; Zollo and Singh 2004). According to Price Waterhouse Coopers (2013), non-technology businesses are increasingly disrupted by new technology-based delivery models, or they are finding better ways to leverage technology to engage customers. Historically, M&A activity in the high-tech industry has been soaring, but uncertainty has recently muted growth of new deals. Acquiring companies that possess a complimentary set of business models or operational capabilities can likely result in great benefits for the acquiring company. Acquiring new business models and operational capabilities from a target organization can be very valuable, especially if the organizations can establish a synergistic learning process between both organizations

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(Hitt et al. 2009). Hitt, et al (2009) also cite Cisco Systems and GE as having “had significant success in making acquisitions, and this success can be at least partially attributed to their ability to learn from the acquired firms and to absorb and integrate the new knowledge in order to build new capabilities,” suggesting that there is specific value in terms of synergy creation between the acquiring and target company. However, entrepreneurial companies such as Cisco, Microsoft, IBM, and Oracle were once run as nimble organizations in their formative years. During this formative stage, these companies introduced revolutionary technologies and innovations to their customers. Now, they grapple with the growing pains of maturing large enterprises. Each of these high-tech organizations is looked upon as bellwethers in the high-tech industry and in the broader financial market in general. In the technology industry, established firms risk technological obsolescence and replacement by disrupting technologies, unless they are able to identify and partner with new innovative companies that are capable of providing an ongoing stream of innovations and attracting appropriate talent and leadership (Teece 1986, 1992.) The idea is substantiated by the upswing in the number of high-tech acquisitions in recent years (Sikora, 2000) and the growing importance of technology- or innovation-motivated acquisitions (Granstrand et al., 1992; Goodman and Lawless, 1994; Link, 1988). The extant literature on acquisition integration deals the process at a theoretical level while research at with an industry context is focused on non-technology industries, and the majority of findings in this research are not applicable to the high-tech industries; in fact, high-tech industries have many additional challenges (Lee et al., 2010).

Additionally, these once-nimble organizations could easily integrate acquisitions, they then faced the problem of vastly complex business and operating models. They now have to learn how to master much more complicated and multi-dimensional acquisitions. M&As are among the biggest challenges for enterprises and specifically their Operations & IT departments to navigate and operationalize. According to Sarrazin and West (2011), many mergers do not live up to their expectations because they stumble on IS & Operations integration. Additionally, according to Henningson (2011), “more than half the synergies available in a merger are strongly related to IS; for example, in the financial services industry approximately 60% of potential synergies are related to IS” Reaping the benefits of a merger or acquisition is a notoriously tricky business. Limited research has focused on the high-tech industry, and given its unique challenges as a sector deeply affected by hyper-competition (Lee et al., 2010), it is an area that needs further investigation. Given the importance of the Operational & IT efforts and success to overall integration success, the research project will start with a focus on this area. This paper aims to provide theoretical, empirical, and practical contributions to the field of research, and the on-going academic conversation, in an attempt to answer the central research question:

RQ1: What role does Operations and IT play in creating value in high-tech M&As?

In response to these conditions, companies have started to leverage their acquisition strategy to gain market share and stay competitive. They have developed a strategic ability to source and apply innovation generated externally, as evidenced in companies such as IBM and Cisco. This is, however, a high risk-reward game, as most acquisitions are priced far above the run-rate price of most companies. In spite of the popularity of high-tech M&A and the focus on developing these capabilities, the research suggests that their effects on post-deal outcomes can result in weak or even negative effects (Ernst and Vitt 2000; De Man and Duysters 2005; Kapoor and Lim 2007). Management scholars have extensively explored factors of acquisition results and have found that the success rate depends largely on what is referred to as ‘synergy-realization’ (Haspeslagh & Jemison, 1991; Hitt, Harrison, & Ireland,

2001; Larsson & Finkelstein, 1999), which depends largely on the ability of the acquirer to choose strategically fitting targets (Barney, 1988; Harrison, Hitt, Hoskisson, & Ireland, 1991; Singh & Montgomery, 1987) and increasingly on optimized acquisition integration processes (Datta, 1991; Haspeslagh & Jemison; 1991, Chatterjee, Lubatkin, Schweiger, & Weber, 1992; Larsson & Finkelstein, 1999). As these companies mature and scale their back-office, operations and IT their mindset must also change regarding what a sustainable organization looks like and how it behaves.

Therefore, this study aims to explore the process of M&As in the high-tech industry by drawing on extant literature that focuses on the theme broadly, expert interviews, focus groups and then narrowing in on specific cases from a relevant technology company. Specifically, we are interested in exploring the interplay between two specific layers of the technology organization: the operations and information technology layers. This research intends to add a much needed perspective on M&A literature by unveiling unique challenges and opportunities faced by the M&A teams in this sector. Toward this end, M&A teams in technology companies can mindfully design and deploy acquisition integration strategies. Additionally, the study also aims to investigate this phenomenon from the perspective of the acquisition integration team, the acquiring group within the organization, and the managers and employees of the company being acquired. The research will be limited to large multi-national companies who acquire in a serial fashion, acquiring multiple companies in a fiscal year, as well as those who acquire small and mid-size organizations. It will not focus on the more complex ‘multi-business’ mergers. This paper aims to provide a brief review of extant literature in the M&A area, and it outlines a suggested research process using a multi-case study analysis approach. The paper also provides a set of future research findings and best practices and potential pitfalls for managers.

3. Initial Theoretical Framing

To this point, modern acquisition integration research is influenced by the work of Jemison and Sitkin (1986) and Haspeslagh and Jemison (1991); since these two publications, scholars have highlighted the significance of planning and implementation in acquisition integration affecting value capture and gains from M&A activity. Specifically, the research on acquisition planning and implementation has focused on the challenge of balancing structural integration and organizational autonomy. Further, research has also focused on the antecedents and consequences of the decision to integrate the target within the organization of the acquirer or to keep it as a standalone (Paruchuri, Hambrick and Nerkar 2006; Puranam, Singh and Zollo 2006; Puranam and Srikanth 2007; Kapor and Lim 2007; Puranam, Singh and Chaudhuri 2009). The majority of the research, starting in 1967 has outlined the concept of “level of integration,” or the level to which the acquirer and the target are linked and can be leveraged for competitive advantage.

Seen through the CIO’s & COO’s Lens

M&As are a major challenge for CIOs and COOs. With M&As on the rise, and with the role of IT integration becoming more critical than ever, it pays for CIOs to build their M&A integration capabilities using proven techniques (Aron, Mesaglio and Albornoz-Allsop, 2010). A 2006 Accenture survey showed that 40% of enterprises reported that their M&A related IT integration had been successful. According to Aron, et al. (2010), outcomes are uncertain, previously unknown, or unimportant facts that suddenly emerge as critical, and there are many moving parts to control. On top of all this, the business must continue to serve clients, run operations, and execute in the face of major, and often disruptive, integration activity.

The role of the CIO and COO in M&As is critical, but successful integration does not rely exclusively on the CIO and COO; they bear a large part of the burden, since integrating people, operations, information, and processes requires significant technology investments (Aron, Mesaglio, and Alborno-Allsop, 2010). Establishing an end-state or target-architecture for the integration is very important to ensure success. A company can take several different approaches to the integration process. The extent of integration is also determined by how similar the processes and applications are among the merging entities. The end-state of post-merger integration of IT systems, applications, and business processes are driven by a number of factors, including the M&A objectives, the timeframe within which the enterprise needs to achieve the integration, and the cost of the integration that the enterprise can bear within the time horizon of an acquisition. If the objectives of the enterprise in M&A is to benefit purely from the wider portfolio of products or services without operational efficiencies, the company will go with little consolidation and minor reporting systems development. However, if the objective is to benefit by leveraging operational synergies and eliminating redundancies, the enterprise will chose a consolidation of processes and systems as its end-state. And finally, if the objective is to merge the two entities completely, the choice is clearly to include all functions, processes, and systems and rationalize completely (Jaligama & Goyal, 2011). Despite the popularity of acquiring companies in the high-tech industry, 60–80% of all acquisitions fail to create value (Swaminathan, Feisal, & Hulland, 2008) and are deemed unsuccessful. A majority of enterprises are decidedly dependent on IT & Operations when executing on their business activities; these enterprises depend on the integration of the IT & Operations functions to be successful (McKiernan & Merali, 1995; Giacomazzi et al., 1997; Robbins & Stylianou, 1999; Evgeniou, 2002; Wijnhoven et al., 2006; Mehta & Hirschheim, 2007). Despite the documented importance and relevance, IT integration in M&A is still sparsely addressed in the existing literature (Wijnhoven et al., 2006). IT integration is cited as one of the top five reasons for M&A failure, and more than 45% of the expected benefits from M&As are directly dependent on the systems and technologies being integrated between the target and the acquirer (Rodgers, 2005). One reason is that executives from IT & Operations often aren't included in the due-diligence process, preventing them from offering valuable input on the costs and practical realities of integration (Sarrazin & West, 2011).

4. Research Design Rationale & Frameworks

Research specifically on acquisitions conducted within the technology industry is relatively sparse. Companies in this industry, as identified previously, face a series of industry-specific challenges and critical issues. Within the technology industry it is clear that the life-cycle of a post-merger integration is a challenging and important aspect of the process (Kitching, 1967; Haspeslagh and Jemison, 1991), some with specific focus on technology focused acquisitions (Gerpott, 1995). Several other researchers have focused on the impact the integration process has (Finkelstein, 1986; Jemison and Sitkin, 1986). The strategic intent has also been a focus of several researchers, with the focus on the type of integration (Haspeslagh and Jemison, 1991; Pablo, 1994; Kaplan, 2001). However, the majority of scholars define the significance of the acquisitions' purposes in determining the strategy for the integration and the value it creates; remarkably few have chosen to focus on the integration aspects of a specific type of acquirer (one-off or serial), a particular acquisition motivation, or a singular industry (Ranft and Lord 2002).

Conceptual Framework

Given the challenges identified in previous literature that covers the acquisition integration process and the opportunity to study the phenomenon at a close distance, we chose to focus the aperture of the initial research on the role of the Operations & Information Systems interactions in the process initially. Multiple vantage points exist when studying the acquisition integration process, and given the researchers' pre-existing knowledge, it was logical to start the inductive and abductive research process rooted in this perspective. The framework was created using information collected during previous research activities as well as from expert interviews conducted during the feasibility phase of this study. The planned utilization of this framework to guide the research is described in the following section. The central thesis is that the CIO (IT/IS) and the COO (Operations) play a key role in enabling a successful acquisition integration process and their collective impact on the 'time to value' metric.

Methodology and Operationalization

This study uses an inductive and abductive epistemological approach within a post-positivist perspective in the development of theory. A pre-established theory-based conceptual framework will be used as tentative prior constructs (Eisenhardt, 1989) or seed categories (Miles and Huberman, 1994). Because the research question focuses on a new understanding of the 'why', 'what' and 'how' M&A is operationalized in the high-tech industry, the research method selected for this research can be described as interpretive qualitative case studies using grounded theory techniques. The reality of general acquisition integration practices is well known; however, very little literature exists specifically about the high-tech industry. The goal is not to test hypotheses and establish universal laws of cause and effect; rather, the goal is to produce small, but rich descriptions from a particular context and setting. The goal of the research is best reached using a qualitative approach such as case studies (Eisenhart & Graebner, 2007). Since the case study research method is the most common qualitative method used in information systems (Orlikowski and Baroudi, 1991; Alavi and Carlson, 1992), it is chosen for this application as well. Specifically, we adopted the multiple-case design, which implies replication logic (Yin, 2009), within which a case is treated as an idiosyncratic expression of the phenomenon under study. Yin's (1994) definition of a case study is as follows: "An empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident," and this suggests that the application in this research is particularly suitable. An additional argument for using the interpretive case study research method for this research is that the process of operationalizing acquisition integration in technology companies is a complex process marked by no formal theory of model prediction connections between the variables.

Proposed Data Collection and Analysis

Complementing the selected multi-case study research method, the collection of data for the four case studies will be conducted inductively through a semi-structured interview process. This will be supported by additional information from internal reports, presentations, and other documents, along with public information on the company website. All primary data will be collected using Grounded Theory Method (GTM) techniques (Strauss and Corbin, 1998; Dyer and Wilkins, 1991), which promotes inductive theory creation from different types of data. The intent of the analysis is to be rooted in the empirical case material (inductively) and not from pre-defined hypotheses (deductively) to generate the theory. The intent is for the tentative prior constructs from theory to be used only to help initially shape

the design of the data collection and analysis in the individual case studies and to ensure that the theoretical understanding will be developed and used in a hermeneutic process across and beyond the case studies. The researcher will conduct an analysis after each interview and use a continuous comparison approach to identify commonalities and to rule out any one-time events, thus ensuring a robust theory.

Using GTM techniques, the analysis will be conducted using three different coding procedures: open coding, axial coding, and selective coding (Strauss and Corbin 1990). Open coding involves “breaking down, examining, comparing, conceptualizing, and categorizing data” (Strauss and Corbin 1990). The initial output of GTM is open codes, which is then aggregated into higher-order concepts called categories and their attributes (properties). Axial coding then formalizes a set of procedures that allow for the reformulation of the data obtained from open coding by developing explicit hierarchical relationships between categories and subcategories. Axial coding is performed until all categories identified during open coding have been included in some category-sub-category relationship. Selective coding constructs relationships among the higher order categories that were identified during the axial coding phase. This coding procedure selects the core categories and systematically relates them to other categories. Correspondingly, our first design requirement is to follow the steps of GTM to derive NFRs from qualitative text data (e.g., interviews with stakeholders). Following this approach, the researcher plans to conduct 52 interviews across multiple instances of acquisitions, using a semi-structured interview guide (Kvale, 1996). Semi-structure interviews allow the subjects of the interviews to explain the M&A process in very rich detail, preserving chronological flows and fruitful explanations in their own words while still keeping some structure. The researcher will ask the questions in an open manner in order to encourage the subjects to bring up issues that are important to them.

5. Initial Findings & Expected Contributions

The feasibility phase of this research has been based on leveraging findings from our previous related research. This research is focused on the findings from our literature analysis and the need to focus additional attention on the high-tech industry.

In addition, using the conceptual framework, the researcher initially conducted several expert interviews, attempting to substantiate the connections identified in the framework while also looking for attributes that characterize the uniqueness of M&A in the sector have contributed to the questions included in the semi-structured interview guide, the sequence of the cases and the types of individuals the research will focus on. Specifically, the interviews revealed that it was important to focus not only on the acquisition integration team and the acquiring business units leadership team, but also on the point of view (POV) of the acquirees, or those being integrated into the company. To further support the case study interviews, the researcher conducted a focus group to provide emerging themes or ‘affinities as described by Interactive Qualitative Analysis (Northcutt & McCoy, 2004) with the heads of acquisition integration in high-tech companies who are considered serial-acquirers as participants. The method to analyze the data, Interactive Qualitative Analysis, was developed by Northcutt, Miles, et al (1998) at the University of Texas at Austin and uses a systems approach to qualitative research. The class members are consistent with Interactive Qualitative Analysis (IQA) intensity sampling. The participants have the ability to reflect and are willing to participate as experiential experts with the issue. IQA combines the tradition of phenomenology, which asks what is the structure and essence of the experience of the phenomenon for the people in the study, and systems theory whose central question is: how and why does this system function as a whole (Patton 1990). The systems perspective is

gestalt in origin, which views relationships as interconnected parts with the whole being greater than the individual parts. Change in one-part leads to changes among all parts and the system itself. A focus group was conducted with nine heads of acquisition integration. The focus group resulted in the discovery of 12 emerging themes & challenges, which will be used the direct the interviews and uncover how each case overcame or faced these challenges.

This paper outlines the initial feasibility of research that supports an empirical study of the acquisition integration process in the high-tech industry. There is a need for a new perspective on how the process is adopted in the high-tech industry, its unique challenges, its inhibitors and enablers to success. The paper offers a grounded theory model research model that melds research from the information systems field with the operations field. The ongoing study is expected to provide several theoretical implications in the areas of Information Systems/Technology, Operations & Strategic Management. First, although current research provides a good representation of general M&A processes, there is a need to specifically focus on the phenomenon in the high-tech industry, given its unique characteristics. This study will fill this gap by exploring the phenomenon at a close distance across four representative case studies in the high-tech industry. It will ground the findings in empirically based findings. Second, the research also aims to represent a previously ignored participant in the process, namely the acquiree, or target of the acquisition. Through the initial research phase, the researcher has identified this group as a key contributor to the complete picture of M&A in the high-tech industry. This study also intends to offer important practical implications for managers in the high-tech industry, particularly for those involved in the planning, coordination, and execution of the integration process, but also for those who are part of the target organization or the acquiring business unit. Because of its foundations in the current literature and in general M&A theory, we are confident that the resulting research findings, resulting model, and future research opportunities will be useful in the development of theory in this emerging part (high-tech context based research) of an established research area of M&A.

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Effect of Social Networks (SNs) on SMEs

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***Abstract** One of the latest examples of the vital role of technology in supporting business activities is the utilization of SNs. This project has been carried out to answer the question what are the best practices SMEs can follow to efficiently implement SNs for facilitating and enhancing business activities. This will be achieved by reviewing related literature. Then reviewing the top-ranked SNs in S.A: Facebook, Twitter, and LinkedIn and critically analyse their influence on SMEs. After that a combination of qualitative and quantitative approaches will be used to assess and analyse the current situation of SNs adoption by SMEs in S.A and some of the successful British SMEs experiences in using SNs. Finally is the producing of the best practices combined framework that includes both the technological requirements and the managerial aspects of the utilization process, which SMEs can follow in order to implement and adopt SNs effectively and successfully.*

Keywords: social networks, Saudi Arabia, small and medium enterprises, virtual communities, e-business

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The Potential of Enterprise Architectural Thinking for Small Enterprises: An Exploratory South African Study

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***Abstract:** Major constraints for small and medium enterprises (SMEs) are the lack of business skills required to grow and sustain enterprises in terms of efficient business processes and opportunities for growth or change. Enterprise Architecture (EA) is normally used in large enterprises to manage change and complexity. This study looks at EA thinking in SMEs. Previous studies on low ICT adoption by SMEs identified the lack of knowledge about strategic use of ICT and insufficient organisational planning in addition to lack of skills as holding back the potential of IT use in SMEs. This paper motivates the use of EA to address the need for a holistic view and approach in SMEs. It also provides some data from an exploratory empirical survey on how SMEs fare in the various EA sub-domains.*

Keywords: Enterprise Architecture, Small Enterprises, South Africa, IT.

1. Introduction and Background to Research

Most countries, including South Africa, are prioritising job creation by growing small enterprises to become medium sized businesses (Jacobs, Kotzé, Merwe, & Gerber, 2011). SMEs are seen as an essential part of the economic growth in a country through entrepreneurship leadership and innovation that comes from the entrepreneurs. However, SMEs face significant challenges and growth constraints (Modimogale & Kroeze, 2009). Enterprise Architecture can be regarded as a partial solution to complexity, growth and change (Urbaczewski & Mrdalj, 2006). These attributes of EA make a case for SMEs to start looking at EA to leverage its benefits. SMEs are generally smaller in size which makes them more agile as they can make quick decisions and have the flexibility to react to change quicker than large enterprises.

This research studies the holistic thinking about information, applications, business processes and alignment with business strategy within SMEs. The paper looks at perceived benefits and potential advantages of aligning IT with business strategy and goals for SMEs. It also focuses on finding the current problems faced by SMEs in terms of business modelling and enterprise architectural thinking i.e. seeing IT as more than just a support structure in their organisations.

2. Literature Review

2.1 SMEs and Challenges

SMEs are characterised by businesses where the owner is directly involved in the management process, and where the firm employs a maximum of 250 to 500 employees, depending on industry (Jassiem et al., 2012). SMEs are crucial to the economy for growth and employment creation (Jacobs et al, 2011). In order to achieve their objectives and fulfil their contribution to the economy, SMEs must stay competitive and improve their business operations by adopting Information and Communications Technology (ICT) (Ismail, Jeffery, & Van Belle, 2011). EA has been suggested as an approach that manages complexity and change while continuously aligning IT with business goals, but it has yet to be adopted by SMEs (Jacobs, et al, 2011).

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SMEs that adopt Information Technology (IT) do so without having properly thought about or planned why they need IT, which brings questions about the SMEs decision making as this results in low success implementation due to lack of guidance (Nguyen, 2009). The decision making of SMEs could prove true the recent studies that have found that most SMEs lack technical expertise and suffer from insufficient organisational planning; this shows the need for a formal architecture to be in place to help SME decision making and guidance towards growth (Migiro & Ocholla, 2005). Some studies have found that it is unclear whether SMEs view IT as a competitive advantage or a threat. This may suggest that lack of EA practice is the reason for such thinking (Nguyen, 2009). SMEs typically have one decision maker, the owner/CEO or manager, which can lead to problems since a single decision maker is unlikely to have a holistic view of the organisation and his/her decision will be subject to personal opinions (Bernaert, 2012).

Although SMEs experience numerous challenges arising from their decision-making processes, they do have advantages over large organisations in that they are more flexible and agile. They can make quick decisions as there are few decision makers and smaller internal coordination costs.

2.2 Enterprise Architecture

EA provides a holistic approach to keep things aligned in a company. It is a key enabler in managing enterprise processes and systems, resulting in alignment of IT with business as well as alignment of business processes with business strategy in order to achieve business objectives (Bernaert, 2012; Jacobs et al., 2011). Literally hundreds of frameworks are used in the practice of EA. The Zachman framework for enterprise architecture is considered the earliest, fully-fledged and, perhaps, most generic of EA frameworks as it does not provide guidance on sequence, process or implementation (Urbaczewski & Mrdalj, 2006). Another, more recent framework that is widely in practice is the TOGAF Framework. TOGAF views the whole organisation as a system and it strives to achieve a balance between promoting the concepts and terminology of ISO/IEC 42010: 2007 (Open Group Standard, 2011). TOGAF is a mature framework and methodology that seeks to design, evaluate and build the right EA for an organisation by combining and coordinating business architecture, information architecture, applications architecture and technology architecture (Open Group Standard, 2011). Although there are differences among EA frameworks, most of them include common sub-domains of EA, including technical architecture, information architecture, data architecture and business architecture (Espinosa, Boh, & DeLone, 2011).

2.3 Potential Value of EA to SMEs

Before suggesting that SMEs should consider having a formal EA in place, it is important to discuss the potential benefits of adopting EA. The following are some of the benefits of EA in relation to SMEs that consider the problems and challenges faced by SMEs.

- **Agility:** Agility is the ability to rapidly and easily adjust to changing environments, whether they are internal or external to the company (Jonkers et al., 2006). Enterprises are living things and constantly need to be re-architected in order to achieve the necessary agility, alignment and integration (Goethals, Snoeck, Lemahieu, & Vandenbulcke, 2006). Studies have shown that companies cannot expect to achieve alignment, integration, flexibility, consistency, compliance and efficiency if they do not explicitly architect their enterprise (and their information systems) with these goals in mind (Goethals et al, 2006; Winter & Fischer, 2006). EA clarifies the linkages between business, information, application and technological architecture, and thus increases agility by enabling the organisation to respond quicker to changes using defined standards and principles

depicted in the models (Boh & Yellin, 2006). SMEs already have an advantage of being more agile as they are small and flexible enough to adapt to change. Growing SMEs can benefit from EA by continuously aligning strategy with execution at technical and process levels.

- **Strategy, planning and decision making:** In a business climate where enterprises are experiencing increased competitive pressure and shifting market conditions, organisations that thrive have defined a capability and framework that allow them to act quickly and decisively (Jensen, Cline & Owen, 2011; Long, 2009). Planning with full EA in mind allows organisations to accelerate change and seize business opportunities (Goethals et al, 2006; Luftman, et al., 2012).
- **Continuous business/IT alignment:** Aligning IT investments with business objectives is one of the main reasons for the existence of EA. Considering the lack of planning identified in SMEs, EA would provide the ability to continuously align strategic and business planning to business architecture while being supported by the IT architecture (Brown, 2004).
- **Management of complexity:** Adopting EA will allow SMEs to automate processes which will result in less complexity in their business processes. This can be achieved by using a modular approach that will distinguish between parts of a system and their relationships (Foorthuis & Steenbergen, 2010). SMEs often adopt ICT without understanding the relationship between IT and their business and why they need ICT; adopting EA will enable the simplified processes and planning which will result in the clear picture of how crucial IT is in supporting business processes (Nguyen, 2009).
- **Integration of business processes:** The fact that there is no formal EA in place in SMEs means that some processes may duplicate, such as departments performing and repeating the same process, whereas unifying and integrating processes will eliminate duplications so as to have one process in place that will be used across the organisation (Brown, 2004).
- **Unify and integrate data and link with external partners:** SMEs are likely to have dispersed data and broken communication due to lack of ICT use. Unifying and integrating data will allow SMEs to have a common communication process whereby they can also be linked with external suppliers, especially in supply chain (Brown, 2004). This will allow suppliers to be informed of orders and deliveries, reducing the cost of communication and improving operations and supply chain management. This enables the capturing of data once then reusing the same data across organisation activities (Brown, 2004).
- **Achieve more value from IT:** IT resources and systems are more aligned to business strategies and are better placed for receptiveness while IT investments are improved by eliminating the redundancies and projects that provide no clear benefits to the organisation (Flodmark, 2008). SMEs are generally smaller and cannot afford to spend much money on IT, so it is important that EA guides them whenever they invest.

2.4 Challenges

EA is a big concept with many benefits that save time and costs; however, EA is not without its own challenges. These challenges are rarely technical, and they arise from “political, project management, and organisational issues and weaknesses” (Kaisler, Armour, 2005, p1). Some key challenges are lack of top management commitment, lack of strategic vision, not being prepared to reserve financial and human resources to the EA project, continuous updating of the EA, demand for immediate ROI, lack of good or easy-to-use modelling tools, and the adoption of an unnecessarily complex EA framework (Long, 2009).

2.5 Current support for EA adoption by SMEs

The concept of EA adoption by SMEs has been introduced in some studies that have talked about ICT adoption and EA for SME growth stage models, but few studies link the potential or adoption of EA directly to SMEs. Jacobs et al. (2011) discuss EA combined with growth stage models and there are various studies about e-commerce, cloud services, and general ICT for SMEs. Bernaert (2012) makes a strong and persuasive case for the adoption and diffusion of EA into SMEs.

3. Research Methodology

Apart from providing a motivation for the use of EA-like thinking i.e. the critical thinking and holistic overviewing of information, systems and business processes in SMEs, this study was also driven by the fact that little is known about adoption and benefits realisation of EA in SMEs. This motivated an exploratory empirical survey to find out the state of EA-type thinking in SMEs.

A short survey questionnaire was constructed covering four major domains of enterprise architecture: business, information, data and technical domains. SME decision makers were targeted and, given the difficulty of getting survey responses from SMEs, a non-probability sampling approach by means of a snowball sampling was used as a sampling method.

4. Data Analysis

4.1 Sample Demographics

Of the 18 SMEs that responded, 13 had less than 100 employees, 3 between 100 and 200 employees, and 3 were medium sized enterprises (200 to 500). The type of industry of the respondents was roughly balanced across most industries, such as business consulting (3), manufacturing (2), engineering (2) and others (4); however, the ICT industry had a much higher number of respondents (7) which may be due to response bias given that the questionnaire focussed on ICT concepts.

4.2 Main Findings

Table 1 shows a summary of responses grouped into constructs of business architecture (BA), information architecture (IA), data architecture (DA) and technical architecture (TA). There are 15 test items that were in the form of Likert scale with the mean ranging from 3.12 to 5.23 and with standard deviation values ranging from 0.35 to 1.23

Table 1: Responses to Architectural Statements (sorted within each domain)

Domain	Statement	Avge	StDev	1	2	3	4	5
BA	IT can help me to support my business processes	4.39	0.85	0	0	4	3	11
BA	Our employees understand the organization	4.33	0.35	0	0	1	10	7
BA	Anyone understands the business should I not be available	3.83	1.1	0	4	0	9	5
BA	Business modelling applications are helping me to simplify my business processes	3.77	0.93	0	2	1	8	2
BA	My business processes are efficient and optimize productivity	3.67	0.91	0	3	2	11	2
BA	I have a clear view of data flow across the organization	3.39	1.04	1	3	3	10	1
IA	I have all the information I need to perform tasks at all times	3.35	0.93	0	4	4	8	1
IA	I can see my customers by region, using business tools	3.12	1.05	1	4	5	6	1
IA	My systems connect to my suppliers' systems	2.41	1.23	4	7	2	3	1
DA	I can share data across the organization with other applications	3.94	0.73	0	1	2	12	3
DA	My applications work together without problems	3.53	0.94	0	3	4	8	2
DA	I often face problems with duplicate information	3.17	0.92	0	5	6	6	1
TA	I have a WLAN and I am happy about how it works	4.42	1.01	0	0	2	3	7
TA	I invest adequately in IT infrastructure and networking equipment such as servers, switches, routers.	3.83	1.2	0	4	2	5	7
TA	I don't have problems with my operating systems/ infrastructure components. they are always up and available	3.56	1.04	0	4	3	8	3

In the business domain, it is clear that respondents have a clear understanding of the business but their understanding of the business processes and how to improve these, possibly using IT, is less advanced. Within the information domain, the respondents appear to have the necessary information for their day-to-day needs but don't have a flexible view of their customers and cannot integrate with their suppliers' systems. Data quality seems to be an issue. Within their technical architecture, they have a well-functioning LAN but individual system components give occasional problems.

4.4 Correlation Analysis

Some correlations were found to be significant and of interest. This section also includes correlations with some other questions on the questionnaire ie overall IT investment and the use of business modelling techniques.

The size of SMEs had a positive correlation to investment in IT infrastructure ($r = .405$, $n = 18$, $p = 0.95$). This shows that bigger SMEs were more likely to invest in IT. Technical architecture is built with IT infrastructure and therefore it is important that, as SMEs grow in size, their investment in IT architecture grows to support the needs of the business.

SMEs were tested to check on whether they were aware of latest technologies especially those that could cut IT infrastructure costs. Eight SMEs were using cloud computing while four said they were planning to use it, showing positive awareness and potential usage. Virtualisation shows different results, with 44% of SMEs not using virtualisation although they have heard of it. 28% were using it while 17% planned to use it. A correlation was done to check on whether there is a possible relationship between SMEs using cloud computing to

them using virtualisation or planning to use it as well as to being aware of it. A strong positive correlation of ($r = .563$, $n = 18$, $p = .015$) was achieved.

A strong negative correlation was obtained when running a test to determine whether SMEs invested in IT infrastructure and used virtualisation at the same time. Results ($r = -.606$, $n = 18$, $p < .008$) show that as the investment in IT infrastructure increased, use of virtualisation and cloud alike decreased. This makes sense in a way that SMEs have some economic reasoning when it comes to IT spending.

4.5 Other Observations

Interesting observations were done to determine the general maturity of SMEs. Eleven out of the eighteen SMEs have a formal business model. Most SMEs agreed (11 strongly, 3 agreed) that IT can help to support business processes which could then bring IT in line with business strategy, while only 4 SMEs neither agreeing nor disagreeing. A positive sign is that the majority of SMEs believe in IT which is a step in the right direction for them to use IT strategically and not just to see IT as “just a department”, but rather as a core of the business. The research also found that 13 SMEs in the sample were aware of ERP systems although only 6 SMEs were actually using ERPs. We also found that 6 SMEs were reluctant to confirm whether new applications integrate with their existing applications, while one SME confirmed that there are problems with integrating new applications with existing ones. Only four SMEs had their systems connect to suppliers while 11 stated that their systems did not connect to suppliers. This is a disadvantage to SMEs as information exchange is important, especially in manufacturing and supply chain in order to monitor stock and re-order levels. The Open Group (2009) suggested that this can be mitigated by adopting a Service-Oriented Architecture (SOA) which provides interoperability within and between enterprise systems.

5. Conclusions

SMEs often adopt ICT without proper planning or understanding why they need IT. The objectives of this research were to -investigate the current status of using IT to support business processes in SMEs, identify the current status of use of business modelling tools, and to determine whether SMEs invested in IT infrastructure. This study was done by conducting quantitative research on SMEs by means of a survey.

Just under half of the SMEs in the sample do not model their business processes, even though more than 60% said they do have a business model that represents different parts of their company. It is encouraging that more than three-quarters of the respondents believed that IT can help them to support their business processes but, surprisingly, a quarter of the SMEs were not sure if IT can help to support business processes. There is an awareness of business modelling tools in SMEs as almost three-quarters of SMEs surveyed were using modelling tools. Overall, SMEs are investing in IT infrastructure while others are also taking advantage of cloud computing and virtualisation technologies. SMEs are already modelling their business processes and they invest in IT infrastructure as they grow in size. The key issues at the moment are data redundancies and not making full use of information architecture.

SMEs should embrace the opportunity to understand EA before it's too late, to avoid the same problems being faced by large companies. Agility, strategic planning, alignment and integration across the enterprise are key benefits that SMEs which adopt EA can look forward to.

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The Happiness of Internet and Non-Internet Users in Thailand

Orose Leelakulthanit*

***Abstract:** This purpose of this study is to explore the causes of life satisfaction or happiness by adopting the classical theory of happiness, including the state theory of happiness, the end point theories of the purpose of life and meaning of life, and the part-whole theory of life, as well as the relatively new concept of the value of life. The data were collected with 48 adult Bangkokians using the triangulation method of three designs of focus-group interviews. The study shows that Internet users and non-Internet users have their own ways of achieving life satisfaction or being happy. Internet users tend to be happy with many more aspects of their life, including family, social life, work, income, material possessions, and self and society whereas non-Internet users seem to be satisfied with fewer aspects of life, including family, income, recreation, work, and society. However, both groups view that their lives would be worthwhile if they could contribute to society.*

Keywords: Internet, Happiness, Life satisfaction, Thailand

1 Introduction

In general, the ultimate goal of life is the pursuit of happiness, even with the coming of new Internet technology. There are two main objectives of Internet usage, which are to increase the efficiency of task performances and to achieve the effectiveness of these intended performances. The efficiency or productivity of task performances is supposed to be assessed in a more objective way. However, the effectiveness of the Internet should be found in its impact on people's life as a whole in such a way that people are the judges of their own lives in terms of life satisfaction or happiness. It follows that this study will focus on the investigation of the life satisfaction or happiness of the Internet users as compared to non-Internet users from the ground up by using a qualitative approach to conducting focus groups. The root causes of happiness of Internet users and non-Internet users will be studied by adopting the classical theories of happiness; namely, the state theory of happiness, the end point theories of the purpose of life and meaning of life, and the part-whole theory of life as well as the relatively new concept of the value of life.

2 Literature Review

In this section, the happiness theories and concepts that led to the questions asked in the focus group interview will be discussed. According to the state theory of happiness, a happy life is merely an accumulation of happy moments (Lewinsohn and MacPhillamy 1974; Chekola 1975; Lewinsohn and Amenson 1978). This concept of what creates happiness led to a focus group interview opening statement of the following: "Please describe the moments that make you happy."

From the goal theory perspective, happiness seems to be caused by fulfilling needs or achieving goals (Sheldon and Elliot 1999; Christensen 2010). The tensionless state or when no gap exists between what one is and what one should become results in happiness. Similarly, towards the end point of happiness, the meaning of life perspective views that we experience meaning when we have a sense of congruence and coherence between who we are and what we do (Frankl 2006). By taking the purpose of life and meaning of life perspectives, the next two focus group interview questions asked were:

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- If today were the last day of your life, what would you like to do?
- If the notion of the next life is true, how would you like your life to be in the next life?

The part-whole relationship of life posits that satisfaction of overall life can be broken down to the satisfaction with various domains of life (Leelakulthanit, Day and Walter 1991; Leelakulthanit and Hongcharu 2011). This means that life satisfaction or happiness can be achieved if people are satisfied or happy with the important domains of their lives. This notion of life satisfaction or happiness led to the following focus group interview questions:

- What is important in your life?
- For non-Internet users, how happy are you with your life and why (meaning with what aspects of your life)?
- For Internet users, how satisfied are you with your overall life after using the Internet (i.e., much happier or less happy) and why (meaning with what aspects of your life)?

The more recent “value of life” concept of happiness emphasizes the things that are important to one’s life. It focuses on the significance of determining and establishing the values in one’s life and business to attain a fulfilling life and career. It states that values could lead to happiness and success and serve as guideposts to a better life (Koury 2012). In other words, one’s value of life is what makes life worth living. To assess this value, the focus group interview question asked of every respondent in the total of six focus groups was “What are the values in your life?”

3 Method

3.1 Triangular Focus-Group Design

Forty-eight residents in Bangkok that were at least 18 years old were recruited by convenience sampling in order to be interviewed in the three designs. Each design consisted of two focus groups and there were eight participants in each focus group. According to the triangulation methodology, to compare the happiness of the non-Internet users and the Internet users, the participants were split into groups of three different designs as follows.

Design 1. General happiness approach

The objective of this design was to compare happiness between eight non-Internet users in one focus group and eight other people that had at least one year of experience in using the Internet in another focus group. The participants in both focus groups were asked the same five questions by the moderator. The first four questions were based on the classical life satisfaction or happiness theories, as mentioned above. The opening question was a direct question, asking the participants to describe their happy moments. The next two questions were indirect questions about the purpose and meaning of life. The specific questions were: If today were the last day of your life, what would you like to do? and If the notion of the next life is true, how would you like your life to be in the next life? The fourth question asked was: What is important in your life? The final question is based on a relatively new concept of happiness in life. Specifically, the question asked was a direct one, as follows: What are the values in your life?

Design 2. Internet-based questioning

The purpose of this design was to compare happiness and its causes in relation to the use of the Internet between the eight non-Internet users in one focus group and that of the eight Internet users of at least one year in the other focus group.

The five questions asked of the non-Internet users in the one focus group were as follows:

1. Many people do not use the Internet, whereas many other people use it. You are a person that does not use the Internet. I wonder why you do not use it.
2. Have you ever thought of using the Internet and why? For a person that wants to use the Internet but has failed to do so, the question is, what are the obstacles?
3. Would you like the world to return to the era of no Internet and why?
4. Imagine if you happened to use the Internet, would you be more or less satisfied or happy with your life and in what aspects of life?
5. What are the values in your life?

The six other questions asked of the Internet users in the other focus group were as follows:

1. After you using the Internet, in general, have you been more or less satisfied or happy with your life and in what aspects of life?
2. If you could not use the Internet for a period of time, how would you feel?
3. Has your life changed after using the Internet and how?
4. Has the Internet helped you to express your identity and in what way?
5. What are the values in your life?
6. Does the Internet play any role in relation to the values in your life and how?

Design 3. Interaction-based questioning between the non-Internet and Internet users

The objective of this design was to allow an interactive discussion between the non-Internet users and Internet users in relation to their happiness and using the Internet. Towards this end, interviews with the two focus groups were conducted. Each group consisted of four non-Internet users and four Internet users that had had experience in using the Internet for at least one year. The same seven questions were asked of the two focus groups as follows:

1. As a person that has used the Internet, are you more or less satisfied or happy with your overall life and why?
2. As a person that has not used the Internet, after you heard the people that use it did you feel more like using it and why?
3. As a person that has not used the Internet, are you happy with your life without it and why? In what aspects of your life?
4. As a person that uses the Internet, what would you want to say with those that do not use it?
5. As a person that does not use the Internet, what would you like to say to say to those that do?
6. What are the values in your life?
7. Does the Internet play any role in relation to the values in your life and how?

The total sample of 48 participants in six focus groups was comprised of mainly females (65%). The age ranged from 18 to 65, with an average of 34 years. Most had never been married (63%). Their level of education was mostly a bachelor's degree (52%) and their income was mostly up to 30,000 baht (71%). Their occupations were private employees (46%), followed by private business owners (23%) and students (13%). For 24 of the participants that used the Internet, the length of time of their usage ranged from 7 to 16 years, with an average of 11 years.

4 Results

4.1 Design 1. General happiness approach

4.1.1 Focus Group of Non-Internet Users

According to the participants' words, working was viewed as a source of earning for a living and is a necessity for survival in daily life. It is also a financial resource for buying things or acquiring material possessions in order to follow the trend, for instance, having satellite television, notebook computers. The money earned from work was perceived as more meaningful when it was spent for the family in several ways, for instance, for going out for eating. Savings from the earning was kept for the children's education when they are grown up, and family tended to be the central part of people's lives. A few participants came to work in Bangkok for better earning. If they had a choice, they would go back to their home town in other provinces in order to live with their children and parents. Health in terms for example of being born with all of their organs and being healthy were cherished. Beauty and richness were the things that some of them wanted to have, although one participant seemed to disagree with the desirability of being rich, saying that "The rich are not the ones that can be happy because they only work and cannot be at home with their children, their families. They only seek money. This will not yield happiness, which is a matter of mind. It may be happiness from a materialistic perspective." Relaxation and travelling with friends were two other activities that made them happy. It is noteworthy that being alive was considered as important in itself. When the participants were asked, if today was the last day of their lives, what would you do? their answer, besides being with the family, was that they wanted to find a way to survive. The fear of death seemed to disappear when they thought that they were not the only ones to die—all others will die as well. One of the strategies of making life happy is to let it go.

4.1.2 Focus Group of Internet Users

Many of the participants thought that having good families and friends made them happy. The chance to eat and socialize with friends or travelling with family and friends made up their happy moments. Happiness was making their parents proud of them and the ability to earn a living without having to depend on the family. However, one participant viewed that self was the most important aspect of life because if one takes good care of oneself, that person will be able to take care of and do good things for the other important things in his/her life, including family, career, and relevant others. Additionally, it was doing what one liked that made one happy, not only working for money day in and day out. Another participant thought that his value lay in doing things that he liked. The money and material possessions that he wanted to have could be just at the level to make him live without being miserable. One lady participant added that happiness had to do with people's satisfaction. Another lady said that, "I think the more we have, the more we are miserable because we have to compete. When we are already smart, we want to be smarter. We always want to be better than others." However, wealth and being healthy were perceived as important to happiness for another participant. New challenges and excitement also added colors to life. A good education was another basis of happiness. One gentleman wanted to have an iPhone besides the four basic needs of human being. Another gentleman recalled the time of his youth. He mentioned that he was happy with the toys he got as birthday gifts or the toys from his father when his father came back home from a journey abroad. Another lady said that she would spend all of the money she had shopping for the sake of possessing the brands she wanted, even if it was the last day of her life. However, this lady happened to think that the values of life lay in doing good without expecting anything in return. An interesting remark that came from one

participant was that his happy moments happened when he was fulfilling his goals. He mentioned the three happy moments in his life: (1) when he passed the entrance examination for engineering school, (2) when he got accepted as an employee in an automobile company, and (3) when he fulfilled his dream by being sent abroad by his employer for three years.

4.2 Design 2. Internet-based questioning

4.2.1 Focus Group of Non-Internet Users

All of the non-Internet users thought that it was not necessary for them to use the Internet, and many of the participants that were cleaners did not see the relevance of the Internet in their work. A lawyer also did not see the need to use the Internet because he could consult law books or the documentary files. The lawyer also added that to search the law by flipping through the pages of a book was much faster than having to search by key words on the Internet. Moreover, the new cases that he took were more or less based on similar laws as the old cases. This made his manual search much faster than an Internet search. He further said however that if he invested in stocks he might want to do Internet searches on the international SET index because the television only shows the Thai SET index. However, for the time being, going through the newspaper for the news was sufficient; there was no need for the Internet. When the participants were asked if they have a chance whether they would like to use the Internet or not, they talked about the general advantages and disadvantages of using the Internet. The Internet was viewed as useful for acquiring new knowledge, quick access to information, searching for new fashions, and the recipes needed for cooking. However, the dark sides of the Internet were various, including electronic crime, football gambling, and cheating. In addition, the obstacles to the usage of the Internet were the cost of computers, a monthly Internet connection cost of 600-700 baht, literacy in the English language, and available time. Many participants that were cleaners for a few companies did not have any time left to use the Internet—they had to work long hours, from the early morning until late at night and were exhausted and yearned for the sleep at night rather than using the Internet. A lawyer that was not using the Internet for his work now wanted to use it to search for information in order to answer his youngsters' questions when he was retired and had plenty of time. When the participants were asked whether they wanted to return to the era of non-Internet, all of them said "No." They thought that if we were to return, we would be out of date, left behind, and backward. For the non-Internet users, the aspects of life that tended to be important to their life satisfaction or happiness were income, material possessions, especially fancy cars, and the family or their youngsters. They viewed that the Internet might create happiness in such a way that it facilitated people's learning, getting information, and having access to the broader world, although, they suggested, that if we aim at sufficiency, we can live without it. However, they wanted their youngsters to be able to use it as part of their studies. The values of the non-Internet users' lives had to do with travelling, ethics, doing what one likes, satisfaction with one has, sufficiency, self-reliance, helping society and the nation, in addition to money, work, and good family.

4.2.2 Focus Group of Internet Users

After having used the Internet, in general, all of the participants were more satisfied or happy as compared to before using it. They could search for the information they wanted to know and broaden their perspectives. Basically, they could perform their tasks more easily with the Internet. For instance, for one R & D person, he could search for new information from research papers, and for a dealer, she can place orders easily through the Internet, and the task of attending meetings could be done through video conferences using the Internet without having to travel far. One person that worked for a logistics company could track shipments by

DHL or Fedex. One could chat with relatives that were abroad. One lady liked the Internet very much because she could connect with her old friends from primary school, secondary school, university as well as her friend up-country via Facebook. Another lady quite liked the idea that the Internet enabled people that liked similar things to form a group, for instance, a SET trade group for investors in the stock market, a group of Korean movie fans, political groups of yellow shirts and red shirts, a car group, a camera group, a travel group and a fashion group. For education, one student said that she could search for information through the Internet instead of going to the library and borrowing books. He can get and submit the assignment to the professors as well as register for courses through the Internet. He can work in a group with his classmates through Storage, Drop Box and share files on the Internet. One gentleman uses the Internet for entertainment by watching movies or YouTube instead of buying CDs and DVDs as before. Another lady followed the footsteps of one forerunner in visiting the Art in Paradise gallery while travelling to Pattaya because of the information she got from the Panthip website. A female marketing officer that did not have much time left from her late work bought things online from eBay at bargain prices. Another lady made use of the Internet by posting the sale of her family land on it. In addition, it was viewed that the news from the Internet was updated frequently and that we did not have to wait for watching TV news or rely on the newspaper. In this way, it helped alleviate the global warming problem as well.

To the question, "If the Internet were out of order temporarily, how would you think about life without it?" one gentleman answered immediately that his time would be more available. Nowadays, after his work, most of his time is spent with the Internet. He wonders what he would do without the it. Many people thought that they would have to go back to the basics and use the telephone and fax instead. However, it would cost more for travelling, and for paper and copying. It was thought that it might not be that convenient going to the library again. Additionally, the connection with work and friends would be disrupted. The negative impact would be more difficulties in working. However, it would be even more positive for private life because there will be more time available for other enjoyable activities, including, spending time with family, reading books, and doing exercise. One person said that one just has to open the Internet or Facebook even if she does not do anything with it.

In the old days, when the Internet was not easily accessible, especially up-country, it was rather expensive and slow, and it was not seen as important. These days, the Internet has wide ranging coverage, and is much cheaper and faster, and that makes it more important for people's lives. After the introduction of the Internet life has changed in many ways, as mentioned earlier. Basically, it has enlarged people's world, for instance, from the world of the library to the unlimited world of searching for information in cyber space. Communication and chatting among friends tended to be wider and more frequent. However, the drawback was that with the Internet, the time available for face-to-face conversation with friends and travelling with friends seemed to be disappearing. One lady even added that when she chatted with one of her friends over the Internet, her friend seems to be talkative. However, when she actually met the person, that friend seemed not to be so expressive. One gentleman said that when he was in primary and lower secondary school, a period without the Internet, he did a lot of exercise by playing badminton, and playing table tennis and tennis. While he was in upper secondary school, a period with the Internet, he did not do these exercises. After the class, he went to an Internet café in order to play online games. Many participants did not think that the Internet was a tool for them to express themselves or to reveal their identities because they did not like to update their status on Facebook. They rather preferred to read their friends' updated status about what their friends liked, thought, felt, and did.

The values of the participants' lives tended to lie in their employment, family, and the gratitude expressed to their parents by taking care of them, being good, not causing the trouble for others, and helping others. In addition, goal attainment was also a value in a person's life. One gentleman was happy because he could achieve his goal of becoming an engineering student and he was striving for his next goal of getting a good job.

The Internet is related to the values of life in such a way that it helped one participant achieve her work goals by searching for needed information, such as comparing promotions of a company with those of competitors. Additionally, the Internet played a role in helping others, for instance, announcing the donation of a rare blood group for children, and asking for volunteers to help flood victims. The positive role of the Internet on the values of life should not be overstated. Some participants thought that happiness is something that comes from within; it is in ourselves, not in any other outer things like the Internet. We are happy when we feel that we are a part of the society. Without the Internet, we are still a part of the society. The Internet may make life easy; however our behaviors are shaped by the family, including parents, brothers, and sisters.

4.3 Design 3. Interaction-based questioning between the non-Internet and Internet users

4.3.1 Focus Group 1—the mix between non-Internet users and Internet users

After having used the Internet, the users expressed various perspectives on their life satisfaction or happiness. Basically, the Internet did not have any direct impact on life satisfaction or happiness. It may have made people feel much happier because it their lives much easier, for instance, checking for the show time of movies before going to the cinema. One can get updated news through the Internet, which made them more alert to the environment. One gentleman specified that his happiness lay in being with the family, spending time with loved ones, and eating and travelling. To him, the mobile phone had more impact on his daily life—he was more willing to sacrifice the Internet than the mobile phone. In addition, one lady seemed to enjoy shopping through the Internet. She was quite happy with her buying brand-name products from abroad with special discounts of 30-40%. For the non-Internet users, it seemed that for them the Internet was not necessary and not an important factor in their lives. They even mentioned an obstacle of using the Internet in that oftentimes, the Internet disconnects due to the rain. Dark sides of the Internet were cited; for instance, inappropriate information can be accessed by the children because of no filtering system. The children read books less often, were less interested in learning, and spent less time with the family. The happiness of non-Internet users tended to lie in being with the family, playing badminton with the children, doing exercises, watching TV, listening to music, going to the cinema, and eating and travelling. Happiness was viewed as a matter of mind. Basically, it lay in the family. If the children have to use the Internet as part of their education, the parents were willing to pay in order to buy computers and connect with the Internet. One lady stated that the "Internet is a form of business—a business that delivers convenience to people's lives." The Internet was perceived as unnecessary because she preferred to watch television and read books.

According to the part of the interview that asked the Internet users and non-Internet users to talk with each other, one Internet user began by citing an advertisement on the television that addressed the issue of a young boy in a rural area eventually teaching his old father how to sell rice through the Internet after he was asked earlier that day about what he was doing with the Internet. Another issue which some other Internet users wanted to point out was the use of Skype to communicate abroad or long distance. It was stated that it was useful because it saved money as compared to calling, and with a regular phone call one could only hear the voice. Skype allowed the caller and the other person to see each other's faces, which was

better for conveying feeling to each other. However, the non-Internet users tended to be concerned with the dark sides of the Internet, for instance, crime over the Internet and the killing that happens as a consequence of youngsters playing games over the Internet. Additionally, there was a caution that those using the Internet should be people that can allocate their time well. Otherwise, the Internet users might be addicted to the Internet and use it all day long.

The values of life for both Internet and non-Internet users seemed to be connected with the family, going back home in up-country, doing good, making oneself worthwhile for the family and society, and not doing any harm to others. One non-Internet user said that, “we cannot choose how we are born but we can choose what we do. If we are satisfied with what we have, we will be happy.” Another Internet user that worked with a multinational company mentioned that her company allows her to work through the Internet at home so that she can be with the family. Hopefully, this will create a better work-life balance. The Internet was viewed by one non-Internet user as delivering values to life in such a way that it enabled an elderly lady in the neighborhood who could not go to the temple to get access to prayer and the Buddha’s teaching.

4.3.2 Focus Group 2—the mix between non-Internet users and Internet users

After having used the Internet, the Internet users felt much happier because they could get the needed information in a more convenient and faster way, especially for both the students and faculty members. One faculty member mentioned that his happiness came from the success in his career. The information from the Internet helped him plan his teaching. A lady participant said that the Internet could answer her questions. One Thai person, who is now studying in Beijing, even talked about the convenience in ordering McDonald’s through the Internet. However, he thought that the Internet was just one part of his life and did not like to be with the Internet for too long. He also liked to be relax by doing some other things, for instance, sleeping, and playing with the dogs. However, basically, the non-Internet users did not use the Internet because it was not necessary for their work. One non-user could not type. If she wanted to do anything with the Internet, she either asked others or her own daughter to do it once in a while. Regarding communication, the non-users rather used the telephone, and they got the news from the mass media and books. The non-Internet users found happiness in their own ways. One non-Internet user enjoyed playing sports and said that “With the connection with the outer world, the Internet users may know more. However, we are happy in our narrow world. We are happy with what we do.” Another non-user was happy with cooking for her children, reading books, listening to music, and watching TV. Further, her eyesight was not quite right. Being with family members, as well as travelling with them, tended to be the activities she cherished. One non-user seemed to be happy with her self-improvement through her application of newly-encountered experiences in her daily According to the sharing among the non-Internet users and Internet users, one Internet user thought that not using the Internet, especially when it as not necessary, as good. One lady said sometimes, we spend too much time using the Internet. We should skip it sometimes. Otherwise, it becomes an addiction. Another user added his comment that using the Internet will not be a waste of time if we use it in a beneficial way for ourselves and others. This will make us happy. According to the Internet users, one advantage of using the Internet for communication, whether it was through Line, Whatsapp or MSN, it can be much cheaper than calling. However, one non-Internet user noted that she did not spend a lot of time calling. Generally, her talk just got right to business right away. Another non-Internet user invited the Internet users to play sports and not play computer games like her boss. She even commented that her boss wanted to play games only and did not want to use the Internet for his work.

The general values of life of both non-Internet users and Internet users were success in one's career, working, being with the family, the happiness of one's parents and the loved ones, making customers smile, being moderate, doing good, and contributing to society. The relation of the Internet to the values of life was equivocal. Some of the participants thought that as long as the Internet helps us to achieve our goals, it does exert a positive value in our lives. However, some other persons thought that, as non-Internet users, they have been happy even without the Internet.

5 Discussion

It is noteworthy that many non-Internet users had lower income, lower education, and came from rural areas. One non-Internet user yearned to go back home in the up-country because it was quiet, unlike Bangkok, which is noisy, with a lot of cars and traffic. She would rather listen to the sound of birds. The rural people tended to be close to nature and cherished it more. In addition, they enjoyed the slower life of the country instead of the busy life of the city. Additionally, the life of the person that lives in an urban area, including Bangkok, tended to be more competitive and to rely on the Internet as a tool for making their lives easier.

The Internet can be used as a means to a happy life—it is not an object of happiness in itself. To name just a few advantages, it can provide information access at the speed of light; it can make the communication, whether it be for work or social life, wider and cheaper; and it can even entertain people via computer games. In addition, some people even enjoy their shopping online because they can get bargain prices. In short, the Internet has an indirect effect on creating the happiness of the users through its impact on their satisfaction with various domains of life.

With the global influences of the Internet, the lives of Internet users tend to be broader; they seem to encounter more things in cyber space. Sometimes, the impact of the Internet is rather negative, for instance, crime, and violence. However, Internet users tend to be happy with many more aspects of their life, including family, social life, work, income, material possessions, and self and society, whereas the non-Internet users seem to be satisfied with fewer aspects of life, including family, income, recreation, and work and society.

Happiness is a matter of heart. People will be happy as long as they are satisfied. It does not have to be worldly possessions. If having more is better, people may not end up being happy. People should be happy when they already have what they want. However, as a matter of fact, oftentimes, they even want more. This creates an escalation effect. On the other hand, people that have less may be quite happy because they do not want much to begin with. Sufficiency is a key to satisfaction and satisfaction is a key to happiness. That is why some people use the word happiness and satisfaction interchangeably.

The Internet tends to play a role in people's lives in many aspects, whether it be work, social life, or recreation. On a daily basis, people may end up spending a lot of time in front of the computer. In working with the Internet, people are expected to respond to e-mail requests quickly, and therefore they may have to work extra hours to cope with such a demand. Additionally, they may socialized with the friends through social networks and even play electronic games. Their lives will be built around the Internet, and this may not be so healthy. It will be better if they can find time to do physical exercise. In addition, oftentimes, people overuse the Internet until they cannot find time to be with their partners, parents and friends. The youngsters may even get addicted to games until they cannot be with the parents, and the husband or wife may spend their time using the Internet and be in a private world rather than being together. Friends may chat over the Internet, even though they are together in a restaurant. The time with the Internet will replace the time spent with other people face to

face. Some people may chat with friends copiously over the Internet and keep silent when meeting friends face to face. If people spend too much time over the Internet, they may lose touch with reality and end up unhappy with the real world.

Internet users and non-Internet users tend to focus mainly on the family. However, when the question of values of life was asked of the participants, it was not as philosophical as one might have thought. The values of life idea seems to be a concrete concept about life. All of the participants answered the question about the values of life right away. Unlike the classical theory of happiness, the values of life theory is viewed as something larger than self and family—it is the contribution to society that makes people's lives worthwhile.

6 Conclusion

The Internet is not an end of happiness in itself; it is a tool for making life easier. It is likely to have an influence on life satisfaction and happiness mainly through satisfaction with various domains of life. Non-Internet users and Internet users have their own ways of achieving satisfying lives and being happy. Non-Internet users seem to be satisfied with fewer aspects of life, including family, income, recreation, and work and society. However, the Internet users tended to be happy with many more aspects of their lives, including family, social life, work, income, material possessions, and self and society. Taking a classical theory perspective, both non-Internet users and Internet users seemed to be satisfied with their lives mainly because of family. On the other hand, from the value of life viewpoint, the people in this study thought that their lives will be worthwhile if they can contribute to the society. On a more general note, the convenience generated from using the Internet in daily life, as well as in achieving the goals of life, is likely to lead to a happier life. In addition, happiness has to do with how we deal with lives. If we aim at sufficiency, we will have a greater chance of being happy.

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ICT and Social Media Technologies' Impact on Business Modelling

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***Abstract:** In today's business landscape, the changing external business environment has far greater impact on corporate strategic planning than ever before. The changes can be mostly accounted for two major trends, namely the advances in Information and Communication Technologies (ICT), and Social Media. This paper presents a framework for analyzing the impacts of consequent globalization, connectivity and consumer preferences on corporate strategic planning and business modeling. The paper discusses the less discussed need for companies to develop strategies for influencing the business environment and demand side through participation in international regulatory and technological development initiatives, and adjusting supply side business models according to thus emerging opportunities. The paper elaborates the argument through a framework for corporate positioning towards standardization and regulatory work and social media. The paper's main contribution is the structured framework for consequent corporate planning and business modeling.*

Keywords: Business Models, ICT and Media Technologies

1. Introduction

Today's business environment changes in an unprecedented rate and with an intensity that cannot be forecasted based on historic data and trend analysis (Brian, 2002). This unpredictability and inherent risks call for new types of sense making and controlling mechanisms from the companies. In order to stay abreast the globalized competition, companies must closely follow technological development and regulations in their field, and anticipate changes in consumer preferences. For many companies this means increased investments in research and innovation activities (Bee, Winston, Roberts, 2007). The most successful companies are those who are able to capitalize on these investments, and re-define corporate strategy and business models building on the research and innovation inputs.

The driving forces behind the rapid changes can, for the most part, be accounted for advances in information and communication, and technologies (ICT), and media. The mega trends of the 21st century, including globalization, mobility, social media, gaming, as well as environmental awareness and urbanization, all boil down to two drivers: adaptation of advanced ICT technologies and media. Technological enablers including mobile payments, internet connectivity, open standards, social media and access to public data all contribute to the changing rules of the game, and create completely new business opportunities, revenue models and service configurations. Companies must define their business models based on their positioning towards these developments and innovations, whether technology shapers, early adapters or followers.

In business model literature value creation models through technology innovation, diffusion and adaptation are frequently studied areas (Chesbrough, Rosenboom, 2002), whereas the companies' strategies to influence the technology development, standardization and customer preferences remain less studied areas.

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This paper contributes to this identified gap in a research by proposing a holistic framework for corporate business model planning based on their positioning towards technology innovation, adaptation and industry standardization. It further discusses the capabilities, networks and structures required for creating, delivering and profiting on the created customer value.

2. Literature Review

There is an emerging interest towards the impacts of advanced ICT and social media technologies on business models in the corporate sector and academia alike (Linden, 2013), but the theoretical foundations in both domains are still to be thoroughly grounded in business and economic literature. The most recent literature links them to organizational change theories (Williams, 1999). The leading academics in business model research (Rosenbloom, Chesbrough, Amitt & Zott, Teece, Porter), however, agree on the elements of the business model, and thus a definition can be drawn.

Business model describes the design of the company's value creation, delivery and capture. It identifies corporate value proposition, market segments and positioning towards competitors and partners.

Business model can be considered to reflect management's hypothesis about what customers want, and how the company can make profit by fulfilling these needs. The focus is on new, technology and media enabled models, and thus the focus of the paper on innovations. In this paper we approach the business models by separating demand (customer requirements, preferences) and supply (innovations, services, technologies and organisations required to fulfill the need) side sub-constructs for innovation. Special emphasis is given for customer engagement for optimizing service experience and fit, as well as innovation networks. Open interfaces and innovation models are highlighted in this context, since in the field of ICT development openness and crowdsourcing are the prevailing mega trends.

2.1 User-Driven Innovation for Exploring Demand

User-driven approach is commonly understood as the process of collecting demand side information and consumer trends by engaging consumers and end-users into a collaborative process. However, in order to derive sustainable benefits from user driven development, companies must deploy also the supply side structures and operational models that are required to support user-driven product and service ideation and development processes (the whole service delivery chain). Despite the obvious benefits of user engagement, several challenges have been identified, arising from wide variety of concerns relating to controllability and quality of user-driven inputs. Committing to user-driven approach for long term requires major investments, as well as changes in competences and mindset in companies.

However, since customers today expect to have more control over the product offering and play a bigger role in product development, adjustments must be made. The trend is accounted for the ease to access data, higher education and the assimilation of user preferences through the diffusion of ideas in social media. Social media further enables the emergence of completely new business opportunities and product coupling by offering a new channel for service delivery and development. Therefore there is an emerging field of research trying to use social media content to investigate the company's profile and innovation performance. Practically by accessing historical data of social media websites like Facebook and twitter, and do a sentiment analysis in a certain time period. The impacts of the media are significant,

and smart measures and indicators need to be developed to quantify these impacts.

2.2 Fulfilling the Demand through technology Innovation

User-driven paradigm is closely related to decision support systems design (Keen, Scott-Morton 1978; Keen 1981) and open innovation paradigm (von Hippel, 2005), which builds on the basic assumption that current demand and consumer needs are too complex for a single organization to fulfill, and thus require an external resources for finding new ideas, developing new products or services, and commercializing them. In networked service creation and delivery the companies need boundary objects that link the actors together, and define each organisations' role and position in the network. Technology standards often act as such objects (note Android, windows, google). The companies must develop positioning towards the dominant standards, and develop their supply side business models accordingly. Industry leaders' typically participate actively in industry development in technological, political and economic front. This gives them the first mover advantage in the selection of dominant standards.

Recent research on technology diffusion (Keller) suggests that adaptation of new technologies or standards require adjustments in the corporate business models, and thus have significant managerial implications. The new technologies also open new avenues for entrepreneurs and small and medium size companies. The companies can tap to larger companies supply chains by offering specific technologies and solutions. The concept of open innovation networks builds on the assumption that new methods, strategies, business models and increased level of user involvement are needed in order to achieve a better success rate for service and product innovations. Yet the recent experiences in that respect have proven that in such open or networked innovation environment, stakeholders are confronted with a number of specific challenges related to lack of competences, diverse expectations and cultures, conflicting public and private objectives, various measuring and benchmarking methods, as well as to obstacles in interoperability and integration of solutions.

3. Research Methodology

This paper builds on a hybrid research design. The hybrid research design is a combination of analytic and empiric research methods. The data for the paper is collected in a literature review, building on the existing body of knowledge in the selected fields of research (user-driven development, networked innovation), and synthesized the context of business model research. In addition to literature review, the paper further draws on the author's analysis of empirical data accumulated over the years in the European Union funded innovation and policy support projects under the Directorate General Information Society and Media (since 2012 DG Connect). The analyzed cases include the Open Data Smart City initiative Service Development Kits (SDK), Future Internet Public Private Partnership (FI PPP) and Future Internet Research (FIRE) initiatives.

4. Main Findings

In the current business landscape the companies must actively combine strategic planning with business model design. Companies must plan strategies for positioning towards external industry development on both supply and demand sides. On demand side the companies opportunities to influence demand range from the traditional means of technical standardization work and price incentives to ecosystem planning, customer engagement and social media presence. On supply side the partner networks and decisions on position in the

value chain will be the main factors impacting corporate business model and value proposition.

The proposed framework emphasizes matching company's internal processes, tools and capabilities with those of the users or collaborative partners as critical success factors in R&D process in an extended enterprise environment. Proactive companies that work in the forefront of the industry development have the ability to sense, collect, organize, process, and maintain information effectively over its' life cycle, and use it for building competitive advantage. Innovation management is included in corporate strategic planning and systematic process reviews. The complex networks of relationships, processes and technologies are divided into controllable segments.

The framework below lists the impacts of the selected positioning towards industry development to the company business model on both demand and supply sides.

Positioning:	Proactive Influencer Strategy	Follower Strategy
Strategy:	Active contributor to industry standards and policies Actively engage with users and customers Anchor firms for SMEs, developers in ecosystems	Follow development, apply standards, comply to policies Agile adjustments to emerging opportunities tapping on anchor firms ecosystems
Examples:	CISCO, IBM, SAP, google, Apple	Small and Medium Size Companies, application developers, entrepreneurs
Impacts to Product Portfolio	Business Model: Portfolio of technologies in different points of lifecycle Radical innovations Building on first mover advantages Building ecosystems around core technologies and solutions	Business Model: Building on dominant standards Capitalizing on investment for a limited period Incremental and process innovations New products launched in rapid cycles
Impact to planning	Anticipate the new standards, long term approach and commitment Focus on sharing the standards, open interfaces	Short term planning, reactive IPR protection
Impacts to organisation	Dynamic capabilities approach Networked service creation Continuous search for new partners Focus on technical work	Specialized skills, niche competences In-house development Investments in marketing

Impacts on Capabilities	Outsourcing non-core activities	emphasized
	Network management capabilities required	Managerial competences can be outsourced
Impacts to Innovation	Innovation maturity	
	Active participation to large scale international initiatives, radical innovations	Focus on short term incremental development, small scale projects
Impact on Media strategy	Active knowledge based contributor in social media	Marketing and branding in social media
	Opinion shaper	Promotions

This framework is intended to describe the impacts that corporate positioning towards external market and industry development play on their corporate planning and business model design. The classification helps companies to understand the various direct and indirect impacts of the positioning, and help them make informed decisions on where they wish to be positioned.

5. Conclusions

The paper discussed the impacts of ICT technology development and media on today's business landscape, and consequent pressures for companies to adjust their planning and operations to respond to the changing business ecosystems and customer preferences. The main conclusion was that companies must make informed decisions on where they are positioned towards industry shaping technology developments and shaping consumer preferences, and plan their strategies and business models accordingly. A framework to support planning based on a literature review and European Commission funded research projects was presented. Further research and practice would be needed to improve the explanatory power and wider applicability of the model through case examples and more detailed categorization of companies.

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