

eTRANSFORMATION JOURNEY FOR SMES

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Abstract: To survive in a globally competitive environment business need to change their process and make use of information systems to make processes more effective and well integrated. A change in the globally competitive environment requires businesses to modify and electronically transform. This process, eTransformation, requires businesses to change along a number of dimensions mainly Strategy, Structure, Tasks and Processes and IT Tools and Systems. Our study indicates that successful eTransformation requires incremental progression within dimensions across stages. First SMEs require changes in organisational Strategy – company environment, their goals and objectives as well as their products, services and operations; then Structure – company departments and divisions followed by Business Tasks and Processes – automation, streamlining and integration. Only after the above three dimensions have been achieved, companies can change along IT Tools and Systems Dimension which involves selecting appropriate tools and system as well as assuring web presence, Internet use and security. To identify how SMEs (Small to Medium Enterprises) are planning to eTransform we interviewed 17 SMEs. Our study indicates that businesses foremost identify that they should invest into IT (Information Technology) and related tools and systems and do not perceive other factors such as company Strategy, Structure or Business Processes to be determinants or predecessors of a successful eTransformation journey.

1 INTRODUCTION

Throughout the centuries, business required to change. Each era in history brought new needs, demands and requirements.

During the Agricultural era land and tools played important roles, while during the Industrial era machines and factories played a dominant role in shaping the organisational and social structures.

Today, we find ourselves in the Information era where Information and Communication Technology (ICT) has a crucial role and has become an integral business component. Survival of businesses nowadays depends strongly on how well they can use ICT to enhance their business processes and sustain pressures of the global markets.

Previous research indicates that Small to Medium Enterprises (SMEs) in particular are struggling to find the optimal way in which to follow their electronic transformation (Austool Limited, 2004; German, 2007). The aim of this study was to identify how SMEs perceive eTransformation and make eTransformation decisions. To identify how SMEs should eTransform we conducted literature

reviews and historical analysis of organisational change and used this information to conduct a detailed study to see how SMEs are transforming.

2 ORGANISATIONAL CHANGE AND TRANSFORMATION THROUGH HISTORY

The historical analysis indicates that businesses at various times in history were faced with inventions and that they were required to adapt and restructure to welcome new technologies if they were to stay in business. Utilisation of new technology often required some or more of the following actions:

Change the way business is done

In the early days, pin makers all worked independently and it took each pin maker a day to make one pin. Business changes and new demands allowed production lines to be formed where each worker had only a few tasks to complete. This allowed each pin to be produced through the

combined work of a few workers. Consequently, the amount of pins made became much greater (Smith, 1776).

Change the organisational structures

Divisionalised management structures are an example of this. In order to follow work operations and ensure factories functional stability, factory structure was changed by making the worker responsible for the tasks he or she was completing and by introducing various levels of management (Smith, 1776).

Ensure business activities are redistributed to maximise production output

In the Ford Motor Company for example (Ford & Crowther, 1922) each department had its own specialisation. Work there was distributed so that each department was dealing with specific raw material goods and was producing a particular product. Each department was responsible for its own operation. The work was organised in this way so that it could be completed quicker and that collectively the company could have a higher outcome.

Ensure that skills and knowledge are adequate to deal with the innovation

Whenever new technology was implemented it required assurance that people dealing with it had the necessary skills and knowledge to follow its uptake. For example, this happened when manual tasks were replaced by machines and assembly lines were introduced (Ford & Crowther, 1922).

Face problems and issues caused by the invention

An overview of the invention of and uptake of electricity strongly indicates that the new invention could bring chaotic and turbulent times. In its early days, electrical appliances were unsafe and they posed a risk of an electric shock and therefore death. Introduction of new technology required careful analysis and understanding of the problem not previously known (Sciencemuseum, 2008).

Life through resistance and rejection of the invention

From the review of the changes that the invention of coal, steam or electricity for example brought, it can be seen that often people at first rejected innovations. The main reasons for this were that they were frightened of something, which was unfamiliar. In addition, as they, for example, saw power in steam they were scared that they will be retrenched and lose their current jobs, which in turn did happen to some. Therefore, it can be concluded

that it is essential to face up to the new technology as resisting it will slow the uptake and the development (Sciencemuseum, 2008).

From the above it can be seen that new inventions in history at first created shock and chaos. After this, quick intervention or a line of action was required to stabilise the created turbulence. Next steps were hard. They often required those immediately affected by the implementation of the new technology to deal with rejection and resistance and mistakes until that technology was understood, used and correctly implemented. To identify how organisations can change as a part of eTransformation we reviewed Organisational Change and eTransformation models.

3 MODELS OF ORGANISATIONAL CHANGE AND TRANSFORMATION

Studies assessed following models: Cycle of Organizational Development Model (Wons, 1999); The Drivers for the Advanced Organization Model (Mawson, 2002); 7 Steps to Business Crisis Management Model (People and Process, 2005); 7S Model from McKinsey & Company (Waterman, Peters, & Phillips, 1980); Nolan's Six Stages of Growth (Nolan, 1979); Earl's Stages Model (Earl, 1989); Evolving the E-Business (Earl, 2000); Internet Based B2B Stages (Rayport & Jaworski, 2002); eBusiness Transformation Model (Burn & Ash, 2005); Galliers and Sutherlands six Stages of Maturity (Galliers, Merali, & Spearling, 1994); SOGe (McKay, Prananto, & Marshall, 2000) and eTransformation Road Map (Ginige, Murugesan, & Kazanis, 2001). From the study undertaken it was identified that the eTransformation Road Map is one of the most comprehensive models assessing the ICT Dimension, later renamed to IT Tools and Systems Dimension (Hol & Ginige, 2009). Multidimensional nature of eTransformation

4 MULTIDIMENSIONAL NATURE OF eTRANSFORMATION

A search for possible eTransformation dimensions was based on the use of 7 S Model comprising of Structure, Strategy, Style, Staff, Shared Values, Skills and Systems (Waterman et al., 1980). The

model was used to create semi-structured interview questions so that they can be used to gather data from SMEs.

Based on the 7 S model Interviews were conducted and data collected for each of the 7 S dimensions. Following this, collected data was analysed. Analysis identified that eTransformation is not only staged but also multidimensional. The study helped identify dimensions that play roles in the process of eTransformation the most. In addition, the study conducted helped identify that SMEs need to develop and progress across eTransformation dimensions incrementally in order to advance and move to the next eTransformation stage (Hol & Ginige, 2008).

Furthermore, study highlights that progression in one dimension alone is not sufficient for the successful eTransformation journey. Therefore an eTransforming company needs to follow its journey across dimensions in a particular order (Figure 1).

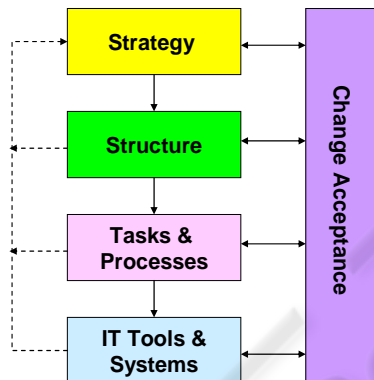


Figure 1: Iterative Model of eTransformation (Hol & Ginige, 2008).

First company is required to identify its Strategy, then its Structure following by its Tasks and Processes and finally IT Tools and Systems.

Within each dimension however there are a number of Categories within which changes need to happen. Categories of Strategy are the Environment, Plans & Visions, Customers, Products & Services, Employees and Goals. Categories of Structure are Centralisation / Decentralisation, Functions / Divisions, Formalisation. Categories of Tasks and Processes are Nature of Tasks, From Tasks to Processes, Task & Process Streamlining and Task & Process Integrations. Categories of IT Tools and Systems are IT Tools, Tool Users, Internet, Website, IT Support, IT Systems and Security. Detailed explanation of the eTransformation dimensions and their categories is presented in Tab 5.

5 eTRANSFORMATION OF SMES

Following the initial analysis of the eTransformation dimensions and their characteristics we selected a group of 17 Australian based SMEs. The aim of the study was to identify how they perceived eTransformation. When doing this we carried semi-structured interviews based on the identified dimensions.

Participants in the study were 4 Toolmakers marked in Table 2 as SME4, 8 IT Provider SMEs marked as itSME and 5 SMEs studied via other eTransformation projects that expressed a wish to follow their eTransformation journey (service SMEs).

Initial analysis required all companies to be assessed along the eTransformation road map which in turn marked their position at the IT Tools and Systems dimension. Companies that have reached Stage 1 were marked with A, Stage 2 with B and Stage 3 with C. There were no Stage 0 and Stage 4 companies.

In addition, through interviews we collected data for dimensions of Strategy, Structure, Tasks and Processes. Data is presented in Table 1.

From Table 2 it can be seen that 14 out of 17 SMEs interviewed wanted to invest in IT Tools and Systems Dimension. The analysis carried however indicated that 12 of these companies required investing in Strategy, 4 in Tasks and Processes and 1 in Structure. The observation of the data signified that none of the studied SMEs should have been investing further into IT Tools and Systems as they have not yet positioned themselves appropriately or identified where and how to use IT Tools and Systems to the full potential.

Table 1: eT Dimensions and Categories (Hol & Ginige, 2009).

Category	Stage 1	Stage 2	Stage 3	Stage 4	
Strategy	The Environment	1.1 SMEs competitors awareness	1.2 Competitors – products & services	1.3 Matching competition	1.4 Be better than competition
	Plans & Visions	2.1 Meet essential deadlines	2.2 Meet all deadlines	2.3 Create improvements	2.4 Vision for the future
	Customers	3.1 SMEs Customers awareness	3.2 Customer requirements	3.3 SMEs marketing	3.4 SMEs learn from Systems
	Products & Services	4.1 Standards & certifications	4.2 Marketing strategies	4.3 Support & guarantee for customers	4.4 New improved products & services
	Employees	5.1 Knowledge requirements	5.2 Education and new ideas	5.3 Employees & Future	5.4 Innovation
	Goals	6.1 SMEs goals	6.2 Reality VS goals	6.3 Strategy VS goals	6.4 Skills & resources VS goals
Structure	Centralisation / Decentralisation	1.1 Decision – CEO	1.2 Decision- Managing director	1.3 Decision - Some employees	1.4 Decision- Whole organisation
	Functions / Divisions	2.1 Operations fixed	2.2 Diversification present	2.3 Operations can be changed if needed	2.4 SMEs adaptable to new circumstances
	Formalisation	3.1 Business functions / operations	3.2 SMEs Focus	3.3 Global needs	3.4 New ideas, innovation and future
Tasks and Processes	Nature of Tasks	1.1 Streamlining	1.2 Automation	1.3 Creation of new tasks	1.4 Reassessment of existing tasks – fit
	From Tasks to Processes	2.1 Removal of repetitive tasks	2.2 Improvement in operations	2.3 Improvement in profitability	2.4 Reassessment of existing processes – fit
	Task & Process Streamlining	3.1 Avoid change	3.2 Change when essential	3.3 Change for benefits	3.4 Change for innovation
	Task & Process Integrations	4.1 Activities are independent	4.2 Activities are grouped – tasks	4.3 Activities form processes	4.4 Activities across processes are integrated
IT Tools and Systems	IT Tools	1.1 Stand alone Tools	1.2 Networked – sections, whole integration not present	1.3 Networked- Partially integrated	1.4 Enterprise wide network – fully integrated
	Tool Users	2.1 Few employees	2.2 All departments not all employees	2.3 All employees	2.4 All employees & some stakeholders
	Internet	3.1 Searching	3.2 Customer Contacts	3.3 Advertising	3.4 External & business contacts
	Website	4.1 Static	4.2 Interactive	4.3 eCommerce	4.4 Convergence
	IT Support	5.1 Limited support (internally or externally)	5.2 Some support – usually ongoing	5.3 Basic IT Department	5.4 IT Department fully operational
	IT Systems	6.1 Office Management – File management	6.2 Operational Systems – CRM, TPS	6.3 KMS, DSS – emerging	6.4 ERP, DSS, ESS
Security	7.1 Antivirus and anti-spyware software	7.2 User access rights, authorisation and authentication, proxies and firewalls	7.3 Network traffic encryption (SSL, TLS)	7.4 System monitoring (intrusion detection, full system disaster recovery plan)	

Table 2: Results of the Study with 17 SME.

ID	Road Map Stage	Strategy	Structure	Tasks & Processes	IT Tools	IT Systems	Company wants to invest in	Company Should Invest in
1sme4	A	A	A	A	B	A	IT	Strategy
2 sme4	A	A	A	A	B	A	IT	Strategy
3 sme4	A	A	A	A	B	A	IT	Strategy
4 sme4	A	A	A	A	B	A	IT	Strategy
5	A	B	B	A	B	A	IT	Tasks & Processes
6	A	A	B	A	B	A	IT	Strategy
7	B	B	C	B	B	B	IT Systems	Strategy
8 itSME	B	B	C	B	B	B	IT Tools	Strategy
9 itSME	B	B	B	B	B	B	Structure	Strategy
10 itSME	B	C	B	B	B	B	IT Tools	Structure
11 itSME	B	B	C	B	C	B	IT Systems	Strategy
12itSME	B	B	C	B	B	B	IT Tools	Strategy
13 itSME	B	C	C	B	B	B	Tasks & Processes	Tasks & Processes
14	B	C	C	B	B	B	Strategy	Tasks & Processes
15	C	C	C	B	C	B	IT Systems	Tasks & Processes
16 itSME	C	B	C	B	C	B	IT Systems	Strategy
17 itSME	C	B	C	B	C	B	IT Systems	Strategy

6 HISTORICAL ANALOGIES

To fully understand the impact of eTransformation to the SMEs of today it is necessary to draw analogies to business changes and transformations that have happened in the past. When comparing the two it can be seen that eTransformation has brought similar changes to what for example steam or electricity powers brought to the organizations century ago.

eTransformation and use of technology is changing the way business is done. Technology has now allowed new business models to be formed and new business structures to be formed such as for example those of Amazon or Dell. Such business models would not be possible if companies were not ready and willing to innovate and change.

To successfully eTransform technology alone is not enough. Companies need to be willing to change and modify their structures and create new departments, rules and dependencies.

Furthermore, new business tasks and processes

can allow organisations to redistribute jobs, streamline operations or just simply automate tasks to be able to achieve maximal benefits and increase business outputs.

Moreover, each new innovation will bring problems, resistance and will require its users to update their skills and gain new knowledge to be able to innovate. When reviewing what happened in the past it can be seen that for example electricity, we all use today, caused many accidents due to lack of knowledge and skills of its users. Similar is happening with technology. Dot.com crash for example was one instance where technology brought disasters. It can also be seen that lack of knowledge is stopping SMEs to make adequate eTransformation decisions.

Therefore to sustain global market pressures and survive global changes it is necessary to face problems and issues caused by the invention. Companies need to be ready to learn more to be able to understand full benefits technology may help them bring.

Businesses, in this case SMEs, need to be able to handle life in the electronically demanding world and be able to select and use IT tools and systems. Our research helped identify the way SMEs see eTransformation and has pointed out that eTransforming SMEs require experts guide, knowledge and understanding of how they can overcome technology rejection and understand that new inventions like those linked to IT Tools and Systems may need some large structural and functional changes to assure technology is going to bring full benefits.

7 CONCLUSIONS

In summary, it can be seen that in order for the companies to successfully eTransform they are required to have a multidimensional scope. Successful eTransformation requires a holistic approach encompassing company Strategy, Structure, Tasks and Processes and IT Tools and System. Our results indicate that SMEs are unaware of these and still struggle to adjust to the global needs and demands by primarily concentrating into investing into IT Tools and Systems without realising that many other dimensions play a role in successful eTransformation. Our future studies look into developing an online system that SMEs can use to be able to guide their eTransformation journey successfully.

REFERENCES

- Austool Limited. (2004). *An Australian Tooling Industry Technology Roadmap Exploratory Study 2003/2004* Sydney, Australia: Austool Ltd.
- Burn, J., & Ash, C. (2005). A Dynamic Model of E-business Strategies for ERP Enabled Organisations. *Industrial Management & Data Systems*, 105(8), 1084-1095.
- Earl, M. J. (1989). *Management Strategies for Information Technology*. Burr Ridge: Irwin.
- Earl, M. J. (2000). Evolving the E-Business. *Business Strategy Review*, 11(2), 33-38.
- Ford, H., & Crowther, S. (1922). *My Life and Work*. New York, USA: Garden City Publishing Company.
- Galliers, R. D., Merali, Y., & Spearling, L. (1994). Coping with Information Technology? How British Executives perceive the key information systems management issues in the mid 1990s. *Journal of Information Technology*, 9, 223-238.
- German, K. (2007). Top 10 dot-com Flops. Retrieved 20 October, 2007, from http://www.cnet.com/4520-11136_1-6278387-1.html
- Ginige, A., Murugesan, S., & Kazanis, P. (2001). A Road Map for Successfully Transforming SMEs into eBusiness. *Cutter IT Journal*, 15(5), 13.
- Hol, A., & Ginige, A. (2008). *Dimensions of eTransformation 4th International Conference on Information and Automation for Sustainability*. Paper presented at the ICIAfS - IEEE, 12-14 December, 2008 Colombo, Sri Lanka.
- Hol, A., & Ginige, A. (2009). *eTransformation Guide: An Online System for SMEs*. Paper presented at the IEEE - DEST, 31st May 2009 -3rd June 2009, Istanbul, Turkey.
- Mawson, A. (2002). The Advanced Organisation, New Models for Turbulent Times. Retrieved 27 February, 2006, from www.advanced-workplace.com
- McKay, J., Prananto, A., & Marshall, P. (2000, 6-8 December). *E-Business Maturity: The SOG-e Model*. Paper presented at the ACIS - Proceedings of the 11th Australasian Conference on Information Systems, Brisbane, Australia.
- Nolan, R. L. (1979). Managing the Crises in Data Processing. *Harvard Business Review*, 57(2), 115-116.
- People and Process. (2005). Business Crisis Management. Retrieved 3 March 2006, from www.the-process-improver.com/business-crisis-management.html
- Rayport, J. F., & Jaworski, B. J. (2002). *Introduction to E-Commerce*. Boston.
- Sciencemuseum. (2008). Science Museum: The Energy Hall Retrieved 23 February, 2008, from http://www.sciencemuseum.org.uk/online/energyhall/theme_Impact.asp
- Smith, A. (1776). The Wealth of Nations. in *Adam Smith Reference Archive Random House, Inc.* .
- Waterman, R. H., Peters, T. J., & Phillips, J. R. (1980). Structure is Not Organization. *Business Horizons*, 23(3), 14-26.
- Wons, E. (1999). *Organisational Change - An Ethical, Means Based, Approach* Boston JPC Training & Consulting LLC