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Institutionalization of Electronic Commerce: The Case of Singapore

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Intel Technology Asia

Abstract
This study adopts a sociological perspective, specifically, an institutional approach, to examine what motivates firms to set up Web sites. On the basis of survey responses from 104 firms, this research obtains results that indicate that both competitive and institutional pressures play a part in firms’ decisions to adopt the Web technology. The study also observes that firms’ current perceptions of Web effectiveness are less favorable than their initial perceptions. Implications of the results are discussed.

Keywords: competitive isomorphism, institutional isomorphism, World Wide Web

1. Introduction

The Internet is a technological innovation which has the potential to affect our lives in a radical way. Briefly, the Internet is a “network of networks” linking various computer networks around the world. Elaborate graphical and multimedia displays including text, sound, graphics, photos and live video can be transmitted to any computer linked to the Internet. Through the use of these graphical displays, businesses are setting up electronic storefronts on the Internet, selling an unlimited variety of products and services worldwide.

In a recent projection, the US-based International Data Corporation (a leading information technology (IT) research company) estimated that the use of the Internet and the World Wide Web (or Web, for short) will increase ten-fold in five years time. Business transactions made through this global computer network will reach US$100 billion (S$140 billion) in the year 2000 (The Straits Times, 1997). Forrester Research (1995) predicted that revenues earned across infrastructure, content, and trade sectors will be about US$40 billion to US$50 billion by the year 2000.

There is little doubt that the Internet offers the advantage of being an efficient channel for global marketing. However, besides this economic reason, there may be other reasons to explain the increasing number of commercials and advertisements on the Internet. For one, institutional forces may play a significant role in motivating firms to set up Web sites on the Internet.

Institutional theorists, Meyer and Scott (1983), argued that organizations operate in two sets of environment: technical and institutional. In order to survive in the technical environment, an organization must be efficient. Meanwhile, to survive in the institutional setting, the organization must be isomorphic with institutionally approved ways of organizing. A dictionary definition of institutionalization is conformity with some set of rules. Therefore, by
conforming to some taken-for-granted or socially accepted rules of organizational behavior, the organization gains legitimacy and thus ensures its survival in the market (DiMaggio and Powell, 1983).

Much has been written on the adoption of marketing on the Internet (also termed as electronic commerce or cyberspace marketing) by businesses as a consequence of the unique characteristics of the Web. However, such literature often narrowly focuses on only one central idea: the efficiency of the Web as a channel for marketing and electronic commerce. In contrast, institutional theory suggests that efficiency is not the sole motivation behind organizational actions; organizations do also conform to normative prescriptions of the institutional environment (Meyer and Rowan, 1977; Meyer and Scott, 1983).

This study seeks to validate the applicability of institutional theory to electronic commerce. More importantly, the focus of this study is to provide an alternative sociological explanation for the isomorphic behavior of organizations in electronic commerce adoption.

As part of this study, a survey is conducted on companies in Singapore which have Web sites. This study attempts to explore and understand the culture of Web publishing in Singapore, particularly, the institutional forces that motivate organizations to set up Web sites. Such a study stands out for three reasons. First, the Singapore context offers an interesting case of heavy government involvement in nurturing and popularizing the Internet. For example, the government has been proactive in encouraging Internet adoption and developing appropriate policies to facilitate electronic commerce. Second, the study’s focus on an Asian country, such as Singapore, enriches existing empirical work on electronic commerce, which has a strong American slant. Third, Singapore is an ideal country to examine the Internet phenomenon because it is well known for its excellent telecommunications infrastructure and its IT2000 plan that aims to transform Singapore into an “intelligent island” by the turn of the century (National Computer Board, 1992).

2. The Internet

The Internet has its roots in the ARPAnet (Advanced Research Projects Administration). Conceived in 1969 at the height of the Cold War as an indestructible computer communications network, the ARPAnet was purely the domain of academic institutions and US government research agencies. Business use was denied by the appropriate use policy of the National Science Foundation (NSF). As the ARPAnet grew, similar networks (without access to ARPAnet) developed with a business-oriented slant (Cockburn and Wilson, 1996).

In the late 1980s, ARPAnet was divided into Milnet (the US government military network) and NSFnet (for research and academic purposes). In 1991, NSFnet and the commercial networks were finally connected to form what is called today “The Internet”.

Developed by a Swiss high-energy physics laboratory (the European Particle Physics Laboratory - CERN), the World Wide Web (or Web, for short) is a sub-network of the Internet where information from any source can be accessed in a simple and consistent way (Cockburn and Wilson, 1996; Horowitz, 1988). The Web is also the fastest growing part of the Internet due to the availability of user-friendly browser software packages (such as Mosaic, Netscape and Microsoft Internet Explorer).
The Web is essentially a medium of communication. As a result of its distributed and interactive multimedia capabilities, it possesses various unique characteristics as a distribution channel. Chatterjee and Narasimhan (1994) observed that the Web has (1) significantly lowered entry and exit barriers for firms; (2) reduced the need for distribution intermediaries; and (3) accelerated market changes. As the consumer can navigate through the Web using search engines, he/she now possesses the luxury of easy access to information about virtually any area of interest.

Glazer (1991) noted that, owing to the existence of increased information intensity, consumers have more channel power and firms have decreased channel power. As a result, instead of the consumers traditionally being involved passively in the reception of information, consumers can now select the pieces of information required. Mohr and Nevin (1990) argued that the most appropriate communication effort should now be “collaborative” rather than “autonomous”. The fundamental reason behind this shift in channel power in favor of consumers appears to be the interactivity of the Web. It is the ability of the Web to permit interactivity that satisfies the three basic objectives of marketing communications: to inform, remind and persuade (Anderson and Rubin, 1986). Hence, an increasing number of businesses are setting up Web sites to market their products and services.

With the growing importance of the Internet, there is an increasing number of published research on the Internet phenomenon in Singapore and around the world. Past research has examined areas such as the demographic profile of Internet users, usage patterns, uses of the Internet, factors affecting an enjoyable experience (Teo, Lim and Lai, 1997), the use of the Internet in education and research (Ives and Jarvenpaa, 1996), a contingency model of Internet adoption (Teo and Tan, 1997), diffusion of the Internet (Goodman et al., 1994), rules governing electronic commerce (Spar and Bussgang, 1996), and the link between information strategy and electronic commerce (Lederer, Mirchandani and Sims, 1997).

Although researchers have examined the role of government in the evolution (Kahn, 1994) and adoption of the Internet (Teo and Tan, 1997), institutional theory has not yet been applied to the Internet phenomenon.

3. Institutional Theory

Institutional theory focuses on two points: (1) the taken-for-granted nature of organizational forms and practices; and (2) circumstances under which organizational actors are unable to implement change successfully despite attempting to act in their best interests (DiMaggio, 1988). DiMaggio (1988) argued that the most significant contribution of institutional theory is its ability to address causal mechanisms that lead to organizational change and stability based on shared “pre-conscious” understanding among organizational actors, independent of their interests.

Central to institutional theory is the assumption that humans prefer certainty and predictability in organizational life (Zucker, 1977; Hannan and Freeman, 1984; DiMaggio and Powell, 1983). It is this preference for certainty and predictability that helps sustain organizations.

Most institutional theorists also assume that organizations, in attempting to survive in their increasingly competitive and resource-scarce environment, subscribe to and endorse the
demands of other actors (usually organizations) whom they depend on for resources and legitimacy (DiMaggio, 1988). By developing and maintaining institutional structures and practices, the organization is perceived by external audiences to be credible and legitimate (Covaleski and Dirsmith, 1988; Fombrun and Shanley, 1990). The primary purpose of being institutionally isomorphic is to deploy these institutionalized structures and practices to justify the organization’s existence and acceptance (Oliver, 1991) and to account rationally when failures befall.

In their seminal work, DiMaggio and Powell (1983) posed the question, “Why are organizations similar?” They observed astonishing homogeneity or isomorphism among various organizational forms and practices prevalent in modern society. Hawley (1968) described isomorphism as a mode (or manner) of coercion whereby units in a population with similar environmental conditions are compelled to appear more like one another. At the organizational population level, isomorphism implies that organizations change their features and structures to be compatible with their environments.

Meyer (1979) and Fennell (1980) asserted that there are two types of isomorphism: competitive and institutional. Competitive isomorphism is a direct consequence of interorganizational competition. Organizations compete for resources, customers, and political power (Hannan and Freeman, 1977). Thus, to survive in the competitive environment, organizations emulate one another in structure, activities, procedures and rules to create an even platform for competition. According to Aldrich (1979), competitive isomorphism indicates that the major factors which organizations must take into account are other organizations.

Institutional isomorphism occurs through three types of mechanisms: coercive, mimetic and normative. Coercive isomorphism results from exerted formal and informal pressures on organizations by other organizations who possess the discretion to grant either resources or legitimization or both (DiMaggio and Powell, 1983). The “coerced” organizations are dependent on politically influential organizations who control resources and legitimacy which the former require in order to satisfy various societal expectations.

Mimetic isomorphism originates from similar reactions in response to uncertainty. The idea of mimetic isomorphism rests on the notion of following the leader when encountering uncertainty (Galaskiewicz and Wasserman, 1989). When faced with uncertainty, organizations economize on search costs (Cyert and March, 1963). Uncertainty often acts as a catalyst that breeds imitation especially when organizations fail to understand technologies adequately (March and Olsen, 1976) and when uncertainty is created by the environment.

Normative isomorphism derives from professionalization. Larson (1977) and Collins (1979) defined professionalization as the consolidated efforts of members of an occupation (usually of high societal status) to spell out clearly articulated conditions and procedures of their work so that they can control the supply of their skilled and valued labor on the labor market. In doing so, occupational sovereignty is achieved through the formation and development of a cognitive base and the creation of legitimization.

There are two aspects of professionalization which act as sources of normative isomorphism (DiMaggio and Powell, 1983). One aspect is formal education whereby a legitimate cognitive
base is created by universities and professional training institutions. Such institutions convey sets of legitimate and socially approved ideas and concepts.

The other aspect of professionalization involves the elaborate professional networks that connect organizations informally. These wide-spanning networks are vehicles for new ideas and concepts to be communicated and diffused. For example, trade and professional bodies are effective media for normative rules of organizational and professional behaviors to be delineated, communicated and promoted.

Over the years, a number of studies have been conducted to determine the extent and mechanisms of institutional isomorphism among different types of organizations. Much of this empirical work has been carried out in the American context. For example, Haveman (1993) used institutional theory to examine whether organizations follow similar and successful organizations into a new market. Haveman tested her hypotheses on a population of savings and loan associations. The results showed that firms imitate large and profitable organizations; however, there was limited evidence of imitation of similar-sized organizations. These findings are consistent with what DiMaggio and Powell (1983) have described as mimetic isomorphism, whereby organizations imitate the behaviour of successful organizations.

Galaskiewicz and Wasserman’s (1989) study also tested the validity of DiMaggio and Powell’s (1983) concept of mimetic isomorphism. Specifically, their study posited that managers are especially likely to mimic the behavior of organizations with which they have some type of network tie via boundary-spanning personnel. Using data on the charitable contributions of 75 business corporations and 198 nonprofit organizations in the Minneapolis-St. Paul metropolitan area in 1980 and 1984, the study found that: (1) a firm is likely to give more money to a nonprofit organization that was previously funded by companies whose CEOs and/or giving officers are known personally by the firm’s boundary-spanning personnel and, (2) a nonprofit organization is likely to receive more money from a corporation whose directors sit on the nonprofit organization’s board. The study concluded that managers utilize information gathered through extraorganizational, interpersonal networks to make decisions on how to relate to other organizations in their task environment and achieve organizational ends.

Other studies that have also been conducted on mimetic change include Starr’s (1982) research on the evolution of hospital structures; Fligstein’s (1985) study of the diffusion of the multi-divisional form; and Knoke’s (1982) and Tolbert and Zucker’s (1983) research on the acceptance of civil-service reform by municipal governments.

An interesting study conducted outside of the American context is Orru, Biggart and Hamilton’s (1991) research on organizational isomorphism in East Asia. They argued that in East Asia, private businesses operate according to distinct institutional models that differentially shape organizational behavior and structure. The study suggested that the institutional and technical components of organizational environments need not be in conflict; on the contrary, they can converge harmoniously in shaping organizational forms. The data analyses concluded that the large business groups in South Korea, Taiwan and Japan operate according to different institutional principles, and exhibit different organizational and inter-organizational structures that manifest those principles. More importantly, the study also showed that East Asian economies have prospered not only because they have adapted to requirements of the technical environment, but also because they have successfully
institutionalized the principles of market activity suited to their sociocultural environment and to their strategies of economic development.

In summary, institutional theory has been applied to a wide variety of contexts to examine organizational isomorphism. However, none of the studies has used institutional theory to explain the motivations behind the adoption of the Internet for cyberspace marketing, and this study represents an initial attempt to do so.

4. Hypotheses

We propose a number of hypotheses pertaining to firms’ motivations for Web site development, as well as their perceptions of the Web’s effectiveness.

4.1 Motivations for Web Site Development

The widespread development of Web sites by Singapore firms very likely reflects both competitive isomorphism and institutional isomorphism. Some firms may have set up Web sites because they have been motivated by considerations of competitiveness, productivity, and efficiency. Other firms may have done so in response to institutional forces like persuasive pressure and encouragement, “follow-the-leader” mimicry, and professionalization of IT employees.

A firm primarily motivated by competitive considerations develops Web sites with the intention of being able to compete better in the marketplace. The primary motive behind the setup of the Web site is to enable the firm to create a competitive edge over its competitors in order to facilitate sales and/or to develop a favorable corporate image. To accomplish the strategic and competitive intent of the Web site, the firm needs to construct a well-designed Web site with attractive features and value-added services to its customers. Thus, the firm is most likely to spend more time and financial resources in designing and setting up the Web site as it is a tool to help the firm compete better in the marketplace. Thus, our first hypothesis is:

\( H1: \) Firms that spend more time and financial resources in developing its Web site are more likely to attribute the development of its Web site to competitive motivations (i.e., that characterizes its Web site development in terms of competitive isomorphism).

As a firm grows in size, it generally becomes more visible in the market place, especially if it expands its business regionally or globally. Consequently, competitors become more aware of its organizational actions since it now competes more intensely for customers and increased amounts of resources. Recall that competitive isomorphism is a direct consequence of interorganizational competition. Thus, a larger firm faces higher levels of competitive pressure as it has to compete more intensely (in different markets) with other organizations to survive and maintain its position in the marketplace. Hence, we predict that:

\( H2: \) Larger firms are more likely to attribute the development of its Web site to competitive motivations (i.e., that characterizes its Web site development in terms of competitive isomorphism).
In the context of Singapore, where conformity to normative behaviors is prevalent and encouraged, individual and organizational actors often take their cues from the government and other influential institutional agencies (e.g., trade and professional associations, labor unions, and social-action groups). Accordingly, the actions of firms in Singapore are frequently motivated by institutional considerations. Similarity in structure and behavior among firms in Singapore likely reflects frequent attempts at institutional isomorphism.

As mentioned above, a larger firm tends to be more visible. The increased visibility of the larger firm attracts more attention from prominent constituents in the firm’s environment. These constituents are now likely to exert more institutional pressure on the firm. As such, we hypothesize that:

\[ H3: \text{Larger firms are more likely to attribute the development of its Web site to institutional motivations (i.e., that characterizes its Web site development in terms of institutional isomorphism).} \]

### 4.2 Current Perception of Web’s Effectiveness

As discussed in the preceding section, firms may set up Web sites for competitive reasons such as sharpening their competitive edge and increasing their revenues. At the same time, firms may be subjected to institutional forces, specifically, coercive, mimetic and normative pressures; such firms emulate similar organizations in their field, exchange knowledge through employed professionals across networks, and are influenced by governmental policies.

In short, firms may feel “compelled” by both competitive and institutional pressures to set up Web sites. The motives behind such firms’ Web site development thus stem from institutional and competitive pressures, and not from a systematic analysis of the Web’s capabilities and weaknesses. Such firms tend not to harness the Web’s full potential to optimize what their Web sites can achieve, since they may not know what to expect realistically from the Web. With the current hype about the advantages of the Web, firms may have unrealistically high expectations of what the Web can do for them. Such expectations, if not fulfilled, may lead to disenchantment about the Web. Hence, we believe that the more a firm feels pressured by both competitive and institutional forces to develop its Web site, the less likely it is to have a favorable current perception of the Web. Specifically,

\[ H4: \text{The more a firm characterizes its Web site development in terms of competitive and institutional isomorphism, the less favorable is its current perception of the Web as an effective marketing tool.} \]

And as hypothesized in the preceding section, a larger firm is more susceptible to both competitive and institutional pressures to set up its Web site. Therefore, as an extension to H4, we predict that firm size has a negative effect on the firm’s perception of the Web. We posit that:

\[ H5: \text{The larger a firm is, the less favorable is its current perception of the Web as an effective marketing tool.} \]

We believe that firms that were among the first in their respective industries to set up Web sites (i.e., that have first-mover status) are not likely to be currently enthusiastic about the
Web. Their disappointment with the Web occurs because other players have since mimicked them, effortlessly building upon their ideas and easily creating better-designed Web sites (i.e., mimetic isomorphism). Mimetic isomorphism is likely since the Web is a non-proprietary technology that is available to all firms. Thus, these pioneer firms now enjoy little or no competitive advantage of being the first to enter cyberspace. We posit that:

\[ H6: \text{First-mover status has a negative impact on a firm’s current perception of the Web as an effective marketing tool.} \]

Two measures to evaluate the success of a firm’s Web site are the firm’s Web site access or “hit” rate and the increase in sales facilitated by the Web site. A higher access rate indicates greater publicity for the firm’s Web site, while increased sales imply a positive impact on the firm’s bottomline. These measures of success are likely to have a positive effect on the firm’s current perception of the Web. Therefore, we predict that:

\[ H7: \text{The Web site access rate and increase in sales have a positive impact on a firm’s current perception of the Web as an effective marketing tool.} \]

5. Method

5.1 Sample

A sample of 500 Web sites of Singapore-based, commercial organizations was gathered with the aid of search engines like Alta Vista Technologies\textsuperscript{TM}, Web Crawler\textsuperscript{TM}, Lycos\textsuperscript{TM} and Yahoo\textsuperscript{TM}. Since the main focus of this study is on business firms, we did not include the Web sites of Singapore government agencies and individuals.

A copy of the questionnaire was sent to the senior IS executive of each of the 500 sampled firms via electronic mail. Twenty-seven of the mailed questionnaires were immediately returned with unknown recipient electronic mail addresses. Of the 112 firms that responded to the questionnaire, eight firms returned incomplete responses. Only the 104 complete responses have been considered for data analysis; this represents a response rate of 23%.

5.2 Variables

5.2.1 Control Variables

Service - This dummy variable (coded 1 for Yes and 0 for No) indicates whether the firm is involved in service activities (rather than in manufacturing activities).

Company - This dummy variable (coded 1 for Yes and 0 for No) indicates whether the firm’s legal status is that of a private limited company, public listed company or multi-national corporation (rather than that of a sole proprietorship or partnership).

Local - This dummy variable (coded 1 for Yes and 0 for No) indicates whether the ownership of the firm is 100% local (rather than 100% foreign or partially foreign).
5.2.2 Independent and Dependent Variables

Time - The amount of time spent in setting up the firm’s Web site is measured on the following scale: (1) 1 to 2 months; (2) 3 to 6 months; and (3) greater than 6 months.

Financial resources - The amount of financial resources expended by the firm in setting up the Web site is measured on the following scale: (1) <$1,000; (2) $1000 to $5,000; (3) $5,000 to $10,000; and (4) > $10,000.

Size - This variable measures the firm’s size in terms of the number of employees as follows: (1) <100; (2) 101 to 500; (3) 501 to 1,000; and (4) > 1,000.

First mover - This dummy variable (coded 1 for Yes and 0 for No) indicates whether the firm was the first in the industry to set up a Web site for electronic commerce.

Access rate - The firm’s Web site access rate is measured on the following scale: (1) 50 or fewer “hits” per day; (2) 51 to 100 “hits” per day; (3) 101 to 200 “hits” per day; and (4) more than 200 “hits” per day.

Increased sales - The impact that the firm’s Web site has had on its sales figure is measured on the following scale: (1) no increase; (2) 1% to 10% increase in sales; (3) 11% to 20% increase in sales; (4) 21% to 30% increase in sales; and (5) greater than 30% increase in sales.

Competitive isomorphism - Each respondent was asked to rate, on a 7-point Likert scale ranging from (1) strongly disagree to (7) strongly agree, the firm’s perception of the strength of competitive forces that motivated the firm to develop its Web site. Six items were used to measure this construct as shown in Table 1. The reliability test for these six items yields an acceptable Cronbach’s alpha of 0.79.

Table 1. Measures for Competitive and Institutional Isomorphism

<table>
<thead>
<tr>
<th>Competitive Isomorphism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information is the key to success nowadays. To compete, being on the World Wide Web is a must.</td>
</tr>
<tr>
<td>An electronic presence on the World Wide Web is necessary to enhance our company image.</td>
</tr>
<tr>
<td>We will be viewed as “backward” if we do not have a Web page.</td>
</tr>
<tr>
<td>Information Technology (IT) is the key to success nowadays. The Web page is an effective vehicle to harness the advantages of IT to compete more effectively.</td>
</tr>
<tr>
<td>We can certainly improve our business if we have our Web page.</td>
</tr>
<tr>
<td>We can enhance our presence in the industry and gain visibility if we have our Web page.</td>
</tr>
</tbody>
</table>
Institutional Isomorphism

Since the government has given much publicity to the World Wide Web, it is wise for us to set up our Web page to harness the advantages touted by the government.

Since the newspapers, television, magazines and trade journals often highlight the importance of the World Wide Web and its many benefits, it must be wise to set up a Web page of our own.

We are following the market leader’s move to set up Web pages.

The person who initiated the Web page has had formal training in IT. He/She has at least a diploma in Computer Science and IT-related experience.

The person who initiated the Web page is an enthusiast who often reads IT-related professional journals and is perhaps a member of some IT-related club/organization.

It is now a standard practice for businesses and companies to have Web pages.

Institutional isomorphism - This variable indicates the firm’s perception of the strength of institutional forces that motivated the firm to develop its Web site. Its value is equal to the mean of the scores for six items (see Table 1) measured on a 7-point Likert scale ranging from (1) strongly disagree to (7) strongly agree. The reliability test for these six items yields an acceptable Cronbach’s alpha of 0.65.

Current perception - Each respondent was asked to rate, on a 5-point Likert scale ranging from (1) not at all effective to (5) to a great extent, the extent to which the firm currently perceives the Web to be an effective tool of marketing.

Difference in perception - Each respondent was also asked to rate the extent to which the firm perceived the Web to be an effective tool of marketing at the time when its Web site was set up (i.e., the firm’s Initial perception). Difference in perception is computed by subtracting the Initial perception score from the Current perception score. A positive value implies that the respondent firm’s perception of the Web as an effective marketing tool has become more favorable over time. A negative value implies that the firm’s perception has become less favorable over time.

6. Results

6.1 Sample Statistics

The sample of 104 organizations comprises 54 service firms (51.9%), and 50 manufacturing firms (48.1%). Most of the firms (84.6%) are 100% local-owned; the remaining firms are either wholly or partially foreign-owned. In terms of legal status, 45 firms (43.3%) are private limited companies, publicly listed companies or multi-national corporations, while 59 firms (56.7%) are sole proprietorships or partnerships. The majority of the companies (85.6%) have fewer than 100 employees. Also, the majority of the firms (78.9%) spent about 1 to 2 months
developing their Web sites, and most firms (90.1%) incurred financial resources of less than S$5000.

6.2 Hierarchical Regression Analyses

Table 2 presents two regression hierarchical models. Models 1 and 2 regress the Competitive isomorphism and Institutional isomorphism variables, respectively, on control variables and independent variables. The Competitive isomorphism variable has a mean value of 5.06, while the Institutional isomorphism variable has a mean of 4.58. The means provide some evidence of the presence of both competitive and institutional isomorphisms on the adoption of the Internet for electronic commerce.

Table 2. Regression Models for Competitive and Institutional Isomorphism

<table>
<thead>
<tr>
<th>Model</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Competitive isomorphism</td>
<td>Institutional isomorphism</td>
</tr>
<tr>
<td></td>
<td>Step 1</td>
<td>Step 2</td>
</tr>
<tr>
<td>Control variables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service</td>
<td>0.17*</td>
<td>0.16*</td>
</tr>
<tr>
<td>Company</td>
<td>0.22*</td>
<td>0.20*</td>
</tr>
<tr>
<td>Local</td>
<td>-0.12</td>
<td>-0.02</td>
</tr>
<tr>
<td>Independent variables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td></td>
<td>-0.21*</td>
</tr>
<tr>
<td>Financial resources</td>
<td></td>
<td>0.11</td>
</tr>
<tr>
<td>Size</td>
<td></td>
<td>0.15+</td>
</tr>
<tr>
<td>F value</td>
<td>3.85**</td>
<td>3.07**</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.08</td>
<td>0.11</td>
</tr>
<tr>
<td>Δ adjusted R²</td>
<td>0.03</td>
<td></td>
</tr>
</tbody>
</table>

a N=104. Standardized regression coefficients are reported.  
+ p < 0.10 (one-tailed)  
* p < 0.05 (one-tailed)  
** p < 0.01 (one-tailed)  
*** p < 0.001 (one-tailed)
The hierarchical regression is carried out in two steps. First, we enter the control variables and second, we enter the independent variables. The values of the adjusted R² indicate that the control and independent variables respectively account for 8 percent and 3 percent of the variation in competitive isomorphism. In contrast, the values of adjusted R² for institutional isomorphism are rather small. This implies that institutional pressures are prevalent regardless of firm characteristics (i.e., control variables) such as industry type (service versus manufacturing), legal status of firm, and ownership (local versus foreign).

Model 1 does not provide empirical support for H1. The coefficient of the Financial Resources variable is not statistically significant. Interestingly, the effect of the Time variable on competitive isomorphism is in the opposite direction to what has been hypothesized. In other words, firms that attribute the development of their Web sites to competitive pressures tend to spend less time setting up their Web sites.

H2 is supported as the Size coefficient in Model 1 is significantly positive. This finding is consistent with our assertion that as the size of the firm increases, it becomes more visible in the marketplace, resulting in more pressure to defend its competitive position. The coefficients of two control variables, Service and Company, are significantly positive in Model 1. These results indicate that firms involved in service activities, as well as private limited companies, public listed companies and multi-national corporations, encounter greater competitive pressures to adopt the Web technology. One plausible reason is that service firms tend to be more information intensive than manufacturing firms, thereby resulting in greater opportunities to adopt the Internet to compete more effectively. The significant result for the legal status of company (private limited companies, public listed companies and multi-national corporations) reinforced the support for hypothesis H2 since such companies tend to be larger in size compared to sole proprietorship or partnership.

The significance of the Size coefficient in Model 2 lends empirical support to H3. Larger firms perceive not only greater competitive pressures, but more institutional pressures as well.

Table 3 presents two hierarchical regression models. The dependent variables in Models 3 and 4 are the current perception of Web effectiveness and the difference between current perception and initial perception, respectively. We decided to enter the variables in three steps in the following order: control variables, independent variables related to firm’s characteristics, and independent variables related to impact of Web sites. Interestingly, the change in adjusted R² for step 3 is rather substantial thereby implying that perceptions of the Web are greatly influenced by its impact.

<table>
<thead>
<tr>
<th>Model</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current perception</td>
<td>Difference in perception</td>
</tr>
<tr>
<td></td>
<td>Step 1</td>
<td>Step 2</td>
</tr>
<tr>
<td><strong>Control variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service</td>
<td>0.22*</td>
<td>0.21*</td>
</tr>
<tr>
<td>Company</td>
<td>0.11</td>
<td>0.09</td>
</tr>
<tr>
<td>Local</td>
<td>-0.07</td>
<td>-0.10</td>
</tr>
<tr>
<td>Independent variables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>Size</td>
<td>-0.12</td>
<td>-0.27***</td>
</tr>
<tr>
<td>Competitive isomorphism</td>
<td>0.16+</td>
<td>0.23**</td>
</tr>
<tr>
<td>Institutional isomorphism</td>
<td>0.24*</td>
<td>0.08</td>
</tr>
<tr>
<td>First mover</td>
<td>-0.05</td>
<td>-0.19**</td>
</tr>
<tr>
<td>Access rate</td>
<td></td>
<td>0.60***</td>
</tr>
<tr>
<td>Increased sales</td>
<td></td>
<td>0.20**</td>
</tr>
<tr>
<td>F value</td>
<td>2.48*</td>
<td>3.18**</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.04</td>
<td>0.13</td>
</tr>
<tr>
<td>$\Delta$ adjusted $R^2$</td>
<td>0.09</td>
<td>0.46</td>
</tr>
</tbody>
</table>

**Note:**  
- N=104. Standardized regression coefficients are reported.  
- + $p < 0.10$ (one-tailed)  
- * $p < 0.05$ (one-tailed)  
- ** $p < 0.01$ (one-tailed)  
- *** $p < 0.001$ (one-tailed)

As can be seen in Model 3, there is no empirical support for H4. In fact, the positive signs of the Competitive isomorphism and Institutional isomorphism coefficients contradict the predictions of H4. Firms that face greater competitive and institutional pressures actually have more favorable perceptions of the Web as an effective marketing tool.

However, Model 3 shows empirical support for H5. The Size coefficient in the model is statistically significant and negative. This result is consistent with our assertion that larger and more visible firms tend to hold less favorable perceptions of Web effectiveness. There is also evidence to support H6, as the First mover coefficient in Model 3 is significant and negative. Firms that were among the first in their respective industries to set up Web sites tend to have less favorable current perceptions of the Web’s effectiveness. Such unfavorable perceptions are likely due to the erosion of first mover advantages as other firms imitate their actions and set up similar Web sites.

The significant and positive coefficients of the Access rate and Increased sales variables in Model 3 provide support for H7. Both the Web site access rate and the increase in sales have positive effects on a firm’s current opinion of the Web as an effective marketing tool. Model 3 also indicates a positive effect of the Company dummy variable on current perception. Specifically, private limited companies, public listed companies and multi-national

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corporations have more favorable current perceptions of the Web than sole proprietorships and partnerships.

The mean value of the Difference in perception variable (which is equal to the difference between a firm’s current perception and initial perception of the Web’s effectiveness) is -0.34. This implies that in general, firms’ perceptions of the Web as an effective marketing tool become less positive over time. No specific predictions are posited for the Difference in perception variable. Nevertheless, Model 4 is presented in Table 3 as it yields some interesting findings.

Each of the three control dummies, Service, Company and Local, in Model 4 has a significant and positive effect on the Difference in perception variable. This means that firms involved in service activities, firms that are either private limited companies, public listed companies or multi-national corporations, and wholly local-owned firms register less drastic perceptual changes over time.

The significant, negative Size coefficient implies that larger firms tend to revise their expectations of the Web downwards more acutely than smaller firms. The Access rate coefficient is also significant. Its positive value indicates that firms whose Web sites experience more “hits” are less likely to express drastic changes in perception. Such firms are obviously pleased with their Web sites’ popularity and with the business opportunities that the Web provides them.

7. Discussion

The aim of this study is to investigate, from a sociological perspective, the isomorphic behaviors of Singapore firms setting up Web sites. We have attempted to see if institutional isomorphism, as described by DiMaggio and Powell (1983), in addition to competitive isomorphism can characterize the widespread development of Web sites by Singapore firms.

Our findings suggest that both institutional isomorphism and competitive isomorphism are evident among firms setting up Web sites. This is contrary to conventional wisdom, which suggests that companies set up Web sites with the sole economic objective of harnessing the capabilities of the Web such as global reach and lower transaction costs. Specifically, our findings challenge the conventional school of thought, which proposes that firms set up Web sites mainly due to business motives (Cockburn and Wilson, 1996; Pant and Hsu, 1996).

Our empirical observation of institutional elements in Web site development ties in with institutional theory at two levels. First, our findings are consistent with Meyer and Rowan’s (1977) assertion that the success of an organization not only depends on its ability to be efficient in its productive activities, but also on its ability to align itself with the rationalized rules and myths of the highly elaborated institutional environment in order to be perceived as legitimate and “normal” by society at large. In the Singapore context, extensive pressure is exerted by government agencies on both individuals and organizations to keep abreast of the latest advances in information technology. Under such conditions, firms that do not adopt the latest information technologies run the risk of being labelled backward, “abnormal,” and lacking in legitimacy.
Second, our observation of institutional isomorphism very likely encompasses all three forms of coercive, mimetic and normative isomorphism identified by DiMaggio and Powell (1983). Coercive isomorphism occurs amidst the persuasive pressures exerted by government agencies and the mass media on Singapore firms to adopt the Internet. Mimetic isomorphism is reflected in firms imitating the industry leaders in Web site development while normative isomorphism results from the exchange of Web-related ideas and information among IT professionals of different firms.

As predicted, our analyses show that larger firms experience higher levels of competitive and institutional pressures. We suggest that larger firms become more visible targets of the strategies and actions of both competitors and institutional agencies. Interestingly, our results indicate that firms reporting higher levels of competitive pressures do not necessarily invest more time and money to set up their Web sites. On the contrary, such firms actually spend less time. This suggests that competitive motivations in fact create a sense of urgency among firms to adopt the Web technology, as early adoption represents a form of competitive advantage. Furthermore, early adoption may enhance the firm’s reputation as being technologically advanced.

Our results also suggest that firms perceive the Web as an effective marketing tool less favorably over time. In other words, firms become more disappointed and disillusioned with the ability of the Web to meet their expectations as they become more familiar with its limitations and weaknesses. Firms’ learning experiences over time result in the firms revising their expectations and perceptions of the Web to lower, more realistic levels.

But do firms differ in their current perceptions of Web effectiveness? Our analyses suggest that perceptual differences among firms are evident. As to be expected, firms that enjoy higher Web site access rates and increased sales report more favorable perceptions. On the other hand, firms that were among the first in their respective industries to embrace the Web technology now report less favorable perceptions, as their competitive advantage gets whittled away by the diffusion of the technology to other firms.

Our study yields some unexpected findings on the effects of competitive pressures, institutional pressures and firm size on current perception. We have predicted that competitive and institutional pressures are likely to lead to a less favorable perception of Web effectiveness, as such pressures entail elements of compulsion and coercion on a firm’s actions. By extension, we have also posited that firm size and perception of Web effectiveness are negatively correlated since larger firms are likely to experience higher levels of competitive and institutional pressures.

However, our analyses do not bear these hypotheses out. Instead, we find evidence of Web effectiveness perception being positively correlated to competitive and institutional pressures on one hand, and being negatively correlated to size on the other. How can these results be interpreted? First, it is plausible that firms may not experience excessive coercion and thus do not register a “backlash” against the Web technology. Firms, in fact, may have realized some benefits from using Web technology for electronic commerce. Consequently, they seem ready to rationalize their submission to competitive and institutional pressures by giving the Web technology higher marks for marketing effectiveness. Second, it is possible that larger firms rate the Web technology less favorably because they have access to more alternative marketing avenues, which in their opinion are more effective than the Web. In contrast,
smaller firms perceive the Web more positively as a marketing medium as they lack the resources to gain access to other alternative marketing tools. Third, the Web is an efficient and low cost channel that enables smaller firms to compete more effectively with larger firms. Consequently, larger firms may perceive the Web less favorably than smaller firms.

8. Conclusions

Our study of what motivates firms to set up Web sites offers an alternative perspective to conventional wisdom which suggests purely economic reasons for the setup of Web sites. Our research attempts to explain the isomorphic behavior of firms from a sociological perspective, specifically, an institutional perspective. Institutional theory suggests that efficiency is not the sole motivation behind organizational actions; organizations do also conform to normative prescriptions of the institutional environment (Meyer and Rowan, 1977; Scott and Meyer, 1983). Hence, by conforming to some taken-for-granted or socially accepted rules of organizational behavior, the organization is viewed as “legitimate” by society and is perceived as a member with the larger community of organizations (DiMaggio and Powell, 1983).

Our study uncovers evidence of institutional motives, in addition to competitive motives, behind firms’ Web site development. In short, Web site development can be characterized in terms of both competitive and institutional isomorphism. The implication of this observation is that managerial decision-making is often not based solely on considerations of efficiency and competitiveness. At times, managers’ actions betray attempts at coercive, mimetic and normative isomorphism, to ensure that their organizations are viewed as “legitimate” by society.

Our finding that firms’ perceptions of Web effectiveness actually become less favorable over time highlights a real problem confronting promoters of the Web. Initial hype on the advances of the Web often create unrealistically high expectations among would-be adopters of the technology. These would-be adopters often fail at the onset to understand the Web’s limitations and weaknesses. As a result, most of them ultimately feel disappointed and disillusioned with the technology.

Our study can be extended in a number of directions. First, a parallel study can be conducted on non-profit organizations. This study deals only with for-profit organizations, i.e., business firms. By investigating the motives of non-profit organizations in setting up Web sites, we may find interesting results since the set of environmental conditions surrounding non-profit organizations is different. We suspect that institutional forces play a far more significant role amongst non-profit organizations.

Second, this study can be replicated across specific industries such as banks, hotels, and airlines to determine the differential influence of institutional and competitive pressures on different types of firms setting up Web sites. This strategy would allow interindustry comparisons to be carried out.

Third, our study can be replicated in the context of other countries, allowing for cross-national comparison. Comparison of our results with those done in the context of countries with less overt governmental promotion of information technology would certainly be interesting.
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