

The Spectrum of e-Business Maturity in Australian SMEs: A Multiple Case Study Approach to the Applicability of the Stages of Growth for e-Business Model

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Abstract

As a part of ongoing research to look at the pragmatic value of the stages of growth concept to map the progression of e-business maturity, this paper describes some of the empirical findings of a qualitative study into the progression and maturity of e-business in small and medium enterprises in Australia. In particular, the paper discusses the progression of e-business initiatives in three different companies at different levels of IS/IT maturity and the applicability of the stages concept in describing their progression. The cases presented in the paper clearly reveal that the IT managers and the CEO of the companies involved in the study responded favourably when using and applying the stages of growth for e-business (SOGe) model to their e-business experience and had no trouble in using the stages model to chart and identify the “evolution” of their e-business initiatives.

Keywords

Stages of growth, e-business maturity, multiple case study

Introduction

In order to create an effective e-business strategy, an organisation needs to take account of their past, current and potential involvement in e-business. In this regard, amongst other things, stages of growth models can be particularly useful in assisting and providing a roadmap of increasingly mature and sophisticated e-business initiatives. Although many stages of growth concepts and models have been proposed both by consulting firms and the academic community, little research has focussed on the pragmatic value of these models in analysing the progression of e-business within an organisation. Hence, by analysing the cases in this paper, we seek to provide further insights into the pragmatic value of the stages of growth model in explaining the evolution of e-business.

The concept of stages of growth

Nolan's stages hypothesis (Nolan, 1973; Gibson & Nolan, 1974) first appeared in the 70's, bringing with it a series of debates and arguments on the validity and viability of the stages concept in the area of Information Systems. Although regarded as an attractive model to explain the progression of IT in organisation, Nolan's stage hypothesis raised great concerns as it lacked of empirical validation (King & Kraemer, 1984, 1987). Further research based on Nolan's stage hypothesis has resulted in inconsistent and conflicting findings in attempting to validate Nolan's hypothesis (Benbasat et al., 1980). It was argued that the stages hypothesis proposed by Nolan lacked details and explanation, making it hard to be verified and validated empirically (Goldstein & McCririck, 1981; Drury, 1983; King & Kraemer, 1984). However, it is important to note that none of the findings utterly rejected the possibility of a stage-like progression in the maturity of IS/IT within an organisation (see Lucas & Sutton, 1977; Benbasat et al., 1980; Goldstein & McCririck, 1981; Drury, 1983; Kazanjian, 1988), and indeed, some researchers indicated that the stage of growth model is useful and widely adopted by academics and practitioners alike (Goldstein & McCririck, 1981; King & Kraemer, 1984; Nolan, 2001) to describe the typical development patterns of organisational information systems (Benbasat et al., 1980; Saaksjarvi, 1985; King & Teo, 1997). This claim can be seen by the emergence of several stages of growth model such as those of Earl (1983), Bhabuta (1988), Hirschheim et al. (1988), and Galliers & Sutherland (1994).

More recently, with the emergence of the Internet and e-commerce, several stages of growth models were formulated to describe the various phases involved in moving towards greater sophistication with respect to the use and management of IS/IT in the new e-commerce environment. Amongst these are the E-Commerce Maturity Model (KPMG, 1997), the Commitment-Implementation Matrix Model (Stroud, 1998), the E-Commerce Levels (O'Connor & Galvin, 1998), the E-Business Lifecycle Model (Berryman, 1999), Intranet Maturity Model (Damsgaard & Scheepers, 1999), and the Stages of Growth for e-Business (SOGe) model (McKay et al., 2000b; Prananto et al., 2002a; Prananto et al., 2002b). Thus, it can be concluded that although empirical validation of the concept of "stages" is limited, various stages model have frequently been used to support understanding of increasing maturity of IS/IT.

Aims of the Research

The cases presented in this paper are part of the results of a broad research project investigating the pragmatic value of stages of growth concept in explaining the progression

of e-business. More importantly, with regards to the stages approach, the research project seeks to understand how organisations plan for their e-business initiatives by learning from their past experiences and assessing their current involvement and ability to implement e-business. Hence, the aims of the case studies can be summarised below:

1. To understand how management conceptualise their experience in e-business and whether that conceptualisation can be realised in a stages-like progression
2. To assess the applicability of such conceptualisation in determining future e-business initiatives
3. To determine the adequacy of description of the stages and the stage-variables proposed in the research

Research Design

The overall research comprised three major phases of empirical research. The first was the preliminary research, utilising an in-depth case study approach to test the research constructs and to reformulate a tentative stage model developed based on various literature on IS/IT and organisational maturity (see McKay et al., 2000a; McKay et al., 2000b). The result of the first phase is the “refined” Stages of Growth for e-Business (SOGe) model, including a description of each stage’s characteristics as indicators of relative maturity of the organisation with respect to its IS/IT. The second phase was a survey (refer to Prananto et al., 2002a; Prananto et al., 2002b), aimed at validating the SOGe model and to collect other data that may explain the progression (or regression) of IS/IT within an organisation. The third and final phase involved a multiple case study approach. The aim of the last phase is to explain how organisations (represented by its IS/IT managers and/or business managers) progress with regards to their IS/IT and how they perceive the usability of the SOGe model to chart their progression and assist them in determining the “next phase” of their e-Business initiatives.

Using theoretical sampling (refer to Glaser & Strauss, 1967; Eisenhardt, 1989), eight organisations were identified to represent each spectrum of the SOGe model. However, due to word limitations, this paper only presents three cases to illustrate the e-Business progression and the applicability of SOGe model in assisting the managers to chart their e-Business initiatives. These cases were selected based on their representation of three different stages of maturity and the different circumstances enshrined their e-business initiatives.

The interviews for the case studies were arranged after the key participants had been identified. The key participants are the highest-ranking personnel in the organisation directly involved in the formulation, development, and the implementation of e-business initiatives within the organisation. In most cases, the key participants are the IS/IT manager of the organisation. Other participants include the CEO and the financial manager of the company.

In a series of semi-structured open-ended questions, the participants were asked to describe the progress of their e-business initiatives over the years, as well as their future initiatives, focussing on their planning activities, staff and management involvement, and impact of the initiatives to the organisation. Great care was taken not to reveal the concept of “stages”, thus, limiting the possibility of framing, engaging and even leading the participants into thinking in terms of stages-like development when describing their e-business progression and future initiatives.

In the second part of the interview, participants were asked to examine the stages model depicting the description of the stages (refer to appendix A) and to discuss the relevancy of the model with their e-business experience. Finally, the participants were asked if they were able to chart their future e-business using the stages model. It is important to emphasise that the participants were encouraged to express any disagreement, even partial agreement and/or disagreement with certain elements of the stages description, or any concern over description of the stages and its characteristics.

Case 1: RubberCo

RubberCo is a medium size manufacturing and distribution company established in 1960s. Its primary activities are producing and distributing rubber products and equipments, mainly catered for, but not limited to, the mining and mineral processing industry. Although the company is a subsidiary of a UK-based chemical company, RubberCo enjoys a large degree of freedom in its operation without much interference from its parent company. This freedom extends to the IS/IT related initiatives and decisions made by RubberCo's headquarter located in Melbourne. Such initiatives are often considered as test cases for the parent company and its subsidiaries elsewhere in the world, include the company's recent involvement in the e-marketplace.

In February 2002, the management decided to join Quadrem, an e-marketplace created by the top 20 mining companies. The new IT manager, who recently joined the company, realised that they would not be able to trade efficiently using Quadrem caused by the lack of readily available electronic version of their product catalogues, the lack of processes to support online trading, the culture of marketing and sales staffs who favoured a more "traditional" way of conducting transactions (i.e. fax and phone orders), and the lack of integration of the company's front-end and back-end systems.

The IT manager then spearheaded the idea of developing a comprehensive system that would allow the company to automate and streamline the trading process from the front-end to the company's ERP back-end system. The system is intended to be able to handle order request, streamline the request to the ERP system, and responds automatically to the prospective buyer without much intervention from staff members. The system was intended not only to handle Quadrem transactions but also other transaction, such as email-based order requests. The idea was first met with resistance by several board members, citing "cost" and that "the company has been running well with the current system". However, after a series of meetings outlining the project plan and the cost benefits analysis of adopting such system, the IT manager finally managed to convince the board to commit a substantial investment to (re)build RubberCo's IS/IT operation to enable an automatic and seamless information and order flow from both its 'traditional' trading partner and Quadrem.

Due to the limited resources of the IS/IT department (the IS/IT department consists only 1 IT manager with a couple of casual staff), the decision was made to outsource the development of the system to a systems consultant rather than developing the new system in-house. This decision, argued the IT manager, would allow for a faster development and deployment of the new system, while minimising the risks for the organisation. The outsourcing decision also made it possible for the IT manager to focus his attention in "preparing" the staff and management of the organisation for conducting e-business with the new system.

Eight months after development commenced, the back-end system was finally ready and was launched without any significant problem. The second stage is currently underway to

complete the front-end systems and integrate it with the back-end systems. The final phase is to link the systems directly to Quadrem's trading environment as well as RubberCo's other trading partners. A proposal was brought forward by the IT department to the board of executives to encourage such partnership linkage by providing a trading discount to those partners who trade with RubberCo using the new electronic trading system.

Perception of SOGe

After a brief evaluation on the SOGe diagram (refer to Appendix A), the IT manager straight away identified RubberCo's position at "between stage 4 and 5", commenting:

"Looking back, when I just started in this company, they were at stage 2... quite obvious when they jumped to e-marketplace without proper infrastructure and preparation. From then onwards we moved to stage 3... i can see that we are at stage 4 now, but we are moving towards stage 5 which is the integration of our systems, the new front-end and our current back-end systems, with our business processes... so we are moving rapidly, very rapidly from the past 8-10 months from having almost nothing, to what we have currently. ... Stage 6 is what I told you earlier, with the initiatives to link our systems with our trading partners, but it's a long term thing, that will involve a major consideration and us sitting together with our partners to smooth things out... but we will get there, we are getting there".

In terms of the characteristics, the IT manager described the organisation as being in stage 4 in terms of its strategy, a mixture of stage 4 and 5 in e-business systems, and "a definite stage 4 and moving towards 5" in impact on business processes. In terms of staff arrangements, the IT manager conceded that although it seemed that the organisation was in stage 4, the help from business-oriented staff is currently very limited, hence it does not quite fit the exact description of the staff arrangement characteristic of stage 4.

Overall, the IT manager found that the model was easy to understand and provided an accurate description of the organisation's path of e-business development and agreed that it might be a useful tool in planning e-business strategy, as it seems to provide a "template of progression". One of the values of such model, according to the IT manager, is the ability to stimulate:

"further discussion on what might be required to advance to the next level"
and to:

"facilitate discussion between the IS/IT people and the management, as it also discusses about strategy, staff, and impact on the business processes, and not just looking at the development solely on the technology – IT perspective, but rather on a wider, organisational, perspective".

Case 2: CleanCo

Established in 1970, CleanCo is a manufacturer of household and bodycare products. Although most of its products are destined for the Australian population, CleanCo exports some of its products to New Zealand and several other South East Asian nations. Some of its major customers within Australia are Woolworth's and Coles' supermarkets.

The IS/IT department has been regarded as a cost centre by the organisation and received very little funding prior to 2000. Due to limited funding, the IT infrastructure which had been

built in the mid-1980s, slowly crumbled, causing major difficulties for the entire organisation and increased irritation and hostility towards IS/IT. The situations worsened when the IT manager resigned in 1997, leaving the already disarrayed IS/IT.

The increasing requests for a straight-forward electronic transaction by two of its major customers, and 'lured' by the prospect of conducting a more efficient and profitable transactions by adapting e-business, in 2000 the management finally invited an IT manager to fill in the vacant position. After conducting a thorough evaluation and systems audit, helped by a consulting firm, the IT manager recommended that the entire IS/IT systems and infrastructure be "overhauled" and replaced entirely with a new and more adaptable system. Realising the resources (and investment) needed to establish a full-blown e-business activities, the board of executive decided to defer the company's e-business initiative indefinitely.

The 5 years plan, dubbed the "IS/IT Directive", adopt a piecemeal approach, starting at rebuilding infrastructure and confidence towards IS/IT, increasing the exposure of IT in business, building a bridge between business and IS/IT, and finally building strategic business applications.

The first 1.5 years was dedicated at major restructuring and upgrading of the entire IT facilities and infrastructure, while at the same time trying to increase confidence and awareness of IT potential to the entire organisation. Several informal and adhoc approaches were conducted to convince the management and business units manager of the possibility and prospect of using IS/IT to improve and innovate the way the organisation conduct its business. Currently, after the second year of the IS/IT Directive, the organisation has a reliable IT infrastructure, a restored confidence in IT, and management has slowly taken interest in the development and progress of the IS/IT. Conceding that the organisation still has "a long way to go" with regards to its e-business initiatives, the IT manager is confident that when the management finally aware of the full potential of IS/IT to improve the efficiency of the business, the time will come for them to implement a full-fledged e-business initiative.

Perception of SOGe

Drawing a comparison between the IS/IT Directive and the SOGe diagram, the IS/IT manager concluded that CleanCo is presently at stage 2 of the SOGe model, with a "tinge" of stage 3 as currently there is a clear direction for IS/IT with the IS/IT Directive. Expressing interest at the SOGe model, the manager made an interesting remark about progressing in clearly defined stages:

"... I found it helpful to progress in such (stages like) manner, it allows me to concentrate and focus on a specific task at one time. It is also easier to deal with the management as I can go to them at the end of each phase and tell them what I've done ... do some sort of evaluation, let them see and feel the benefits ... hopefully make them to be more involved and interested in the next phase... When you are dealing with somebody who is uncertain about the role of IT but hold the key to the vault, it is easier to go step by step to convince them."

In terms of strategy, the IS/IT manager indicated that the organisation now has a formal strategy for its IS/IT, which put them in stage 3 of the e-business strategy characteristic of SOGe. Although currently CleanCo is at Stage 2 for its e-business systems, the IT manager is

hopeful to progress to stage 3 when the business starts taking more interest in IS/IT. At the same time, the organisation is currently at stage 2 of the SOGe model with regards to its business processes.

The IS/IT manager went further to use the SOGe model as a prescriptive model to chart CleanCo's potential and future e-business goal.

“going to stage 6 will be our main goal, strategic and long term... it will be beneficial for us, but we have to go a long way before implementing such [system], as rightly shown in the diagram... to do it properly we have to consolidate all our systems, manufacturing systems etc, other processes before we can connect to our suppliers/customers..”

Case 3: CaliCo

This case focuses on a company whose core business is in the distribution and calibration of sensitive engineering and measurement equipment. Established in the early 1970s, CaliCo, undertakes two major activities, the distribution of engineering equipments, making it a middleman for manufacturers of engineering equipments. This engineering and measurement equipment, need to be tested and calibrated before being used. The calibration of this equipment constitutes the second major activity of CaliCo.

IS/IT has been one of the vital elements in the company's business. In the early years, IS/IT was utilised mainly to store suppliers', clients' and equipment data. Over time, IS/IT became more intricately woven into the company's business as CaliCo started to integrate their measuring and calibrating equipment with its computer systems, increasing the efficiency of the measuring and calibrating processes and eliminating any redundant data entry, thereby eliminating any human error in the transfer of data between the measurement and calibration equipment to the computer system. This constant engagement in the development of IS/IT within the company can be contributed to the owner/CEO and the IT manager of CaliCo, who realised that IS/IT and business must establish a mutual symbiosis in order to be efficient and be “one step ahead” of its competitors.

In mid 1990s, the “e-commerce wave” raised the interest of the IT manager. Constant strategic discussions with the CEO about utilising the Internet to support and enhance their business practices produced an expanded “business model” for the company. The plan was to use the internet not only as a channel to conduct transactions with their suppliers and clients, but also to provide additional services to their customers which included the ability to track orders, track the status of equipments currently being repaired and calibrated, and a fee-based data repository for all the client's equipment. Of interest is the last initiative. The equipment data repository is intended to be the “one-stop” equipment maintenance scheduling systems that will allow both CaliCo and its clients to manage all the client's engineering equipment. The database will contain all details of the equipment, including, among other things, the type, location, maintenance history, future maintenance schedule, invoice history, billing systems, payment systems, as well as a digitised calibration and maintenance certificate. This database will be accessible using an Internet interface via a secure Internet connection.

A series of “strategic discussions” conducted with CaliCo's clients revealed that they were highly interested on the idea, and would be willing to pay for such valuable services. Convinced of the benefits and possible opportunities presented with the proposed system, the CEO then committed a large amount of capital to invest in the development of the proposed IS/IT venture. Having extensive experience and insight of the current, already integrated systems and standardised data, within four months, the IS/IT team managed to complete, test,

and deploy the project. At present, the initiative is seen as highly successful by CaliCo, as well as its customers.

Perception of SOGe

Using the SOGe model separately, the CEO and the IT manager came to the same conclusion that the organisation had been progressing from stage 4 to stage 5 in the mid 1990s, and had been at stage 5 with regards to their IS/IT since the integration of its IS/IT with various parts of the organisation. With regards to the SOGe characteristics, the CEO and the IT manager agreed that in each and every aspects of the model (i.e. strategy, staff, systems, and impact on business processes) CaliCo currently resides in stage 6. Further, the CEO and the IT manager strongly agree that since the implementation of the new systems linking them and their customers, Calico is currently at stage 6 of the model.

“... although I didn't see our movement as in distinct stages, but rather a continuous progression, I can see that this describes our situation accurately. Prior to this, we did have a fully integrated environment, in which our (latest) initiatives wouldn't take off without it... What we have now is I think what you described as stage 6, if we conduct a calibration to our client's equipment they can literally track whatever we do if they want to, on the other hand, if they indicated that they have moved their equipment in another location, we will be notified by the systems... so I can see that according to this diagram, we have progressed from stage 5 to stage 6 even if we didn't plan it that way.”

Discussion of the Cases

The three cases presented three different companies with different stages of maturity with regards to their e-business initiatives. Some of the issues and factors influencing the progression of e-business illustrated in these three cases are indicative of the cases in our sample. Although not identical, patterns of similarity can be identified between the lessons learned from each case.

The case studies revealed that the stage model and its characteristics provide an accurate description of development and progression path of organisations' e-business initiatives. More importantly, the participants in the case studies (the three IS/IT managers and the CEO), seemed to be able to conceptualise their organisation's e-business progression in a stage-like development. Further, the respondents regarded the stages approach as useful in explaining their past, current, and future involvement in e-business, suggesting that the stages model has a pragmatic value in assisting the management of an organisation in assessing and evaluating their current position with regards to their e-business initiatives, as well as helping them to plan their future involvement in e-business. Arguably, this may indicate that the SOGe model can be used as one of many tools in the formulation of e-business strategy.

We also identified other prevalent issues and concerns emerged throughout the cases. A common concern amongst the organisations involved in this paper is the cost associated with e-business. In most of our cases, which involve SMEs at a lower IS/IT maturity, cost, whether it was caused by the financial inability of the organisation or the lack of commitment of the management to invest, is the main impediment of e-business progress. This is understandable, as a low maturity of IS/IT might be correlated with low IS/IT infrastructure capability. A sizable amount of investment would be needed to build this capability before the company can move on to more sophisticated e-business initiatives. It is also understandable that there would be reluctance among the management to invest in e-

business initiatives without any guarantee that they will get a return on their e-business investment.

The cases also revealed that in order to progress with an e-business initiative, stewardship of e-business is needed. At times, this “e-business champion” needs to confront and/or convince the “opposition” of e-business in order to push forward the initiatives. This is clearly shown in RubberCo, where one of the roles of the IT manager was to convince the management to commit the organisation to the advancement of e-business in the company. In the case CaliCo, the high maturity of its IS/IT can be attributed to the uniformity of the CEO and the IS/IT manager’s perception on their e-business initiatives. At the other extreme, a history of scepticism of IS/IT and rejection from the management of CleanCo has resulted in the relatively slow progression of its e-business initiative.

An organisation would appear to have an advantage when dealing with e-business if it already has a long history of mature and sophisticated IS/IT department and staff. Arguably, accumulated organisational knowledge of the organisation’s IS/IT is a great asset when dealing or implementing a new technology. However, an organisation without prior involvement in IS/IT may also gain similar advantage by having a good and reliable consultant or outsourcing company, as this external entity provides knowledge and experience in e-business implementation.

In the case of SMEs involving external consultants or outsourcing vendors for their e-business initiatives, our findings indicate 5 major issues need to be observed in the selection of the outsourcing vendor. They are cost, specification fulfilment, implementation plan, vendor reputation, and above all, contract management. *Cost*, as mentioned earlier, is probably the main restraint for SMEs’ e-business initiatives. Most SMEs would not be able to hire a top-tier vendor such as IBM or PeopleSoft. However, in some cases where there is a strong business involvement in the projects, the budget limitations are somewhat more flexible, enabling the organisations to go for “tier-2” vendors with good *reputation* among the SMEs community as noted by IS manager of RubberCo:

“...reputation of the vendor is important. Obviously we want someone with experience who have done this sort of thing before, you don’t want a rookie or a vendor with not-so-good reputation as what we are looking here is our would-be core application, it is going to be crucial for us. If the vendor screws it up, we’ll have a major problem in our hand... Before selecting our vendor, I did my research, contacted some colleagues finding out their experience with such and such vendors before shortlisting those vendors”

Specification fulfilment and a reliable *implementation plan* are also crucial in selecting the vendors, the company must assure that the outsourcing vendor is able to fulfil the business requirement, which usually include integration with their current systems, and deliver the system in a timely manner. However, trade-off between specification fulfilment, cost, and vendor reputation often happened as companies tried to balance their limited resources while at the same time trying to reach for the maximum possible benefits, as noted by one of the IS manager:

“...when we were faced with an option of having 100% fulfilment of our spec from a not-so-reputable vendor, also in other words, cheaper, and a 85-90% spec fulfilment from a vendor with good reputation, I proposed the latter to the management, and they agreed. I’d rather go with a known, reliable vendor, although we had to dig in our pocket slightly more, and get a better overall systems than to rely on a less known company, not

when this e-business initiative is viewed as being the most crucial initiative in the company.”

Lastly, deemed the most important issue of all, is the *contract management*. As emphasised clearly in the following quotes, good contract management is imperative in dealing with outsourcing vendors. Implied in the following statement, is the nature of the “standard” outsourcing contract proposed by the vendor that leans towards the benefits of the vendor rather than its clients.

“... we’ve gone to a bit of trouble to make sure we are protected in the contract. The original contract was very much weighted in their favour.”

“...not only the issue of us being protected, but also to guarantee that they deliver the goods as promised in timely manner. We are small company, we don’t have the in-house capability to quickly fix problems arise from a faulty system or its implementation, nor we want a long legal battle, if it ever comes, to determine what’s in the contract. We had to be very thorough and clear of what their responsibilities are, milestones, what happen if something goes awry, penalty and so on...”

Conclusion

Our research indicated that the SOG-e model proposed provides a reasonably accurate description on the different level of maturity of an organisation’s e-business. By providing an accurate description of the stages of maturity, arguably, the model has some merit in assisting an organisation in identifying its future e-business initiatives, thus, underlining the prescriptive nature of the model, as opposed to merely being a descriptive model. Further, the response from the participants involved in the case studies revealed that the SOG-e does have a useful and pragmatic value in helping them focus their objectives and generate discussion on “what is needed” and “what needs to be done” in order to achieve their objectives.

Finally, although the study has been aimed at large SMEs, the authors suggest that the SOGe model developed in this research might also be applicable to large organisations. However, this needs to be examined further, opening an opportunity to expand the research using the model to investigate the progression of e-business maturity in large organisations.

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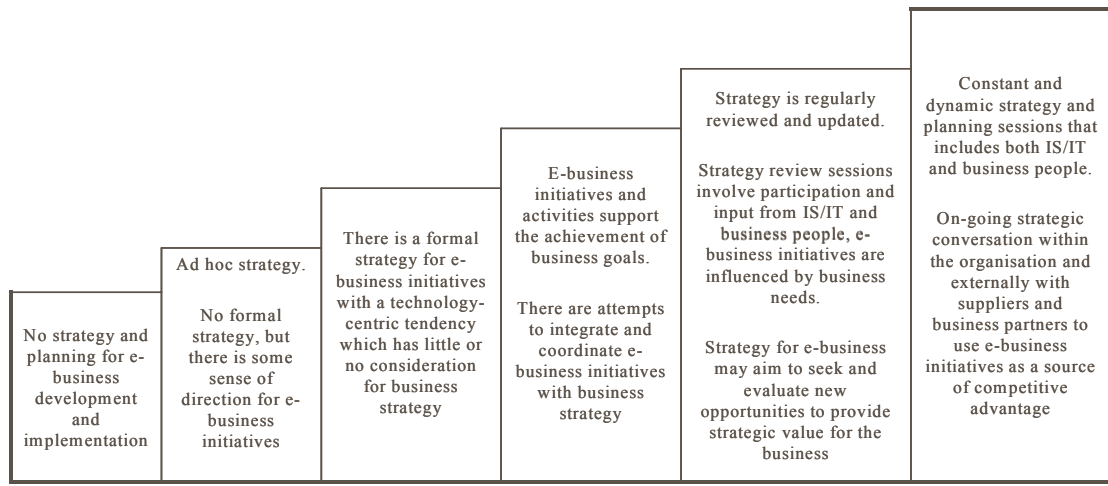
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Appendix A

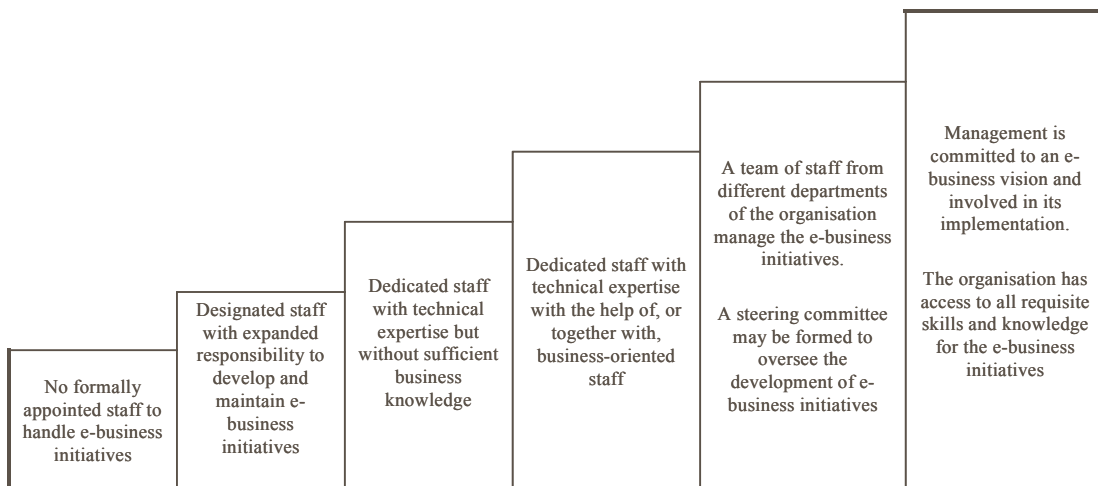
SOGe Stages Description

Stage	Description
Stage 1	There is no clear direction for the organisation's e-business initiatives.
Stage 2	E-business initiatives are increasingly considered to be an important component of the organisation's business. However, there is no proper planning and a lack of direction for IS/IT development and implementation.
Stage 3	E-business initiatives are considered an important component of the organisation's business. There is a clear direction for the development of e-business initiatives within the organisation. However, e-business development is still focused much on technology-centric perspective and not influenced by business needs.
Stage 4	E-business adoption and development is becoming more business-focussed. There is a move towards integration and greater coordination between the components of e-business (eg. IS/IT and Internet) and the organisation's business processes.
Stage 5	Integration between traditional business processes and activities and e-business processes and activities, creates seamless communication and flow of processes within your organisation. E-business initiatives aim to provide strategic benefits by building strategic systems.
Stage 6	E-business is deeply embedded throughout every aspect of the organisation. There is a strong integration between the components of e-business and business processes within the organisation as well as with those of its suppliers and business partners. E-business initiatives are aimed to create and maintain our organisation's strategic advantage.

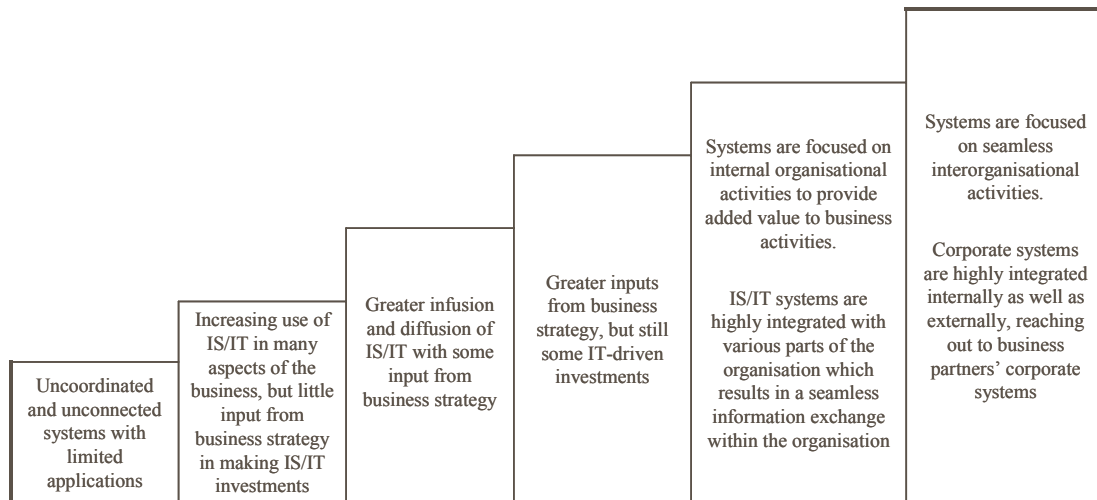
SOGe Characteristic: e-Business Strategy



SOGe Characteristic: Staff Arrangement



SOGe Characteristic: E-Business Systems



SOGe Characteristic: Impact on Business Processes

