

# Managing Changes in E-Transformation

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## Abstract

In today's digital economy and business, firms especially the SMEs (small and medium-sized enterprises) are facing competitive challenges from anywhere around the globe. Transforming the traditional business processes and activities into electronic capable (e-capable) format has become the essential tasks for companies to not only sustain in the competitive environment but flourish in the companies' perpetual operations. During the e-transformation process, organisations normally face changes in various aspects. To success in the transformation, companies need to manage the changes effectively. The change management tasks should be developed systematically through the identification of areas where changes may occur, and the research and development of solutions that will accommodate the changes.

This study proposes a conceptual model for managing changes in e-transformation, which provide SMEs with a methodological framework in identifying and managing organisational changes.

## 1. Introduction

Many firms especially the SMEs have recognised the information technology (IT) as the key driver that could enable companies to position themselves competitively into the global marketplace. Specifically, the Internet is a prominent medium for providing SMEs with a speedy transformation process that allows companies to transit their business activities and operations from a domestic focus to the global orientation. Nevertheless, transforming SMEs into e-businesses is not just creating interactive websites and incorporating payments as part of the online functions. The real challenges for companies pursuing e-transformation is to embrace the management of changes before, during, and after the transition in all aspects.

This study aims to development a framework for managing changes in e-transformation that would assist SMEs in strategic planning and decision making for the transition. The paper starts with the revisiting of SMEs e-transformation roadmap, review the forces to organisational change, followed by the identification of organisational changes in e-transformation. Finally, it concludes with the proposed framework for change management in e-transformation and the development of a checklist for e-transformation achievement.

## 2. The E-transformation Roadmap for SMEs

There is no doubt that many SMEs are eager to engage themselves in the e-business vogue through the application of the Internet technology which incorporates eminent and fascinating functionalities such as interactive or "full-duplex" communications, online payment, and dynamic inventory et cetera. Moreover, companies are commonly impatient to develop their "corporate websites" which contain typically the same information as they put in the Yellowpages and which is rarely updated. As the result of such unplanned approach, senior executives are most likely to diminish the budget and human resources involvement and eventually suspend the e-transformation project.

In order to successfully transform small and medium-sized firms into e-capable companies, Ginige et al. [1] proposed an e-transformation roadmap which focuses on not only the website development, but also the involvement of employees as individuals, project or task teams as groups, as well as the entire company as a single entity. The roadmap (Figure 1) consists of eight phases: basic website, interactive website, e-commerce website, effective individual, effective group, effective enterprise, convergence, and new emerging business processes. The first six phases of the roadmap are formed into internal and external development approaches. The internal development approach is mainly concerned with the transition of effectiveness with a company. It is constructed as of the development of effective individuals toward the effective enterprise. On the other hand, the external development approach is related to the construction of the website and its functionalities. It is based on the development of a static, information only website towards e-commerce, online payment competent website. Each e-transformation roadmap phase is briefly outlined in the following sections.

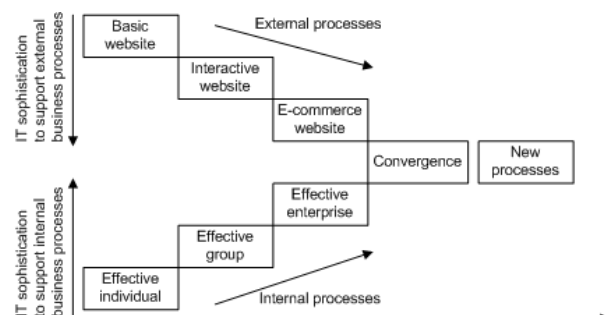


Figure 1. E-transformation roadmap for SMEs

## 2.1 Basic Website

It refers to a static, and information only website. This is a preliminary external development phase that enterprises use the Internet as the media for disseminating marketing and advertising campaigns and products information. In this phase, the Internet is employed as the same way as they have been using in the conventional promotion methods such as magazines, newspapers, and product catalogues and so on. The main task of this phase is to ensure the corporate web presence with the appropriate contents incorporated.

## 2.2 Interactive Website

In the second transformation phase, companies are suggested to construct their websites towards more advanced functions. This type of website can be seen as an interactive website which provide the browsers (eg. the clients/customers, or employees) with dynamic and up-to-date information. The key concept of the dynamic contents emphasises on the connection and interface between the front-end website and the back-end database systems. The initial task of an interactive website development is to identify what are the dynamic contents should be available on the Internet.

## 2.3 E-commerce Website

The ultimate e-transformation objective in regarding to the website evolution is to construct an e-commerce or online payment enabled website. Through an e-capable website, customers are able to place sales orders, organise accounts payables; vendors or suppliers are able to remit invoices and receive payments; and the enterprise could arrange payrolls and any other expenses. The imperative task in this phase focuses on the development of secure environment that provides all business parties confidently trading through the Internet.

## 2.4 Effective Individual

This phase refers to the initial stage for the internal approach of the e-transformation process. It is the fundamental phase that each employee should have suitable IT facilities that will support their individual needs to carry out daily business activities. The appropriate IT facilities support individuals including personal computers, laptops, word processing applications, and spreadsheets applications.

## 2.5 Effective Group

The second level of internal approach refers to the development of an effective group. Teamwork is an imperative concept in exploiting the diverse skills of individual employees and resulting efficient outcomes. Without a doubt, the IT and information systems are the keys to provide an effective team or group environment. The specific components in relation to IT and information systems comprise groupware applications (such as Lotus Notes® and Microsoft® Exchange Server), collaborative

software applications, project management applications and so forth.

## 2.6 Effective Enterprise

When moving from the effective group development towards an effective enterprise, the company needs to integrate and interconnect tasks performed by individuals and groups into a single entity. This requires supports from the adoption of network infrastructure, network operating systems, as well as the integration of information systems and the enterprise resource planning applications.

## 2.7 Convergence

Once the internal and external developments have reached the mature status – e-commerce website and effective enterprise stages, companies are competent to converge both internal and external into a single operation. That is, an enterprise's information system has the capability of obtaining information from the Internet, processing the information for specific needs, and remitting the processed information or results back to the Internet for other business parties (Figure 2). This would eventually lead to collaborative business.

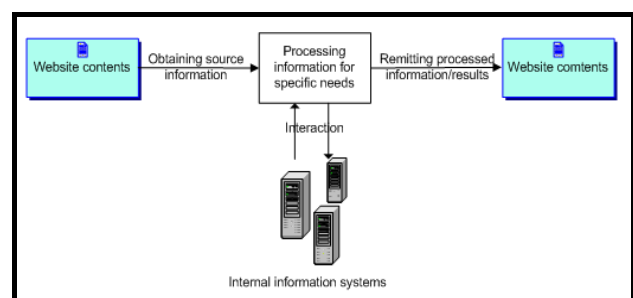


Figure 2. Internal and external convergence phase

## 2.8 New Business Processes

A number of new business processes are emerging as a result of the convergence phase. These new business processes generally relate to the activities of handling the business behaviours amongst business parties (clients, suppliers, and the enterprise itself). Such including customer relationship management (CRM), supplier relationship management (SRM), supply chain management (SCM), and knowledge management (KM).

## 3. Forces of Organisational Changes

Firms have realised that they have to make changes in order to transform themselves into e-capable enterprises. Before positioning themselves in the process e-transformation, they must clearly identify what are the driving forces for change. Because every business has different status and competencies, identification of the driving forces is essential to ensure the correct starting point of the e-transformation roadmap for each enterprise. Generally, the driving forces for change can be divided into two broad categories: external and internal.

### 3.1 External Forces

In this category, the forces for change come from outside of the company. This mainly refers to the business parties that are external to the business such as customers, suppliers, vendors, and competitors. In addition, political, economic climate [2] and certainly IT are also imperative external forces. All these external forces demand enterprises to make changes in order to sustain in the global competitive environment. Outcomes of the change generally result in reducing costs, increasing productivity and product quality, shortening distribution time, and applying IT for business operations.

### 3.2 Internal forces

The internal forces refer to the factors arise within the company. They are commonly related to changes in terms of the business development and growth. For example, in the transition of globalisation [3] enterprises are facing changes in organisational structure, reporting hierarchy, business vision and strategy.

## 4. Identification of Changes

After the investigation of each phase in the roadmap and the related driving forces, changes in e-transformation can be generally classified in five categories: business processes, applications, employee and skills, technology infrastructure, and executive management.

### 4.1 Business processes

Introduction or changes of business processes are required to

1. provide employees to perform their work effectively,
2. link or connect business functions together with an enterprise,
3. be able to share information between business parties,
4. enable website contents up-to-date,
5. allow website contents to be dynamically presented and accessed by the external users,
6. facilitate online transaction functions that are accessed and trusted by the external users, and
7. integrate the internal information systems and external website functions to handle e-commerce related business operations.

### 4.2 Applications

Introduction or changes of software applications are required to

1. carry out essential industry specific needs,
2. allow employees to communicate each other and transfer messages within an enterprise such as email applications,
3. facilitate the ability of information sharing for business purposes, for example, project

management and scheduling applications, groupwares, and intranet systems,

4. accomplish the implementation of new emerging business processes (CRM, SRM, SCM, and KM),
5. retrieve the company's website which contains static company and product information, messages for the external users, mailing lists, and frequent asked questions session (FAQs),
6. access the company's interactive website which contains dynamic product information (inventory in particular), interactive enquires and feedbacks, discussion boards, member login facility, and
7. provide online web functions for placing orders, tracking orders or delivery schedules, online payment, and distributing electronic products and services.

### 4.3 Employee and skills

Introduction of new skills for appropriate employees are essential to

1. implement basic computer applications such as word processors, spreadsheet applications, and industry specific software packages,
2. carry out work related tasks through the utilisation of computer applications for communicating within team and project environment, such as the skills of using project management software, email applications, groupwares, and accessing databases,
3. gain competency in implementing enterprise wide information systems such as enterprise resource planning (ERP), CRM, SRM, and SCM applications,
4. browse websites for searching work related information from the Internet,
5. handle interactive website functions such as responding online enquires, posting news and messages for discussion forums, updating and accessing product information dynamically, and
6. perform e-commerce website functions such as placing purchase orders, online payments, banking, order and delivery tracking through the Internet.

### 4.4 Technology infrastructure

Introduction and deployment of new information infrastructure are crucial to

1. provide adequate hardware and equipment for individual employees to carry daily business activities, such as personal computers (PCs), laptops, personal digital assistants (PDAs), printers, and many other peripherals,
2. connect the company's information systems and applications through the local area networks (LANs) or the intranet,
3. integrate the company's information systems

with business parties information systems through the extranet or virtual private networks (VPNs),

4. supply the company with the ability of accessing the Internet through a high-speed bandwidth connection and securing sensitive business information through the use of backup and restore equipment,
5. allow the company to enforce disaster recovery plans or business continuity plans for any causes of disasters, and
6. perform a secure and interactive website functions and interact with back-end information systems.

#### 4.5 Executive management

Changes of business strategy in executive management are critical to

1. support IT maintenances in hardware, software, databases, and networks,
2. incorporate policies, procedures, and processes for IT,
3. confirm that the company has agreed in the integration of enterprise wide information systems,
4. implement decision support systems for the best business practice, and
5. ensure that the company has consented to amalgamate the information systems with other business parties.

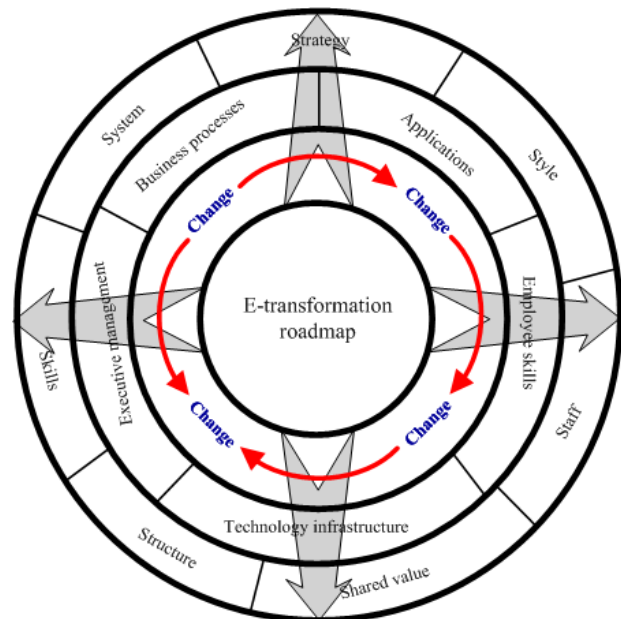
### 5. Framework for managing changes in e-transformation

The underlying premise of managing changes in e-transformation framework (Figure 3) is that the integration of the e-transformation roadmap, five categories of changes in e-transformation processes and together with the validation process through the 7S model [4]. Both e-transformation roadmap and change categories have been described earlier in this paper; it is the final stage of constructing the framework by mounting change factors into the 7S model.

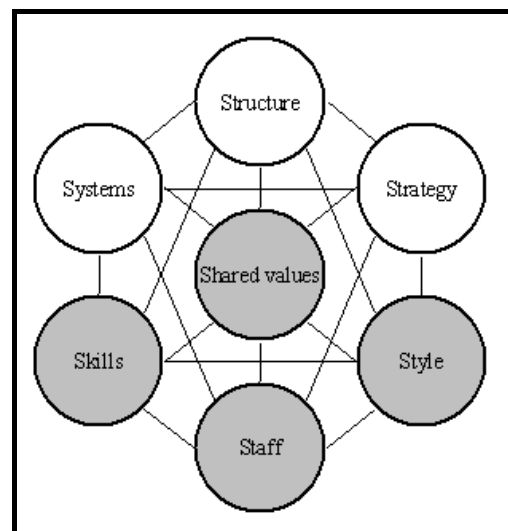
The fundamental concept of the 7-S model is that “structure” is not the only element representing an organisation; there are other six elements that form a complete organisation. These seven elements can be classified into two groups – tangible and intangible. Firstly the tangible elements, these are feasible and easy to identify. They can be found in the enterprise’s strategic plan, mission statement, organisational chart, and other corporate documentations. These tangible elements are strategy, structure, and systems. On the other hand, the intangible elements are those hardly feasible. They are difficult to describe and continuously developing and changing as the organisation evolves. These intangible factors include skills, staff, style, and shared values.

Figure 4 and the following subsections illustrate and describe these elements (both tangible and intangible) in

general as well as the context of e-transformation. The intangible ones are greyed out.



**Figure 3. Framework for managing changes in transforming SMEs into E-capable companies**



**Figure 4. The 7S Model**

#### 5.1 Tangible elements

##### 5.1.1 Structure

An appropriate managerial structure has to be established in order to successfully implement and support proposed changes. To achieve an effective enterprise with e-capable business functionalities, the establishment of communication channels between business functions and unambiguous definition of responsibilities for all levels of management require to be incorporated into the organisational structure. Companies need to ask themselves whether separate business functions are required to carry out e-commerce activities or incorporate the e-operations into the existing business functions. Further, the identification of people who are

responsible for any e-commerce activities, (eg. are they managers of each department?) Or whether new positions required for these e-management roles?

### 5.1.2 Strategy

It refers to actions an organisation plans in response to or anticipation of changes in its external environment. For example, the involvement of competitors in e-commerce operations may force the enterprise to shape its business plan to incorporate the e-transformation strategy.

### 5.1.3 Systems

It can be seen as formal and informal procedures and processes that support the strategy and structure. In the e-transformation context, systems comprise IT solutions and other techniques for collecting, processing, retrieving, and storing of information.

## 5.2 Intangible elements

### 5.2.1 Skills

The appropriate skills are required for implementing and maintaining e-capable business operations and an effective organisation. Such skills are mostly related to the application and utilisation of IT for advancing both the internal business operations and the external e-commerce development and implementation.

### 5.2.2 Staff

Referring to the human resource management. It includes processes used to develop managers, socialisation processes, methods of recruiting appropriate employees, and approaches of helping to manage and develop the careers of employees. As the introduction of e-commerce operations, additional staff are required to perform new emerging business and technical activities such as online customer and supplier management, administration of online transactions, maintenance of website contents, and any other IT supports.

### 5.2.3 Style

It can be seen as the culture of the organisation and management style. When implementing the fully e-commerce websites, enterprises will be facing an unprecedented challenge – sharing information with external business parties. In the e-commerce environment, inventory data, purchase orders, and sales information will intentionally be made translucent for the external business parties such as suppliers, vendors, and customers. Hence, changes of the organisational culture and management style are necessary to cope with the e-capable business operations.

### 5.2.4 Shared values

These are superordinate goals, guiding concepts, fundamental ideas around which a business is built. In the e-transformation context, the ultimate goals are to

construct and perform e-commerce operations through the amalgamation of the internal business systems.

By mapping the change factors of e-transformation with the 7S model, the following table (Table 1) intends to act as a diagnostic model for the completeness of changes required in the e-transformation processes. As the result of mapping, all change factors have been covered under the 7S model.

**Table 1. Mapping of five change categories to the 7S model components**

Change category	Change factor	7S model components
Business processes	individual employees working efficiently	style, staff
	connection of business functions	shared value, style
	information sharing between business parties	shared value, style
	keeping web contents up-to-date	strategy, style
	availability of dynamic web contents for external users	strategy, style
	Online transaction functions	strategy, style
	integration of information systems amongst business parties	strategy, style
Applications	industry specific software applications	system
	message transfer and email applications	system
	project management and scheduling applications, groupwares and intranet	system
	applications for implementing new emerging business processes	system
	applications for browsing static web contents	system
	applications for accessing interactive and dynamic web contents	system
	applications for e-commerce functions	system
Employee and skills	basic computer application skills	skills, staff
	communication and information sharing applications skills	skills, staff
	enterprise wide information systems skills	skills, staff
	Internet browsing and searching skills	skills, staff
	Internet interactive responding skills	skills, staff
Information infrastructure	e-commerce online transaction skills	skills, staff
	adequate hardware and equipment for individual employees	system
	intranet or local area networks (LANs)	structure, system
	extranet or virtual private networks (VPNs)	structure, system
	high-speed Internet connection and backup/restore equipment	structure, system
	facilities for implementing disaster recovery plans or business continuity plans	structure, system
Executive management	facilities for implementing a secure and interactive website functions and interact with back-end information systems	structure, system
	supporting IT maintenance	strategy
	incorporating IT policies, procedures, and processes	strategy
	agreement of the enterprise wide information systems integration	strategy
	consentience of information systems amalgamation with business parties	strategy

The proposed framework provides enterprises an overall picture of conducting the e-transformation

## 6. Development of a checklist for e-transformation achievement

embraces three main stages. Firstly, the e-transformation roadmap is reviewed through the investigation and identification of requirement and components of each transformation phase. The second stage deals with the classification of five e-transformation change categories. The third stage is concerned with verifying the e-transformation changes through the mapping of 7S model. Accordingly, the framework ensures changes occurred in the e-transformation process have been indicated explicitly and integrated into all aspects of the business operations.

## References

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Change category		External phases			
		Basic website	Interactive website	E-commerce website	
	Business processes				
	Applications				Ready for convergence process
	Employee skills				
	Information infrastructure				
	Executive management				
		Effective individual	Effective group	Effective enterprise	
		Internal phases			

**Figure 5. Checklist for e-transformation achievement**

## 7. Conclusion

During the process of e-transformation, companies usually face a variety of challenges. These challenges mainly associate with the changes occurred in various aspects in the organisation. Without realising and understanding the changes, the implication of e-transformation will not sustain and be part of the business strategy and operations. Hence, a framework for managing changes in an enterprise's e-transformation process is necessary. The framework development