An Exploratory Study of E-Business Success Factors

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Abstract E-business success factors are important for traditional enterprises to implement e-business. This topic is attracting more and more researchers to study. This paper makes an exploratory study on the factors influencing e-business success. Firstly, based on the literature review, 52 factors are suggested. Secondly, two rounds of survey with Delphi method are conducted. Qualitative and quantitative analysis are used to identify 57 factors. This is the foundation of empirical study.

Key words e-business; success factors; comprehensive factors; web features and functions

As information technology grows, e-business applications are found all over the world. More and more companies recognize the benefit of e-business and move from traditional business to e-business.

Cisco and Dell are good examples of e-business success. But only a few companies can succeed in e-business. Most companies found many difficulties when they try to implement e-business. What are the factors affecting e-business success? How other companies can learn from the successful ones?

A survey showed some issues that researchers care about: 1) security and privacy, 2) e-business success criteria, 3) e-business critical success factors, etc. Many researchers are now studying factors affecting e-business success.

Our study project tries to identify factors that influence e-business of traditional companies. The factors are suitable for companies in China, and can help companies establish proper plan to implement e-business. Our study method includes exploratory study and experimental study. We analyze and identify dependant variables and independent variables, which indicate e-business success indicators and e-business success factors separately.

This paper is just the beginning of this project, which means to do exploratory study on independent variables. In this paper, we identify 52 independent variables in two dimensions from literature review. And after two round investigations to experts with Delphi method, 57 independent variables, which may influence e-business success, are selected out.

1 Literature Review and Initial Factors

After reading many papers in top journals and books, we find out there are two main directions in this area: the comprehensive factors of a company and the web features and functions that affect e-business success. But most studies only focus on one aspect. In order to get the whole view of the e-business, we try to consider both dimensions above.

Many researchers study factors or web features and functions in several aspects. Cisco studies e-business readiness from leadership, governance, organizational and competencies, technology. Tang identifies the factors from four aspects: organization, technology, management, and top manager and user. Barua study e-business success drivers encompassing three areas: e-business process, IT applications and the readiness of customers and suppliers. Considering these taxonomies, we attempt to identify the comprehensive factors influencing e-business success from five aspects: leadership, management, organization, technology and customers/suppliers. In the study of the impact of Web, Saeed identifies website features in three stages of customer service life cycle. Barua put forward many drivers of IT applications oriented towards customers and...
suppliers. Because we identify e-business as service both to customers and suppliers, we separate the functions for these two. And some functions to them all classified in to overall functions. To sum up, we identify the web features and functions from three aspects: overall features and functions, functions for customers and functions for suppliers.

1.1 Comprehensive Factors

1.1.1 Leadership

The implementation of e-business is related to all the employee of the company. Leaders should participate in the project and establish a clear target. Chatterjee defined top management championship in terms of managerial beliefs about Web initiatives and participation in those initiatives. Decision-makers and managers are core and sole of the company. Only did they support can the project be successful. Since executive level input is critical when analyzing and rethinking exiting business processes, the implementation project should have an executive management planning committee that is committed to enterprise integration, understands system, fully supports the costs, demands, payback, and champions the project.

Leadership also indicates establishing e-business strategy. In 1998, CSC’s (Computer Sciences Corporation) survey of “Top IS Management Key Issues Globally” pointed out that “aligning IS and corporate goals” and “developing an electronic business strategy” are important issues considered by CIOs all over the world. There should be a clear link to business objectives and clear benefits in using the technology. Besides establishing a proper e-business strategy, PWC indicated further that the organization should regularly evaluate new growth opportunities arising from e-business and can quickly make decisions whether to pursue these new opportunities based on strategic goals. And the organization should conduct regular analysis of it’s competitors, benchmarks new technologies, keeps track of new regulations and their impact on the e-business strategy, and updates its strategy accordingly.

So, factors in leadership are included in Tab.1.

1.1.2 Management

Management implies that the organization establishes an effective management pattern. This is always the biggest obstacle that the company should overcome. Management plays key role in implementing e-business. Only can effective management represent the advantage of EB system.

To implement e-business system successfully, there should be a specifically team which includes both business and IT managers. When establishing the e-business project team, an organization need to ensure that members are the key roles from business units. And the leader should authorize the project team so that they can successfully finish their jobs. Decision-making authority should be clearly assigned for all e-business initiatives. Roles, responsibilities and accountability are clearly defined for each team member involved in e-business initiatives. When implementing the system, the company should have a well-defined plan/schedule for all the activities involved, with an appropriate allocation of budget and sources for these activities. Company must staff e-business projects with the proper resources and have the proper funding to be successful in e-business initiatives.

Besides e-business project, managers should pay attention to perception of a company. Perceptions matter a great deal when business is conduced face-to-face, but when doing business over the Internet, they matter even more. Improving perception, brand and trust are the critical success factors of e-business.

So, factors in management are included in Tab.1.

1.1.3 Organization and Competencies

Organization and its competencies is interrelated with leadership, management and technology.

Implementing e-business will bring many changes to a company because the existing organizational structure and processes found in most companies are not compatible with the system. The current organizational structure must provide an environment that is well suited for e-business. Companies should reengineer business processes to link to life events at the front end and link to existing legacy processes and system at the back end. At the same time, companies must consider the influence of these changes. Companies should understand and plan for the impact
e-business initiatives will have on employees and communicate the e-strategy and its impact throughout the company.[19]

E-business success needs proper organization structure and process, and it requires good quality of the employees and ability of IT staff. The project manager should have technical as well as business knowledge, and the ability to communicate with the senior management. Support staff must be sophisticated enough to interact with top management and be able to master the technologies required for the system.[17] Besides, companies should pay attention to IT training. IT training plan should take into consideration both technical staff and end-users. Only when end-users use the new system properly, the benefits of the system can be realized.[16]

IT expands quickly and many new e-business models appear. Companies should always renew their notion to fit the changes. On the one hand, companies should have ability to fit the changes, keep agile and be ready for new changes. On the other hand, companies should continually do researches on innovative technologies to keep up with the IT development.

So, factors in organization and competencies are included in Tab.1.

1.1.4 Technology

E-business combines business and technology. Without good IT infrastructure, companies cannot fit the evolution of e-business. In order to success in electronic economy, the whole company must have strong and standardized IT infrastructure. IT should support e-business applications quickly and make people work together easily.[13]

One of the most important factors in technology is security and privacy. Many studies refer to this factor. PWC even takes security and privacy as a domain of e-business success. Many potential customers still cite concerns about security as the most important issue stopping them from engaging in more electronic commerce.[11] Security is not optional. Companies must consider it as they move to deploy e-business applications.[21]

E-business connects customers and suppliers with company’s intranet, so building information system is critical for e-business success. Any subsystems in the company must communicate with one another easily, and employees can retrieve required information through the intranet.[3] Companies should pay attention to legacy system management and systems integration.[22]

So factors in technology are included in Tab.1.

1.1.5 Customer and Supplier

E-business is related to suppliers, customers and other companies that involved in the business process. To have good relationship with partners is important to make success.[18,19,23,24]

Barua studies an e-business value model and lists many drivers that can improve operational performance.[3] He point out that readiness and process related to customers and suppliers are some of the e-business drivers. To better use e-business, customers and suppliers must consider engaging in e-business important. Only when they think much of e-business and have relevant system to engage in can the company’s e-business implementation be successful.

One the one hand, company should reevaluate its customer related process to improve custom service. E-business accelerates communication with customers. But if relevant sector doesn’t receive customers opinions in time, company still cannot provide good service. So customer feedback should quickly disseminate into organizational processes.[3] Many researchers and companies pay more and more attention to customer relationship management. The organization should have appointed a manager responsible for coordinating and monitoring customer relationships at all customer touch points.[19] On the other hand, company should make sure their supplier related process is good for reducing cost and saving time. Companies should define information-exchange policies with suppliers (frequency, precision, real-time or delayed, format, and channel), supplier evaluation metrics and supplier quality monitoring process.[3] The standard operating procedures cover all procurement scenarios (for example, well-defined rules for large versus small procurement) should be well documented.[3].
So, factors in customers and suppliers are included in Tab.1.

1.2 Web Features and Functions

E-business provides information and function to suppliers and customers on the web. Whether the web can provide functions that users need cannot be ignored. Many researchers study web functions and features that influence Web success[2,6,7,11].

1.2.1 Overall Features and Functions

Website is a primary way to communicate with suppliers and customers. One of its main purposes is to provide information. Information on the web should be useful, easy to understand, complete, timely, credible and accurate[25]. For users, a powerful search engine is prerequisite[4,5,7]. And again, security is an important issue to ensure web site operating normally.

1.2.2 Functions for Customers

Customer and supplier are two main users of e-business. In order to provide better service to customers, the website should include many functions according to customers needs.

Barua points out that customer facing systems should have both informational and transactional capabilities[3]. Informational capabilities include allowing customers to: find all product-related information, customize their orders online, find a comprehensive FAQ section, conveniently contact service representatives or seek service online, interact using online forums or communities and see personalized content when logging onto a website. Transactional capabilities include allowing customers to submit and modify orders online, pay online, automatically notified of their order status[3]. Other papers[2,5,7] also mention lots of functions for customers.

1.2.3 Functions for Suppliers

A company can provide useful information to suppliers on its own website. Zhu considers supplier connection as an element of e-commerce capability metrics[5]. Company should make electronic linkages to integrate suppliers via information sharing. Barua suggest a company to provide its suppliers with customer feedback, inventory information, production schedules and capacity (machines, manpower) information, product demand information (actual and forecasted) online[3]. And to have better service to suppliers, Barua suggest providing online communities (discussion forums, online chat, and so on), a comprehensive online FAQ section (for example, contact information, glossary, events), supplier evaluation reports and paying electronically to suppliers[3].

To sum up, we separate web function into 5 overall features and functions, 9 functions for customers and 8 functions for suppliers. These features and functions are listed in Tab.1.

2 Exploratory Survey

To make sure our factors are reliable and integrated, we enquire experts’ opinion in two rounds with Delphi method.

2.1 Exploratory Questionnaire and Survey

Based on the literature review we designed first round if questionnaire. There are 52 factors. Each item is measured on a five-point Likert scale, which represents five options separately: “extremely important” (=5), “important” (=4), “not sure” (=3), “unimportant” (=2), “extremely unimportant” (=1). In order to better differentiate the importance of factors, the questionnaire used in the second survey is measured on a seven-point scaled.

The two questionnaires were spread to 28 experts in e-business area. They are researchers of e-business/IS in universities or leaders of companies that implemented e-business. Many respondents provided their own opinions of e-business success. We carefully analyzed and coordinated all these factors and assimilated some new critical factors. These factors were added in to the second questionnaire.

2.2 Data Analysis

Basic statistics analysis and content validity ratio (CVR) is used to derive the final critical factors affecting e-business success[26]. First, means for each factor is calculated. Factors with mean less than 5.0 (70% of highest score 7) should be dropped. Second, All factors that have a CVR less than 0.36 should be dropped[26].

Finally we get 57 factors as critical factors influencing e-business success.
Tab.1 All Factors and Data Analysis Results

<table>
<thead>
<tr>
<th>Factors</th>
<th>Mean</th>
<th>CVR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leadership</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>understand e-b thoroughly by leader[6,14-16,19,20,22-24]</td>
<td>6.538</td>
<td>0.923</td>
</tr>
<tr>
<td>have CIO management system*</td>
<td>5.500</td>
<td>0.692</td>
</tr>
<tr>
<td>establish e-b strategy fitted in with company’s characteristic[14,16-19,22-24]</td>
<td>6.308</td>
<td>1.000</td>
</tr>
<tr>
<td>update e-b strategy according to competitive environment and opportunities[6,11,18,19]</td>
<td>6.038</td>
<td>1.000</td>
</tr>
<tr>
<td><strong>Management</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>set up the project team with managers from key units[6,16-18-20]</td>
<td>5.769</td>
<td>0.769</td>
</tr>
<tr>
<td>establish canonical e-b operation process[6,18-21,24]</td>
<td>6.038</td>
<td>0.923</td>
</tr>
<tr>
<td>input enough resource[15,18,19]</td>
<td>5.731</td>
<td>0.846</td>
</tr>
<tr>
<td>authorize e-b applications[18-20]</td>
<td>4.654</td>
<td>0.077</td>
</tr>
<tr>
<td>improve perception, brand and trust[11,22]</td>
<td>5.231</td>
<td>0.385</td>
</tr>
<tr>
<td><strong>Organization and Competencies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>reengineer business process[12,17,18,20]</td>
<td>6.231</td>
<td>0.923</td>
</tr>
<tr>
<td>adjust organization structure[16,19,20,22]</td>
<td>5.731</td>
<td>0.769</td>
</tr>
<tr>
<td>infiltrate e-b knowledge into business culture[18,19,22]</td>
<td>5.692</td>
<td>0.769</td>
</tr>
<tr>
<td>have an incentive structure to exert technical staff’s ability*</td>
<td>5.154</td>
<td>0.538</td>
</tr>
<tr>
<td>make a fast reaction and adapt with the changes of environment[19,21]</td>
<td>5.760</td>
<td>0.846</td>
</tr>
<tr>
<td>raise the technical level of IT staff and quality of employees[15,17]</td>
<td>5.385</td>
<td>0.615</td>
</tr>
<tr>
<td>enhance much of IT training[14-16,19,22,24]</td>
<td>5.192</td>
<td>0.538</td>
</tr>
<tr>
<td>keep up with new technology[18]</td>
<td>5.115</td>
<td>0.615</td>
</tr>
<tr>
<td><strong>Technology</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>choose proper system development partner*</td>
<td>6.080</td>
<td>0.923</td>
</tr>
<tr>
<td>establish fast and efficiency development process*</td>
<td>5.640</td>
<td>0.692</td>
</tr>
<tr>
<td>follow industrial, national or international standards*</td>
<td>5.923</td>
<td>0.846</td>
</tr>
<tr>
<td>ensure security and privacy[3,5,11,12,4,18,19,21]</td>
<td>5.500</td>
<td>0.692</td>
</tr>
<tr>
<td>get information from intranet by employees[13,19]</td>
<td>6.192</td>
<td>0.846</td>
</tr>
<tr>
<td>share information between systems[3]</td>
<td>5.692</td>
<td>0.538</td>
</tr>
<tr>
<td>integrate systems seamlessly[5,14,21,22]</td>
<td>5.846</td>
<td>0.846</td>
</tr>
<tr>
<td>increase system reliability*</td>
<td>5.840</td>
<td>0.769</td>
</tr>
<tr>
<td>increase response time*</td>
<td>5.346</td>
<td>0.462</td>
</tr>
<tr>
<td>enhance system expansibility*</td>
<td>6.077</td>
<td>0.769</td>
</tr>
<tr>
<td>transmit, integrate, and process data easily[3]</td>
<td>5.923</td>
<td>0.769</td>
</tr>
</tbody>
</table>

Customers and Suppliers

- customer consider e-b important[3] 5.808 0.846
- disseminate customer feedback rapidly[3] 6.077 0.923
- resolve customer complaints rapidly* 5.923 0.846
- manage customer relationship[18] 5.692 0.846
- have good relationship with partners[11,12,18,19] 5.962 0.846
- suppliers consider e-b important[3] 5.654 0.769
- suppliers have engaged in e-b[3] 5.077 0.462
- establish standard operating procedures[3] 5.538 0.538
- define supplier evaluation metrics[3] 4.654 0.231
- define supplier quality monitoring process[3] 5.077 0.462
- define information-exchange policies with suppliers[3] 5.654 0.615

Overall Features and Functions

- powerful search function[4,7,5,27] 5.462 0.615
- usefulness and easy understanding[21] 6.115 0.769
- completeness and timeliness[5,25] 6.308 0.923
- credible and accurate information[20] 6.308 0.923
- security[12,23,18] 5.885 0.846
- trust management* 5.962 0.923

Functions for Customers

- all product-related information[1,2,3,5] 6.308 1.000
- customize orders[3,5,7] 5.769 0.769
- personalized content[3,5,7,11,21,25] 5.269 0.615
- orders submission and modification online[1,3,5] 6.000 0.846
- online payment[2,3] 5.423 0.769
- online service[3,5,7] 5.962 0.923
- automatically notified order status[3,5,8] 5.808 0.692
- comprehensive FAQ section[3,4,7] 5.731 0.692
- online forums or communities[3,7,12] 4.654 0.385

Functions for Suppliers

- online shared customer feedback[3] 5.692 0.769
- online shared inventory information[1,3] 5.692 0.692
- online shared production schedules and capacity information[1,3] 5.577 0.615
- online shared product demand information[3] 6.038 0.769
- electronical payment to suppliers[3] 4.885 0.231
- comprehensive online FAQ section[3,5] 5.077 0.538
- online communities[3,5] 3.923 0.150
- supplier evaluation reports[3] 4.500 0.231

* are opinions of experts; Means and CVRs with shadow are dissatisfied.
3 Conclusion and Further Research

This is only an exploratory study of the issue. Next step we will conduct an empirical study to test the factors. We plan to do a questionnaire survey among traditional companies in China, and try to do statistical analysis to prove the relationship between dependent variables and independent variables.

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Brief Introduction to Authors

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