

Research Direction of Constructive e-Business Consulting for SMEs and Medium-Sized Enterprises (SMEs): Focusing on e-Commerce Business

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Abstract

Modern day e-businesses can create significant capital for corporations while enhancing long-term efficiency. As such, they have become a source of economic development for many nations. Lately, the e-commerce industry has been undergoing a polarization of profits due to competition, with SMEs businesses seeing very low performance even though trade volume has increased tremendously every year. The cause for this can be found in the lack of accumulated knowledge available as practical reference along with a shortage of knowledgeable professionals. Therefore, this study intends to suggest a model that presents a direction of consulting for SMEs businesses to increase their competitiveness in e-business. Moreover, the study notes that technology and organization are the two variables that affect e-business value through e-business capability.

Keywords: e-Business Capability, e-Business Consulting, e-Business Value, IT Expertise, Market Orientation, Organization Context, Technology Context

1. Introduction

According to ¹research, e-commerce is described as follows: "Advertisement and display of products for Internet trade is done in electronic shopping malls; data related to various products such as prices, structures, and features are available on servers; multimedia information and product information are offered on web pages; products from a variety of fields are included in online stores." In other words, e-commerce is a virtual market created by computer networks, with the users of the Internet and mobile devices as its customers. While e-business is becoming more important, SMEs businesses continue to

struggle to create significant e-business value due to a lack of relevant studies and a shortage of experts. For this reason, this study presents ideas for SMEs business to gain competitiveness by using e-business systems such as technology and organization context and e-business capability in an environment in which the e-business market is growing rapidly. Reference^{2,8} defined Operation and Management (OM) as designing, operating, and continually improving the production system and the distribution system of products and services. Thus, e-commerce operation management refers to the application of the principles of operation management in the e-commerce environment³. Reference⁴ defined e-business operation and management as a complex connector of

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business process application throughout the organization, and the organization structure necessary to create a business model with high performance. As for e-commerce businesses, consulting management means management of change, and² considered consulting a key aspect of e-commerce operations.

Reference 5 explained that e-business consulting can be provided by experts inside or outside a corporation. According to Such, the hiring of outside experts is a more common practice since employing internal experts can be very costly. E-business value refers to the impact that e-business has on the performance of a business as a whole, which can be measured by sales performance, operation efficiency, customer relationship development, and customer satisfaction⁶. According to⁷, it is crucial for companies to expand the integrated process of connecting with business partners based on their value chains: downstream (i.e., with customers) and upstream (i.e., with suppliers/business partners). According to⁸, programming, system analysis, design ability, and employee knowledge of IT technology represents the capacity of new technology. Since IT experts equipped with the knowledge and the technology to implement e-businesses can promote the growth of SMEs businesses by developing e-business, companies that utilize applied programs with technology develop e-business systems that operate effective businesses⁹. Reference¹⁰ stated that efficiency can be enhanced by removing a barrier to information flow through more accurate and timely use of information than previously unconnected parties and the reduction of information asymmetry. Reference¹¹ argued that value analysis is an activity that identifies business activities and studies economic impacts. Porter also claimed that differentiation can be achieved through customer segmentation according to various values. This can be accomplished by analyzing buyers who are driven by low prices and whose purchases are characterized by product prices and high quality services.

2. Research Model

As discussed in Section 1, the review of previous introduction shows that most studies have focused on large corporations, and the studies that have focused on SMEs businesses have been limited. In addition, few studies have tried to identify the variants that affect e-business value. In order to vitalize e-commerce and e-business

consulting for SMEs businesses, the variants of e-business value can be examined in two different contexts, technology and organization, based on previous research, to highlight helpful results in theory and for practical consulting. Accordingly, this study proposes the following research model (Figure 1)

H1 IT Infrastructure has a Significant Impact on e-business Capability

Reference¹² stated that IT infrastructure enables customers to order online, provides support through communication between business partners and internal members of an organization in accordance with transaction processes and value chain, and ensures a reliable technological platform in which e-business capability can be built.

IT infrastructure facilitates information exchange and corporate innovation, and serves as a strong business environmental link, which allows companies to adapt to changes by using business opportunities¹³. Reference¹⁴ claimed that e-business helps develop growing companies having a strong relationship with suppliers, business partners, and customers.

H2 IT Expertise has a Significant Impact on e-business Capability

Researchers who examined e-business innovation indicated that IT expertise leads to the growth of successful corporate e-business capability^{15,16}. According to⁹, companies that use effective applications utilize e-business to increase the efficiency of the value chain, and are looking for IT employees with the skills and knowledge necessary for e-business development.

H3 Market Orientation has a Significant Impact on e-business Capability

Reference¹⁷ stated that market orientation indicates the direction of valuable resources such as analysis of direction of competition and customers, emphasizing that studies on rapidly grown SMEs businesses are a key to understanding business approach for market orientation. According to¹⁸, competition-oriented companies strive to improve external and internal communication, understand the method of using e-business technology and adjust the process, recognize their own positions in the current market, and prepare for a new challenge.

H4 Top Management has a Significant Impact on e-business Capability

When implementing new e-business technology, a large proportion of financial resources should be mobilized.

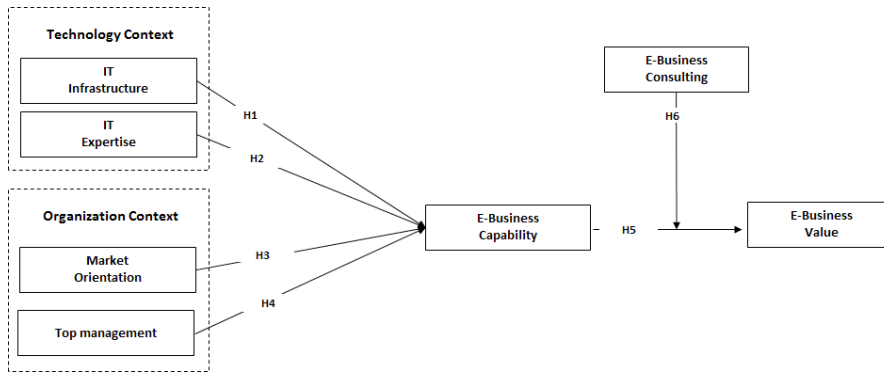


Figure 1. Research model.

A certain degree of top management support is related to the adjustment of organizational members and serves as an important factor affecting the success of enterprise digitalization^{18,19}. It is, therefore, critical for the implementation of e-business^{20–22}.

H5 e-business Capability has a Significant Impact on e-business Value

It is expected that companies that use a greater range of e-business have more potential and are likely to create e-business value¹⁶. Empirical studies by²³ and²⁴ verified that e-business has a positive effect on the performance of SMEs businesses, facilitating corporate growth and internationalization strategies.

H6 E-business Consulting plays an Accommodative role in a Relationship in which e-business Capability Affects e-business Value

A study by²⁵ verified that social learning networks have a positive effect on e-business (ERP) consulting.

3. Verification of Hypothesis

3.1 Business-related Items

For analysis of the “research subject,” 150 e-business companies whose main business is e-commerce were requested to fill out a questionnaire by e-mail, mail, and telephone. The analysis used 81 retrieved items among the entire set of items, which were related to business. In terms of characteristics, the items were divided into sale item, shopping mall types, sales, the number of employees, and year of operation. As for sale item’s ratio (%), Fashion/Clothes/Accessories (29.6%) had the highest ratio, while other sale items included Food (7.4%), Agricultural products (23.5%), Furniture/Bedding (7.4%), Household items (13.6%), Home electronic appliances (2.5%),

Sports/Hobbies (6.2%), and Others (9.9%). Shopping mall types included Specialized mall (61.7%), International open market (2.5%), General mall (2.5%), National open market (30.9%), Others (2.5%). Sales included sales over 50,000,000 won to 300,000,000 won (38.3%), less than 50,000,000 won (29.6%), sales between 300 million won and 500 million won (7.4%), and sales over 500,000,000 won (24.7%). The number of employees less than 10 was 55.6% and the number between 10 and 30 was 44.4%. Around 66.7% of the companies had consulting experience, whereas 33.3% did not. The consulting fields included internet marketing (18.5%), technology (18.5%), web planning (21.0%), finance (4.9%), organization management (3.7%), and missing (companies with no consulting experience: 33.3%).

3.2 General Characteristics

For general characteristics by gender, there were 48 males (59.3%) and 33 females (40.7%). In terms of age, 10 people were in their 20s (12.3%), 23 people in their 30s (28.4%), 36 people in their 40s (44.4%), and 12 people in their 50s or greater (14.8%). In terms of education, there were two people with at most a high school diploma (2.5%), 10 college students/graduates (12.3%), 39 university students/graduates (48.1%), and 30 students/graduates of graduate school (37.0%). In terms of fields of work, 14 people were involved in technology (17.3%), 4 in accounting (4.9%), 17 in whole work (21.0%), 42 in marketing (51.9%), 4 in non-computer-based work (4.9%), and none in HR (0%). As for business role, 10 people were in administration (12.3%), 17 in consulting and outsourcing (21.0%), 36 in management (44.4%), 8 entry-level employees (9.9%), and 10 executives (12.3%).

3.3 Reliability and Validity (Factor) Analysis

Using the SPSS 19.0 & AMOS program, this study examined the reliability of the following measurement variables - IT Infrastructure, IT Expertise, Market Orientation, Top Management, E-Business Capability, E-business Consulting, and E-business Value. Results indicated that the Cronbach's alpha coefficient was greater than 0.8, implying that there is no reliability problem; thus, all variables were used as validation data, which is the next stage. For validity analysis, a factor analysis was conducted. To verify the construct validity of the measurement tool, principal component analysis with varimax orthogonal rotation, which reduces a large number of variables to a

SMEs number of factors to the utmost while minimizing loss of information, was used. As for the number of factors, those whose eigen value is more than 1 were selected, and items were considered significant only when each of their factor loading was more than 0.5. The result of factor analysis is shown in Table 3. Although 42 variables were inputted, 11 variables comprising IT Infrastructure (4), Market Orientation (2), E-Business Capability (4), and Top Management (1) were removed. The remaining 31 variables consisted of IT Infrastructure (1,3), IT Expertise (1,2,3,4,5) Market Orientation (1,2,4,6), Top Management (1,2,3), E-Business Capability (3,4,5,7,8,9,11), E-business Consulting (1,2,3,4,5), E-business Value (1,2,3,4,5).

Table 1. Reliability and validity analysis

Items	Factor analysis							Reliability
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Cronbach's α
Capability 9	.889	.126	-.032	.000	.031	.106	-.069	0.839
Capability 8	.874	-.004	-.134	-.074	.093	.128	-.066	
Capability 5	.869	.195	.156	.155	-.037	.003	.149	
Capability 4	.862	.181	-.008	.167	-.010	.028	.187	
Capability 7	.843	.018	.031	-.042	.150	.159	.205	
Capability 3	.793	.116	.150	.281	.067	.227	.151	
Capability 11	.688	.262	.064	.194	.249	.226	.099	0.871
Value 2	.205	.917	.002	.098	.008	.107	.024	
Value 1	.211	.906	.067	.125	.133	.060	.089	
Value 3	.267	.808	.235	.060	.114	.133	-.091	
Value 4	-.079	.797	.267	.028	.299	-.042	.139	
Value 5	.118	.790	.021	.048	.304	.037	.284	
Consulting 2	.163	.104	.900	.102	-.113	.108	-.053	0.939
Consulting 5	-.052	-.093	.869	.013	.010	.172	.203	
Consulting 4	.107	.010	.853	-.015	.106	.243	.125	
Consulting 1	-.047	.267	.802	.118	-.036	-.151	-.155	
Consulting 3	-.024	.244	.797	.139	.063	-.222	-.091	0.908
Expertise 4	-.075	.093	.088	.829	.269	.118	.242	
Expertise 2	.218	-.023	-.059	.826	.037	.175	-.054	
Expertise 3	-.144	.047	.010	.733	.377	.133	.300	
Expertise 5	.159	.237	.198	.696	.263	-.042	.009	
Expertise 1	.383	.072	.231	.690	-.153	-.001	-.085	0.805
Market 1	.208	.108	-.061	.161	.891	.087	.090	
Market 2	.202	.321	-.071	.082	.820	.082	-.054	
Market 6	.052	.146	-.017	.234	.720	.221	.159	
Market 4	-.148	.235	.377	.150	.698	.347	.084	0.922
Top Management 2	.270	.107	.092	.123	.178	.883	.112	
Top Management 3	.293	-.052	-.027	.111	.086	.869	-.016	
Top Management 1	.089	.199	.103	.089	.249	.857	.049	
Infrastructure 1	.245	.206	-.079	.011	.288	-.024	.731	0.857
Infrastructure 3	.285	.132	.122	.290	-.041	.176	.689	

3.4 Confirmatory Factor Analysis

To verify the goodness of fit of the data, χ^2 , GFI, AGFI, CFI, NFI, IFI, RMR, RMSEA, and p value were used. A process of removing items one-by-one was carried out repeatedly based on a Squared Multiple Correlation (SMC) value of less than 4.0 in the final and first items to ensure a high goodness of fit in the these items. SMC is an indicator used to determine the extent to which measuring variables explains latent variables. Results of the confirmatory factor analysis are shown in Table 2.

Table 2. Confirmatory factor analysis

Measure		Number of items	χ^2	p	CMIM/DF	RMR	GFI	AGFI	CFI	NFI	IFI	RMSEA
Infrastructure	Initial	6	41.010	0.000	4.557	0.382	0.855	0.661	0.821	0.789	0.827	0.211
	Final	4	0.739	0.691	0.370	0.088	0.995	0.977	1.000	0.994	1.010	0.000
Expertise	Initial	5	30.275	0.000	6.055	0.430	0.866	0.599	0.885	0.868	0.887	0.251
	Final	4	3.234	0.199	1.617	0.172	0.980	0.901	0.993	0.982	0.993	0.088
Market Orientation	Initial	6	59.804	0.000	6.645	0.132	0.777	0.480	0.813	0.792	0.817	0.266
	Final	4	3.206	0.201	1.603	0.060	0.982	0.908	0.984	0.961	0.985	0.087
Top Management	Initial	4	1.167	0.558	0.583	0.038	0.993	0.964	1.000	0.995	1.003	0.000
	Final	4	1.167	0.558	0.583	0.038	0.993	0.964	1.000	0.995	1.003	0.000
Capability	Initial	11	201.018	0.000	4.569	0.249	0.699	0.549	0.792	0.752	0.795	0.211
	Final	4	2.188	0.335	1.094	0.050	0.987	0.937	0.999	0.990	0.999	0.034
Value	Initial	5	16.401	0.006	3.280	0.049	0.957	0.775	0.969	0.957	0.970	0.169
	Final	4	1.577	0.455	0.788	0.013	0.990	0.951	1.000	0.995	1.000	0.000

3.5 Correlation Analysis

Reference²⁶ stated that correlation analysis examines the relationship between variables. It analyzes the intensity and direction of a change when one variable changes in accordance with changes in another variable under the condition that there are more than two variables. The intensity of change is higher as it is closer to the absolute value of 1. As for the direction of change, + is called positive direction and - is called negative direction. Results of the correlation analysis are shown in Table 3.

3.6 The Measurement Model of Moderating Variables and Hypothesis Testing Result

Following the reliability and validity analysis, reliability was noted to be more than 0.8 and validity was more than 0.6. Accordingly, a multiple regression analysis was conducted to verify the causal relationship between independent and dependent variables and whether e-business consulting plays an accommodative role.

First, analysis was carried out for independent variables and e-business capability. The effects of IT profession

also and top management on e-business capability were selected as independent variables, while the rest were dismissed. Analytic details are shown in Table 4.

Second, a moderating effect analysis was conducted by following these three steps according to status of consulting experience:

- Step 1: Regression analysis between independent and dependent variables.
- Step 2: Regression analysis between independent and moderating variables and dependent variables.

- Step 3: Regression analysis between independent and moderating variables, and interaction term (independent variables X moderating variables) and dependent variables.

The results of the analysis verified that the regression analysis between independent variables and dependent variables, which is the first step, the regression analysis between independent and moderating variables and dependent variables, which is the second step, and the regression analysis among independent and moderating variables and interaction term, which is the third step, were adopted. As shown in these results, the status of consulting experience plays an accommodative role.

4. Conclusion

SMEs businesses are unable to cope with the changes in the network environment with the sharply rising volume of computer tablets and mobile devices. As a result, for SMEs businesses, the significance of e-business consulting is growing. In reality, however, there are not enough experts that can solve e-business risks.

Table 3. Correlation analysis

		Expertise	Infrastructure	Market Orientation	Capability	Top Management	Value
Expertise	Pearson correlation	1	.342**	.404**	.314**	.281*	.276*
	two-tailed p-value		.002	.000	.004	.011	.012
	N	81	81	81	81	81	81
Infrastructure	Pearson correlation	.342**	1	.339**	.453**	.284*	.344**
	two-tailed p-value	.002		.002	.000	.010	.002
	N	81	81	81	81	81	81
Market Orientation	Pearson correlation	.404**	.339**	1	.256*	.425**	.452**
	two-tailed p-value	.000	.002		.021	.000	.000
	N	81	81	81	81	81	81
Capability	Pearson correlation	.314**	.453**	.256*	1	.406**	.347**
	two-tailed p-value	.004	.000	.021		.000	.002
	N	81	81	81	81	81	81
Top Management	Pearson correlation	.281*	.284*	.425**	.406**	1	.224*
	two-tailed p-value	.011	.010	.000	.000		.044
	N	81	81	81	81	81	81
Value	Pearson correlation	.276*	.344**	.452**	.347**	.224*	1
	two-tailed p-value	.012	.002	.000	.002	.044	
	N	81	81	81	81	81	81

** The correlation coefficient is significant at the 0.01 level (two-tailed).

* The correlation coefficient is significant at the 0.05 level (two-tailed).

Table 4. Evaluation of the measurement model between independent and dependent variables and hypothesis testing result

Dependent variable	Independent variable	Unstandardized coefficients		Standardized coefficients	t	p-value	Collinearity statistics		Result
		B	SE	Beta			Tolerance	VIF	
e-business capability	IT-based facility -> Capability	.173	.143	.132	1.216	.228	.782	1.279	Rejected
	IT professionals -> Capability	1.164	.365	.338	3.189	.002	.819	1.221	Adopted
	Market orientation -> Capability	-.104	.343	-.035	-.304	.762	.709	1.411	Rejected
	Top management -> Capability	.799	.299	.288	2.673	.009	.790	1.267	Adopted
	R = .550a, R ² = .303, modified R ² = .266, F = 8.241, p = .000, Durbin-Watson = 1.556								

E-commerce related education or training, that many colleges and semi-educational organizations offer, is focused on technical aspects of e-commerce. For this reason, there is a shortage of highly educated consultants (MBAs) who can create overarching plans for e-commerce business models, analyze technology, also have a knowledge

of business administration, marketing and market flow, and know how to communicate with customers. Hence, to enhance technology context, organization context, capability, and value, which can be the base of e-business of SMEs businesses, this study examined the effect of

Table 5. Evaluation of the measurement model of moderating variables and hypothesis testing result

Dependent variable	Independent variable	Unstandardized coefficients		Standardized coefficients	t	p-value	Collinearity statistics		Result
				Beta			Tolerance	VIF	
e-business value	Capability->Value		.175	.053	.347	3.289	.002	1.000	Adopted
	R = .347a, R ² = .120, modified R ² = .109, F = 10.818, p = .002, Durbin-Watson = 1.967								
	Capability, consulting ->Value	Capability ->Value	.156	.048	.309	3.246	.002	.992	Adopted
		Consulting ->Value	4.763	1.071	.423	4.447	.000	.992	Adopted
	R = .546a, R ² = .298 modified R ² = .280, F = 16.583, p = .000, Durbin-Watson = 2.229								
	Capability ->Consulting, consulting moderation (capability X consulting)	Consulting ->Value	4.607	1.076	.410	4.280	.000	.982	Adopted
		Consulting moderation ->Value	.156	.048	.311	3.246	.002	.982	Adopted
	R = .546a, R ² = .298 modified R ² = .280, F = 16.583, p = .000, Durbin-Watson = 2.229								

for fostering e-business consultants by verifying importance of e-business consulting as an accompaniment of promising business areas of growth for poor SMEs businesses. In line with this, the first hypothesis that stated IT infrastructure will have a significant effect on e-business capability was rejected in this study. In other words, this indicated that factors including possession of a personal computer, software, and equipment for photography and building status of a complex mall do not directly affect e-business capability. Second, the hypothesis that IT expertise has a significant effect on e-business capability was adopted. In other words, this implied that when IT expertise such as corporate professional programmers, professional designers, market analysts, and system analysts is ensured, it has a direct effect on e-business capability.

Third, contrary to the expectation, the hypothesis that market orientation has a significant effect on e-business capability was rejected. It seems that customer-centric orientation, an ability to identify competitors, and understanding of the ways to use e-business technology were dismissed because sectorally subdivided customer-centric orientation and analytical form for identifying competitors were not established. Fourth, the hypothesis that top management will have a significant effect on e-business

capability was adopted. This implied that the level of top management's knowledge of e-business and active resource support has a direct effect.

Fifth, the hypothesis that e-business capability has a significant effect on e-business value was adopted. This indicated that e-business capability has a direct effect on corporate sale performance, operational efficiency, and relationship development.

Sixth, the hypothesis that e-business consulting plays an accommodative role in a relationship in which e-business capability will affect e-business value was adopted.

The result of the analysis of whether the status of e-business consulting experience affects the value of SMEs businesses, which this study aimed to examine, confirmed that it has a direct effect.

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