

e-비즈니스 모델의 국가간 비교 분석에 관한 연구 : 한국과 미국을 중심으로

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Evaluating E-Business Models from Cross-Cultural (Korea vs. US) Perspective

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Abstract

Understanding characteristics of Internet businesses from a cross-cultural perspective could offer valuable insights on developing business strategies and policies. This work is concerned with revealing divergence and convergence of Internet businesses in their financial performance, given organizational conditions and cultural context. For this, we studied the association between static organizational attributes (core activity, origination, firm age, and industry type) and a firms financial performance (gross revenue and net income). Relevant data was gathered from representative Internet firms in Korea and U.S. Data analysis indicated that, besides industry type, overall connection between selected organizational variables and financial performance was weak. Cross-national comparison showed that Korean firms financial performance was comparable to U.S firms during the period of economic turbulence. A noticeable difference was that Korean Internet firms and their business models were more service-oriented than U.S. counterparts.

Keywords : Business Model, e-Business, e-Commerce, Cross-cultural Study, Internet Business

논문접수일 : 2003년 10월 24일

논문게재확정일 : 2004년 2월 1일

※ This work was supported by the Korea Research Foundation Grant (KRF-2002- B00079).

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1. INTRODUCTION

Traditional as well as new businesses have been taking advantage of opportunities the Internet offers and accordingly Internet business models are beginning to show signs of improved maturity. We are also starting to witness the geographical and cultural discrepancies in their development course and success stories. Discovering the diversion and conversion of Internet businesses and understanding the characteristics of their evolutionary paths from cross-cultural perspective could offer valuable strategic and policy insights to the planning and promotion of Internet businesses.

Despite the importance, cross-cultural investigation of Internet businesses has been rarely conducted. This becomes the motivation of our exploratory research. Our effort is, therefore, concerned with revealing the divergence and convergence of Internet businesses models, especially in their financial performance, given organizational conditions and cultural context.

Organizational conditions represent major static (rather than dynamic) elements of an Internet business. Four variables (core activity, industry types, origination, and firm age) were chosen as the static attributes of an Internet firm. Their association to two performance variables (gross revenue and net income) was studied. Additional examination was made on the dependency among the organizational attributes.

To conduct research from cross-cultural

perspective, we gathered relevant data from Internet firms in Korea and U.S. Two countries are considered as representative fore-runners of Internet businesses, sharing similarities in e-business penetration and overall growth rate [Dryden, 2001]. However, there appears to be an increasing gap in the evolutionary path of Internet businesses models, their operational performance (e.g., profit achievement), and the patterns of success and failure.

In this study, we aim to improve understanding the performance of Internet businesses in terms of selected organizational characteristics and their cultural background. Organizational characteristics represent major static (rather than dynamic) elements of an organization. More specifically, we studied the relationship between four firm-related variables (core activity, industry type, origination, and firm age) and two performance variables (gross revenue and net income) of Internet businesses. Additional examination was made on the association among the independent variables. Cultural dimension was regarded as context, rather than an independent variable.

2. RESEARCH VARIABLES

2.1 Performance Factors

Target study requires the definition of performance metrics that can be consistently applied throughout the study. Performance concept itself can be highly divergent depending on how we define its type and scope. Several

subjective and objective indicators of e-business performance have been suggested. Among them, variables of financial performance have been most frequently adopted. For instance, Dubosson-Torbay [2002] suggested such metrics as revenue growth, cost management, asset utilization, and market capitalization. The performance also can be adequately assessed through measures of profitability and profitability prediction [Afuah and Tucci, 2001]. We, therefore, decided to use gross revenue (REV) and net income (NIC) as the indicators of financial performance. They are complementary in nature by representing revenue and profitability aspects of business performance, in which higher revenue may not necessarily translate into higher profitability [Markman and Gartner, 2002].

2.2 Organizational Features

We chose core business activities, firm age, industry type, and origination (on-line or off-line) as organizational feature that might explain financial performance of Internet firms.

2.2.1 Core Business Activities

Several taxonomy schemes have been proposed to characterize the nature of Internet businesses [e.g., Mahadevan, 2000]. On the basis of existing works, we classified Internet business activities into seven categories: merchandising (physical and digital), professional services, dynamic content provision, infrastructure (hard and soft), intermediaries, and market making <see Table 1>.

<Table 1> A taxonomy of Internet business activities

Core business activities	Business Model Examples
1. Merchandise-physical	: Books, flowers
2. Merchandise-digital	: Software products and solutions
3. Professional services	: Financial, legal, consulting, healthcare
4. Dynamic content provision	: Research, on-line publishing, e-learning
5. Hard infrastructure	: Network infra, hosting, ISP
6. Soft infrastructure	: Trust services, security, certification
7. Info-mediary	: Portals, linking, listing
8. Market making	: Demand aggregation, auction, exchanges

Merchandising includes the transaction of physical and digital products. All Internet stores selling physical products belong to the former category. Meanwhile, digital products are mostly associated with software products and solutions developed for merchandising. Any on-line businesses rendering service based on the availability of special expertise such as medical and legal know-how belong to the category of **professional services**. It is different from **dynamic content provision** whose core activity is to provide general contents (e.g., news) for selected topics. **Hard infrastructure** providers own networking and hosting infrastructure and provide related services to generate income. **Soft infrastructure** providers offer services indispensable for e-business transactions to take place and for the Internet marketplace to function in a reliable manner. **Info-mediary** activities focus on provisioning product information for buyers and sellers rather than active involvement in a transactional process. **Market makers** bring buyers and sellers together and actively me-

ciate business transactions among them.

Given the taxonomy scheme and corresponding business activities, one of our research questions is to understand the association relationship between the core activity of an Internet business and its financial performance.

2.2.2 Industry Type

The connection between the industry type of a firm and its performance has been studied frequently. For example, Hitt and Ireland [1985a] showed that "non-durable goods" industry was a positive indicator of firm performance. In King's study [1966], about ten percent of stock price variation was explained by the industry a firm belongs. The role of industry in moderating the relationship between distinctive competency and a firm's performance [Hitt and Ireland, 1985b], and between cultural characteristics (e.g., innovation and result orientation) of an organization and its revenue growth [Christensen and Gordon, 1999] was investigated as well.

These studies are, however, conducted on traditional brick-and-mortar companies and their applicability to Internet businesses has been subject to empirical validation. Furthermore, industry typologies used for early studies are heavily oriented toward industrial and manufacturing sectors, not adequately reflecting the emergence of network and technology paradigm.

Given the background, industry coding scheme from NASDAQ was initially adopted for the classification of Internet businesses <Table 2>. NASDAQ defines 25 different industry

sectors from aerospace/defense to utilities. Due to the large number of categories, higher-level meta-categories are further developed, which include *financial*, *technical*, *industrial*, *retail*, and *services*. The correspondence between NASDAQ industries and meta-categories is in <Table 2>. Using two industry classifications, we attempted to partially understand the association between the industry of an Internet business and its financial performance.

<Table 2> Correspondence : meta-industry and NASDAQ classification

Meta-Industries	NASDAQ industries
1. Financial:	<ul style="list-style-type: none"> • Banks, financial services & insurance • Closed end funds & investment companies • Distribution unit trusts & funds
2. Technology:	<ul style="list-style-type: none"> • Biotechnology • Computer hardware, software, and Internet services • Telecommunication services
3. Industrial:	<ul style="list-style-type: none"> • Aerospace & defense • Agriculture, paper & packaging • Automotive • Building & construction • Chemicals • Electronics & engineering • Food manufacturing & products • Industrial & manufacturing • Metals & mining • Oil, gas, & energy
4. Retail:	<ul style="list-style-type: none"> • Home, clothing, retail, stores
5. Services:	<ul style="list-style-type: none"> • Publishing, printing & media • Business & support services (BSS), learning, marketing, advertising • Health-care & pharmaceutical (HP) • Leisure & entertainment, hotels, lottery, gambling • Real estate • Transportation • Utilities • Government

2.2.3 Origination

The origination (either on-line or off-line) of an Internet company may be associated with its overall business performance. We witnessed the proliferation of innovative business models on the Internet space. Many brick-and-mortars (off-line starters) added Internet components to their existing channels to take advantage of benefits the Internet offers. Some (e.g., Amazon.com) copied traditional business concepts into the virtual space and elaborated them (on-line starters). Others (e.g., priceline.com) are grounded on innovative ideas that cannot be realized in the traditional market place (on-line starters).

Conceptually, off-line starters' business models may be less risky because, to a certain degree, their feasibility has been tested and proved in the off-line space. The potential weakness of many on-line starters could be the uncertain viability of their business models and the lack of proved business experience. Also, off-line starters may be able to mitigate potential risks better than on-line counterparts can do. Off-line starters tend to incorporate on-line components to create synergy and to further strengthen their business position. By having their roots in off-line space, they are in a position to leverage the strengths of two worlds and therefore may be able to reduce business risks. On the contrary, the chances are that most on-line starters stay on-line rather than diversifying to off-line because of the business nature or off-line competition.

Off-line starters can have weaknesses as well. Cost overrun (e.g., inventory), distri-

bution channel conflicts, and difficulties of integration between on-line and off-line infrastructures are among them. On the contrary, on-line starters can start clean without worrying about legacy factors such as existing business channels, limiting organizational processes, and soft/hard infrastructure, potentially making their operation more efficient. This conjecture leaves us a good reason to compare off-line and on-line starters in their financial performance.

2.2.4 Age of a Firm

Age may have direct or indirect implications on competitive practices of a firm because of its relevance to both external relationships (e.g., market recognition) and internal arrangements (e.g., internal control) [BarNir et al., 2003]. There has been a controversy regarding the effect of aging on organizational performance. For a research camp, aging means more knowledge, know-how, and experience that can speed up the innovation. It also is related to better environmental scanning, gathering remote information such as trends, and using more marketplace information for decision-making [Mohan-Neill, 1995]. For the other camp, aging is associated with extra managerial hierarchy, higher inertia, and rigidity that could interfere with business innovation and agility. Formalized internal processes, institutionalized power structure, and embedded relationships and communication patterns [BarNir et al., 2003] as a result of aging may work against a firms' performance.

As a related work, several studies empirically examined the relationship between firm

age and business growth/failure. Delmar et al [2003]'s study revealed that the patterns of business growth are significantly related to a firm's age. Business failure (as a result of short or long-term financial performance) appears to be higher for young businesses than for old ones although empirical findings are somewhat inconclusive [HAnnan, 1998 ; Honjo, 2000]. Honjo [2000] discovered that a firm's age was negatively associated with business failure and new firms that entered a low entry market and those that entered during turbulent economic period were especially worse-off. This leads us to conjecture that Internet's low-entry barrier may expose young businesses to higher risk.

Counter findings are also made. Firm age was found to be inversely related to profitability among high-growth firms [Markman and Gartner, 2002]. Meanwhile, it was also suggested that the association between age and business mortality is moderated by such factors as the size, initial resource endowments, structural inertia, and organizational capability [HAnnan, 1998]. Accordingly, we explore the relationship between the age of an

Internet business and its financial performance.

In summary, core business activities, firm age, industry types (NASDAQ classification and meta-industry), and origination (on-line or off-line) constituted independent variables that might explain the financial performance of Internet firms in their gross revenue and net income. The list of independent and dependent variables and their data types are summarized in <Table 3>

3. RESEARCH METHODOLOGY

3.1 Sampling

To conduct the proposed research, Internet companies had to be identified. The list of core activities in <Table 1> was used as the main criteria for determining Internet businesses. We limited Internet firms to the public companies listed in KOSDAQ (Korea) and NASDAQ (U.S.) initially. KOSDAQ had 877 companies (as of 6/9/2003) listed at the time of the search. Three reviewers went through each company and individually selected Internet companies

<Table 3> Studied variables and data types

Type	Variable	Data type	Values
Dependent.1	Gross revenue	Quantitative	
Dependent.2	Net income	Quantitative	
Independent.1	Core activities	Nominal	See Table 1
Independent.2	Industry <ul style="list-style-type: none"> • NASDAQ industry • Meta-industry 	Nominal	See Table 2
Independent.3	Origination	Nominal	off-line, on-line
Independent.4	Firm's age	Quantitative	

that satisfy the search criteria. Then, another reviewer along with the three original reviewers went through the selected list once again and finalized Internet firms from Korea. Thirty one Korean cases were identified from KOSDAQ based on the consensus among the reviewers.

Due to the limited list of KOSDAQ firms that meet the selection criteria, Korea's 3rd market, with 161 companies listed, was also searched with identical procedure. Twenty one companies were additionally identified from the 3rd market, making the total Korean samples to fifty two.

NASDAQ had nearly 4100 companies (including non-U.S. firms) listed at the time of the search and therefore more careful screening process had to be adopted to improve the reliability of selection process. Again, the same three reviewers went through the complete list and individually came up with the U.S. firms that satisfy the search criteria of core activities. The degree of agreement in initial search was as follow :

3 reviewers agreed :	103 cases (group 1)
2 reviewers agreed :	124 cases (group 2)
1 reviewer picked :	233 cases (group 3)
Total	: 460 cases

Then, additional confirmation was made based on the keyword (with .COM and .NET keywords) search on NASDAQ list to validate if any Internet companies were missing from initial samples. The key word search resulted in 274 cases and this was cross-examined with the list of manual search that resulted in 460 samples. Except two cases, all companies from

the keyword search were in either group 2 or group 3. This validated that NASDAQ companies with .COM or .NET extensions conduct significant businesses on the Internet. The result also confirmed the integrity of manual search.

Once the list was completed, each of two IS faculty members from U.S. went through it again to validated the integrity of included companies. During the examination, all holding companies and foreign firms were dropped to consider only U.S. companies. Then, two reviewers' individual lists were again cross examined to determine the final samples. With the cross examination, 88 companies from group 1 (84.5% retention), 112 companies from group 2 (90.3% retention) were retained. For group 3 companies, all but 66 companies (28.3% retention) were dropped from further consideration.

When the review process was completed, 266 firms from NASDAQ and 52 firms from KOSDAQ and Korea's 3rd market place were retained for the study. Then, those with no financial information had to be dropped from further consideration. Samples that had at least one financial variable (either gross revenue or net income) with a complete data set of three year period were not dropped. The remaining observation size was 298 (257 : U.S. and 41 : Korea).

3.2 Data Gathering

Necessary data including financial information were mostly archival in nature. We,

therefore, relied on various information sources to gather them, which included electronic archives and various web sites including Yahoo! finance, thomsonfn.com, csidata.com, multex-investor.com, NASDAQ.com, and KOSDAQ.com.

As for the firm origination, relevant information for Korean firms was available in the public domain. For U.S. firms, however, such information was not obtainable (or we might have failed to uncover relevant information sources) and efforts had to be made to determine the value (either online or offline) for each company. To do that, we divided all U.S. firms into two types : those found prior to 1990 and after 1990. We assumed that those in the former category started their business off-line because until 1990 the Internet was not ready to become a business platform. Then, for the firms found after 1990, we searched each company's on-line sources and incorporated the information into a database. In case such information was not available on the Internet, we contacted each company and had a brief interview process to learn its origination. As it was not a sensitive piece of information, interviewed firms were highly responsive to our inquiry.

Determining *core business activities* of Internet firms could implicate certain level of subjectivity and therefore value determination had to be conducted in a reliable manner. For the estimation, the authors individually determined the main activity of selected firms based on available descriptions from Internet sources, especially from finance sites such as Yahoo! finance. Then, ensuing discrepancies were col-

lectively resolved after further review of company information and discussions.

As for the financial variables, we decided to utilize three-year longitudinal data [2000, 2001, and 2002] and their average values to neutralize potential bias in data analysis. From the longitudinal data, gross revenue (REV) and net income (NIC) values are computed as below :

$$REV = (REV1 + REV2 + REC3)/3$$

$$NIC = (NIC1 + NIC2 + NIC3)/3$$

Where :

REV : Gross revenue (average)

NIC : Net income (average)

REV1, REV2, and REV3 : Respective revenue for 2000, 2001, and 2002

NIC1, NIC2, and NIC3 : Respective net income for 2000, 2001, and 2002

3.3 Analysis Methods

Independent variables in consideration are not quantitative except firms' age (see <Table 3>) and not a single analysis method is comprehensive enough to examine the data. We, therefore, adopted various analysis methods to reveal hidden information, which included descriptive statistics, analysis of variance, linear regression, and categorical data analysis. Except categorical data analysis that requires a large sample size for test reliability, other analysis methods examined U.S. and Korean firms separately to understand the data from cross-cultural perspective. Besides, combined-data approach was not adequate because it could have neutralized the effects of Korean

data due to the large disparity in sample size.

4. ANALYSIS RESULTS

4.1 Descriptive Statistics

4.1.1 Core activities

<Table 4> summarizes Internet companies in terms of their core activities. In U.S., on-line merchandising of digital products such as software solutions had the largest share of the observation points, followed by hard infrastructure, most of whom are the providers of communication and network infrastructure. This implies that the large share of U.S. firms served knowledge-based engineering of digital products and their provision, especially in the form of software solutions.

This is in stark contrast to the distribution of Korean Internet firms in which about fifty percent of Internet businesses created values through dynamic content provision and more traditional merchandising of physical products. In fact, closer observation of core activities for Korean firms indicated their service-orientation. Production and merchandising of software did not carry a significant market share among Korean firms. It shows that Korea's Internet businesses were not driven by the development of innovative technologies but by their application.

<Table 4> Distribution of core activities

#	U.S.	Korea
1	Merchandise : digital(40.2%)	Dynamic Content Provision(31.7%)
2	Hard Infrastructure(19.1%)	Merchandise : physical(19.5)
3	Dynamic Content Provision(13.3%)	Soft Infrastructure(17.1%)
4	Professional Services(8.6%)	Info-mediary(12.2%)

4.1.2 Industry classification

Many U.S firms belonged to IT-intensive industries (e.g., computers, software, and telecommunication) as indicated in <Table 5a>. Meanwhile, a larger share of Korean firms was concerned with service rendering that included entertainment and retailing. The share of technology-driven business models in Korea was far smaller than that of U.S.

<Table 5a> Industry distribution of Internet businesses

US	
1.	Computers, Technology & Internet (CTI) (60.5%)
2.	Telecommunications (15.2%)
3.	Banks, Financial Services & Insurance (5.9%)
4.	Business support system, learning, marketing, advertising (5.5%)
5.	Home, clothing, retail, stores (3.9%)
Korea	
1.	Leisure & Entertainment, hotels, lottery, gambling (29.3%)
2.	Home, clothing, retail, stores (24.4%)
3.	Business support system, learning, marketing, advertising (19.5%)
4.	Computers, Technology & Internet(CTI) (14.6%)

<Table 5b> Meta-Industry distribution

#	U.S.	Korea
1	Technology(75.8%)	Services(56.1%)
2	Services(14.1%)	Retail(24.4%)
3	Financial(5.9%)	Technology(19.5%)
4	Retail(3.9%)	

This is also highlighted by the summary table

that classified Internet businesses on the basis of their meta-industry <see Table 5b>. The distribution revealed the dominance, over seventy five percent, of technology industries among the Internet businesses in U.S. Meanwhile, various service industries (56%) had the largest share among Korean firms. The share of high-tech industry among Internet firms in Korea was less than 20 percent. Financial industry was non-existent in Korea, manifesting the lack of advancement in this important sector.

4.1.3 Firm age

Korean Internet firms are about six years younger than U.S. firms <Table 6>. <Table 6> and <Figure 1> indicate that more than eighty percent of Korean firms were less than or equal to ten years old. But the ratio fell to about fifty percent among U.S. firms. Also, much smaller standard distribution among Korean firms implied that Internet firms in U.S. were more widely distributed throughout the age groups than Korean firms were. The disparity may be an indicator that Korean firms are relatively younger and therefore could be more vulnerable to failures in the marketplace [Honjo, 2000].

<Table 6> Descriptive statistics of company age

Country	Age group		
	1~10	11~20	21~
Korea	32(82.1%)	6(15.3%)	1(2.6%)
U.S.	120(51.3%)	78(33.3%)	36(12.8%)

Country	Min.	Max.	Mean	SD	Median	Mode
Korea(41)	4	21	8.02	3.85	7	5
U.S.(234)	2	102	13.61	10.93	10	8

Through two-sample t-tests, we compared U.S. and Korean firms in terms of the selected variables <Table 7>. Equality of variances between U.S. and Korean sources was not assumed for gross revenue and net income variables because of the large gap in standard errors. All the comparisons show their statistical differences. Korean firms had higher on-line starters than U.S. Firms, and Korean firms were younger than U.S. firms. U.S. firms had much larger gross revenue. Loss of net income was much larger for U.S. firms as well, but the loss ratio (net loss/gross revenue) was much higher among Korean firms.

Finally, the association between gross revenue and net income variables was tested with the correlation coefficients. For U.S. firms, the Pearson correlations coefficient (-.02) was

<Table 7> Two-sample t-tests of selected variables

	Korea	US	t-stat	df.	Sig.
Origination	.67(.07)	.42(.03)	2.94	293	.00*
Firm Age	8.02(.60)	13.61(.71)	-3.23	273	.00*
Gross revenue	67.42(31.24)	323.64(125.01)	-1.98	280	.04*
Net income	-19.15(24.4)	-169.15(42.1)	3.07	263	.00*

- Gross revenues and net income are in \$1 millions.
- Significance at .95 confidence level.
- Values in parentheses are standard errors.
- Equality of variances not assumed for gross revenue and net income.

insignificant ($p = .67$). For Korean firms, however, gross revenue was significantly correlated with net income (Coef. = .52, $P = .00$), indicating the cross-cultural discrepancy.

4.2 One-Way ANOVA

One way ANOVA was used to reveal the association between financial performance variables and non-quantitative (nominal) variables. Again, rather than combining Korean and U.S. observations, tests were separately conducted.

4.2.1 Core activities & financial performance

When the association relationship was tested with U.S. data, all categories of core activities were included because no category had small observations that could bias the test and therefore justified its exclusion. In conclusion, the association between core business activities and financial variables (both gross revenue and net income) did not exist.

When Korean firms were tested, gross revenue ($p = .24$) and net income ($p = .10$) did not indicate a statistical significance among busi-

nesses of different core activities. The result, however, could be biased because of much skewness in data distribution. In other words, three groups “merchandising : digital”, “infrastructure” and “market making” had one or two observation points. The lack of replications among them could significantly compromise the integrity of overall test results. The ANOVA test was, therefore, re-ran after dropping the observations pertaining to three categories and the result is summarized on <Table 8> It re-confirmed no significant association between core activities and studied financial performance.

4.2.2 Industry & financial performance

Association between the industry type of Internet businesses and their financial performance was examined. Industry categories with only a single observation were dropped from computation as their internal variations (within variances) could not be calculated.

As for the U.S. firms, two industry categories (automotive and real estate) that had a

<Table 8> One-way ANOVA (treatment : core activities)

Country			SS	Df	MS	F	Sig.
U.S.	REV	Between	5511674	7	787382	.19	.98
		Within	1.01E+09	248	4091602		
		Total	1.02E+09	255			
U.S.	NIC	Between	4643586	7	663369	1.48	.17
		Within	1.11E+08	247	448001		
		Total	1.15E+08	254			
Korea	REV	Between	360652	5	72130	1.92	.11
		Within	1237606	33	37503		
		Total	1598259	38			
Korea	NIC	Between	72311	5	14462	.68	.64
		Within	700877	33	21238		
		Total	773188	38			

single observation point were excluded from consideration to maintain test reliability. As a result, the ANOVA test included ten industries for U.S data, resulting in nine degrees of freedom for the treatment effect. The test did not indicate any significant associations with growth revenue and net income <Table 9a>.

For the Korean sample, the industry category, real estate, was dropped due to its single observation, and remaining six industries were included in the analysis. A significant difference in net income was indicated among considered industries. Multiple comparison tests

<Table 9b> based on Scheffe's method revealed that telecommunication industry's performance was especially weak.

The association between meta-industry and financial performance, however, turned out to be statistically significant among Korean firms (see <Table 10a>). With only three meta-industry sectors among Korean samples (see <Table 5b>), there are two degrees of freedom for the treatment effect. Scheffe multiple comparison tests (see <Table 10b>) revealed that 'retail' industry's gross revenue was larger than 'services' industry. Also, net income was

<Table 9a> One-way ANOVA (treatment : industry)

Country			SS	Df	MS	F	Sig.
U.S.	REV	Between	2846185	9	316242	0.7	1.00
		Within	1.02E+09	244	4169076		
		Total	1.02E+09	253			
Korea	REV	Between	4516535	9	501837	1.10	.36
		Within	1.11E+08	243	455733		
		Total	1.15E+08	252			
Korea	NIC	Between	279521	5	55904	1.44	.23
		Within	1318005	34	38764		
		Total	1597527	39			
Korea	NIC	Between	550687	5	110137	8.65	.00*
		Within	432461	34	12719		
		Total	983148	39			

<Table 9b> Scheffe multiple comparisons (Korean samples)

Dependent Variable	Ind. 1	Ind. 2	Mean Difference	Standard Error	Sig.
Net income	TEL	BSS	-497.58	89.16	.00*
	TEL	CTI	-499.78	92.08	.00*
	TEL	LEM	-554.76	86.13	.00*
	TEL	PBM	-511.89	112.78	.00*
	TEL	RTL	-537.95	87.35	.00*

*BSS : Business, support services, learning, marketing, advertising

*CTI : Computers, Technology & Internet

*LEM : Leisure, entertainment, hotels, lottery, gambling

*PBM : Publishing, media

*TEL : Telecommunications

*RTL : Home, clothing, retail, stores

〈Table 10a〉 One-way ANOVA (treatment : meta-industry)

Country			SS	Df	MS	F	Sig.
U.S.	REV	Between	2752402	3	917467	.22	.87
		Within	1.02E+09	251	4053440		
		Total	1.02E+09	254			
	NIC	Between	552866	3	184288	.40	.75
		Within	1.15E+08	250	458911		
		Total	1.15E+08	253			
Korea	REV	Between	277241	2	138620	3.97	.02*
		Within	1324077	38	34844		
		Total	1601318	40			
	NIC	Between	159969	2	79984	3.69	.03*
		Within	823657	38	21674		
		Total	983586	40			

〈Table 10b〉 Scheffe multiple comparisons (Korean samples)

Dependent Variable	Meta Ind 1	Meta-Ind 2	Mean Difference	Standard Error	Sig.
Gross revenue	retail	services	190.82	70.70	.03*
Net income	technology	services	-154.99	60.42	.04*

larger among the firms in 'service' industry than those in 'technology' industry.

4.2.3 Origination & financial performance

Possible association between the origination of a firm and its financial performance was examined <Table 11>. For both U.S. and Kore-

an firms, their origination did not significantly differentiate the financial performance in grossrevenue and net income.

4.3 Regression Analysis

Regression analysis is used to understand

〈Table 11〉 One-way ANOVA (treatment : origination)

Country			SS	Df	MS	F	Sig.
U.S.	REV	Between	2322432	1	2322432	.58	.44
		Within	1.02E+09	254	4.00E+12		
		Total	1.02E+09	255			
	NIC	Between	1250688	1	1250689	2.77	.09
		Within	1.14E+08	253	450787		
		Total	1.15E+08	254			
Korea	REV	Between	12227	1	12227	.28	.59
		Within	1582483	37	42769		
		Total	1594710	38			
	NIC	Between	10235	1	10235	.38	.53
		Within	972277	37	27277		
		Total	982512	38			

the association between the age of Internet companies and their financial performance. The age of each company was computed based on its foundation year. The regressions indicated no significant association both in Korea and U.S. (<see Table 12>). Nonetheless, the possibility of positive or negative association (Sig = .09) between firm age and net income was indicated for both U.S. and Korean firms.

4.4 Categorical Data Analysis

In this section, we took advantage of categorical data analysis based on two way cross-tables. The analysis in this section is different from prior analyses in that our interest is in learning the associative relationship between involved variables without necessarily defin-

ing them as either dependent or independent ones [Agresti, 1984]. Here, the focus of our analysis was on the two-way relationship among "core business activities", "industry type", "origination", and "firm age" <see Table 13>. Some relationships (e.g., origination & firm age) are rather natural. For this analysis, both U.S. and Korea data were combined to increase observation points.

As indicated in <Table 3>, all except 'firm age' are nominal variables. Because 'firm age' is a quantitative variable, somewhat arbitrary re-coding of values was done to divide them into two categories : category : 1 (1~10 years) and category 2 (11 years or older). The number of categories was suppressed to the smallest because the sample was not large enough to

<Table 12> Regression analysis

Country	Dependent Variable		Coefficients		T	Sig.
			un-standard.	Standard.		
US	REV	Constant	208.19(46.51)		4.47	.00*
		Age	.12(2.66)	.00	.04	.96
	NIC	Constant	-258.7(70.7)		-3.65	.00*
		Age	6.81(4.04)	.11	1.68	.09
Korea	REV	constant	8.95(76.05)		.12	.90
		Age	7.28(8.22)	.14	.88	.38
	NIC	constant	66.8(55.7)		1.19	.23
		Age	-10.7(6.2)	-.26	-1.70	.09

주) * The values in parenthesis are standard errors.

<Table 13> Chi-square analysis of categorical data

Factors	N	pearson Chi-square	df	Sig.	Cells<5*
Core act. * Origin	295	20.99	7	.00*	1(6.2%)
Core act. * Firm age	275	22.22	7	.00*	2(12.5%)
Core act. * Meta-Ind	297	423.08	28	.00*	26(65%)
Meta-Ind * Origin	295	11.53	4	.02*	2(20%)
Meta-ind * Firm age	275	8.42	4	.07	2(20%)

주) * The number of cells with less than five observations.

conduct categorical data analysis in a reliable manner.

The Chi-square test shows non-independence between core activities and origination. On-line origination was understandably higher for core businesses of info-mediary (87.5) and market making (66.6%) than other categories. Also, the Chi-square test indicates association between Core activities and age group. For example, all info-mediaries were less than 10 years old. Seventy eight percent of market makers were also younger than 10 years. In the meantime, the ratio drops significantly in digital merchandising (43%) and dynamic content provision (52%).

Analysis of the two-way table with meta-industry and origination variables reveals that on-line origination was higher for retail (68.4%) and service (56.8%) industry categories. Meanwhile, financial and technology firms had higher off-line origination at 66.7% and 59.9% respectively. Finally, the association between meta-industry class and firm age was not significant (Sig = .07).

5. DISCUSSIONS

Cross-cultural data analysis revealed similarities and discrepancies in the financial performance between U.S. and Korean firms. More differences than similarities were recognized.

Many of Internet businesses in U.S. were software engineering and infrastructure-driven, meanwhile, a large share of Internet businesses in Korea was service (e.g., content and entertainment) and merchandising-oriented. Ac-

ordingly, the share of technology-driven business models in Korea was significantly smaller than that of U.S. Such lack of technology fundamentals could expose Korean firms to more failure, especially during economic downturns.

The ratio of on-line starters among Korean firms was higher than that of U.S. firms. Also, Korean firms were younger than U.S. firms. U.S. firms had much higher gross revenue as well as larger income deficit than Korean firms. Gross revenue for U.S. firms was more than 400 times larger than that of Korean firms. Meanwhile, the loss in net income among U.S. firms was about nine times larger than that of Korean firms. It indicates that overall Korean Internet firms fared as well as U.S. ones during the tumultuous years. This is especially true if we count the fact that Korea's economy is not as mature as that of U.S. We believe that the comparable performance by Korean firms was possible because of the prevalent usage of broadband services.

That Internet firms from both countries had negative net income is explained by the fact that the three years [2000, 2001, and 2002] represent unprecedented dark period of technology industry throughout the world, especially for Internet businesses. During the time, many Internet companies had to fold their businesses as the victim of dot.com bubble. During the period, NASDAQ index tumbled from 4157 (1/03/2000) to 1079 (12/31/2002), losing 74 percent in just three years (average loss of 25 percent per year). KOSDAQ index experienced similar collapse during the same period. The findings of this study, therefore, should be

understood in the context of severe economic downturn.

In general, the association between core activities and financial performance, and between industries (based on NASDAQ categories) and financial performance was not recognized from U.S. samples. However, statistical significance was indicated from Korean samples when the association was studied between industry types (both NASDAQ and meta categories) and financial variables. Scheffes multiple comparison tests showed that telecommunication services suffered most in their net income. Meanwhile, overall it was also indicated that retail industry had higher gross revenue than service industry which, in turn, had higher net income than technology industry in Korea.

The origination (either on-line or off-line) and the age of Internet firms were not significantly associated with their financial performance in both U.S. and Korea. In the meantime, the possibility of contradiction remained in which net income could be larger for aged firms in U.S. but larger for younger firms in Korea <Table 12>. Finally, categorical data analysis based on combined observations of U.S. and Korean samples indicated a considerable inter-dependency among independent variables. For instance, Internet businesses of info-mediary and market making had much higher on-line orientation than other categories. These firms were also much younger than those in other categories.

6. CONCLUSIONS

Businesses are increasingly taking advan-

tage of opportunities the Internet offers. However, despite the alleged potentials of new business paradigm, dismal performance of many Internet companies since 2000 was evident when many .COM businesses folded. Much of this might have been the consequence of blind trust on Internet potentials, false valuation of Internet businesses, and the lack of experience for e-business management. In the meantime, Internet businesses are starting to show the signs of maturity and cross-cultural divergence. Such diversion of growth patterns and success stories for Internet businesses have been rarely examined and this became the motivation of our exploratory research.

Given the cultural context, we studied the association between organizational attributes (core activity, origination, firm age, and industry types) and Internet firms financial performance in terms of gross revenue and net income. Overall, except industry factors, the connection of other independent variables to financial variables was weak. Meanwhile, structural gap of Internet industries was evident between Korean and U.S. Despite that Korea and U.S. are fore-runners in taking advantage of Internet opportunities, this study revealed much structural discrepancy between two countries. The most striking difference is that Korean Internet firms were more application (especially service)-oriented based on available technologies; meanwhile, the development and merchandising of fundamental ITs and solutions were the driving force of many Internet firms from U.S.

Another discovery was that the ratio of net income loss to gross revenue among Korean

firms was quite comparable to U.S. firms. It may be partially explained by the fact that Korean firms Internet business was riding on the broadband infrastructure that was much more prevalent than U.S. It may also be explained by the fact that the share of telecommunications industry in U.S. was much larger than Korea. And the review of studied data revealed that this sector was particularly hit hard by the economic turbulence, significantly affecting overall performance of Internet businesses in U.S.

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황 경 태

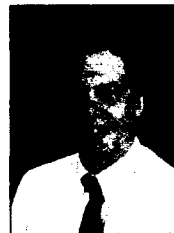
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