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THE VALUE OF E-BUSINESS: HOW WEB ASSIMILATION LEADS TO BETTER ORGANIZATIONAL PERFORMANCE

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Abstract

Despite the growth in web assimilation research as a result of fresh skepticism about the business value of web technology, our understanding of the process through which web assimilation leads to better organizational performance is limited. To investigate the nature of this process, a theoretical lens is constructed based on an extensive review of organizational theories that provide competing explanations on how better organizational performance is achieved. Applying this theoretical lens to analyze a case study of a successful Singaporean dotcom, this article illustrates five different paths through which web assimilation may lead to better organizational performance. In doing so, this article enhances our understanding of the business value of web assimilation, hints at a possible solution to the paradox of heterogeneity in organizational research and provides a framework for practitioners to analyze their own investments in web technology.

Keywords: Web assimilation, web technology, e-business strategy, business value, case study
THE VALUE OF E-BUSINESS: HOW WEB ASSIMILATION LEADS TO BETTER ORGANIZATIONAL PERFORMANCE

Introduction

Amidst renewed skepticism about the business value of web technologies (see Carr 2003; Martinsons and Martinsons 2002), there is growing interest among the Information Systems (IS) community in examining the adoption, use and value of web technologies (Straub et al. 2002; Zhu and Kraemer 2005). Yet despite the growing body of research on the organizational assimilation of web technology, several important gaps remain in the literature. The majority of web assimilation research tends to (1) focus on factors that lead to the adoption and assimilation of web technologies rather than its consequences, (2) adopt a production-orientation that neglects the alignment between web assimilation and broader organizational objectives, (3) adopt a variance theory approach which assumes that the link between web assimilation and organizational performance is automatic, and (4) be over-reliant on the resource-based view of the firm (RBV). These gaps are curtailing the response of the IS community to the new “productivity paradox” debate, and the failure to respond convincingly may severely affect the perceived value of their craft and their standing among organizational researchers.

The purpose of this article is to address these gaps through an in-depth analysis of the consequences of web assimilation. Specifically, the key research questions that motivated our work are: (1) What is the business value of web assimilation? (2) How does web assimilation tie in with the broader objectives of the organization? And (3) How does web assimilation lead to better organizational performance? As web technologies can conceivably be used to support a myriad of business objectives, we adopt a broad perspective of organizational performance and define it as the achievement of an organization with respect to its specific business goals (Lenz 1980). These goals may range from improving profitability, market share, production efficiency, or the likelihood of organizational survival.

To begin our search for the answers to our research questions, we conducted an extensive literature review of organizational theories that offer different explanations on how better organizational performance may be achieved. Next, by using a case study of the events that transpired at Hardwarezone.com (HWZ), an e-commerce startup that revolutionized the Information Technology (IT) publications industry in Singapore, this article attempts to explain the different ways through which web assimilation may lead to better organizational performance.

For our analysis, we first use the punctuated equilibrium paradigm (Gersick 1991) to define two states of the organizational environment - equilibrium and revolution. Next, we demonstrate how web assimilation at HWZ facilitated strategies that lead to either differentiation or conformity, contingent on the state of the organizational environment, to achieve sustained growth and profitability. Based on our case findings, we propose five different paths of leveraging investments in web technologies for enhancing organizational performance.

The theoretical contribution of our study lies in complementing existing variance theories (e.g. Zhu et al. 2004; Zhu and Kraemer 2005) to enhance our understanding of the process through which web assimilation enhances organizational performance. In addition, this study hints at a possible contingency solution to the paradox of heterogeneity in organizational research by suggesting that the effectiveness of strategies that lead to either heterogeneity or conformity is contingent on the fit between business strategy, technology and the organizational environment. In terms of practical contributions, we hope that managers and practitioners can use the process theory developed in our study to evaluate the paths that their own investments in web technology have taken, so that they may adopt the appropriate remedial measures to re-align their investments to the path of success.

The paper is structured to first provide a brief summary of the relevant literature. The research methodology is then presented, followed by a summary of the data collected, so that the reader may follow the theory building process (Klein and Myers 1999) and make judgment about the validity of the developed theory based on the cogency and plausibility of the underlying logic (Walsham 1993; Walsham 1995). This is followed by a discussion of the pertinent findings that emerge before the conclusion of the paper.
Literature Review

The Business Value of Web Assimilation

The e-business success stories of organizations such as Cisco, General Electric, Dell, Amazon and eBay (Amit and Zott 2001; Chatterjee et al. 2002) demonstrate that web technologies have the potential to fundamentally transform an organization and enhance organizational performance. Yet, the phenomenal success of these organizations tends to be the exception rather than the norm. Even for firms within the same industry, the business value of assimilating web technologies varies widely (Hsu et al. 2006).

This inconsistency led to the emergence of fresh skepticism about the business value of Internet-related technologies (see Carr 2003; Martinsons and Martinsons 2002), and has re-ignited debate on the “productivity paradox” (see Baily 1986; Brynjolfsson and Hitt 1996; Kraemer and Dedrick 1994; Roach 1987). Amidst the furor, IS researchers today are facing strong pressure to demonstrate that web assimilation; defined as the extent of organizational use of web technologies in facilitating e-commerce strategies and activities (Chatterjee et al. 2002), has a consistently positive influence on organizational performance (Zhu et al. 2004). Reacting to the challenge, there is growing interest among the IS community in examining the adoption, use and value of web technologies (Straub et al. 2002; Zhu and Kraemer 2005). But notwithstanding the academic and practical contributions of the growing body of web assimilation research, several gaps can be identified in the literature.

First, the majority of existing web assimilation research has focused on factors that lead to the adoption and assimilation of web technologies (e.g. Chatterjee et al. 2002; Gibbs and Kraemer 2004; Hsu et al. 2006; Lederer et al. 2000; Ranganathan et al. 2004; Zhu and Kraemer 2005), with more emphasis on the antecedents rather than the consequences of web assimilation. This imbalance is largely due to the difficulty of developing measures and collecting data, (Zhu and Kraemer 2002), and the lack of theory to guide empirical research (Zhu and Kraemer 2005).

Second, much of existing research has adopted a production-oriented view (e.g., Belanger et al 2002; Benbunan-Fich 2001; DeLone and McLean 2004; Massad et al. 2006), emphasizing the technical quality of the e-business rather than its alignment with the broader business objectives of the organization, when the root of the productivity paradox is that IT per se rarely leads to better organizational performance (Henderson and Venkatraman 1999; Powell and Dent-Micaleff 1997).

Third, of the small handful of studies (e.g. Amit and Zott 2001; Zhu et al. 2004; Zhu and Kraemer 2005) that examine the consequences of web assimilation, all of them have adopted a factor-oriented, or variance theory, approach. And although a positive statistical correlation between web assimilation and organizational performance has been demonstrated repeatedly (e.g., Zhu et al. 2004; Zhu and Kraemer 2005), the mechanism through which web assimilation leads to enhanced organizational performance is typically treated as a “black box”.

Finally, in existing web assimilation research and at the more general level of IS research, articles that discuss the relationship between IT and organizational performance typically adopt the RBV as the theoretical basis for their work (e.g. Mata et al. 1995; Melville et al. 2004; Picolli and Ives 2005; Wade and Hulland 2004; Zhu and Kraemer 2005). While the RBV is undoubtedly an invaluable tool for understanding the value of web assimilation, there are other organizational theories; such as the institutional theory, the dynamic capabilities approach, or organizational ecology, that may be equally useful for explaining how web assimilation can lead to better organizational performance.

In summary, these gaps in prior research are limiting the response of IS researchers to the skepticism on the business value of web assimilation. Without an in-depth understanding of the consequences of web assimilation, how web assimilation can facilitate the attainment of broader organizational objectives, and the mechanism through which web assimilation leads to better organizational performance, a convincing response in this debate is not possible. The failure to respond decisively will undoubtedly have far-reaching implications for the perceived value of their craft and their standing in organizational research.

The purpose of this article is to narrow these gaps through an in-depth examination of the business value of web assimilation. To this end, we adopt a process-oriented perspective in analyzing the events that transpired at HWZ to generate insights on how web assimilation can facilitate the enactment of key organizational strategies and lead to better organizational performance. Our search for answers begins with a review of organizational theories that offer
prescriptions on how organizational performance may be enhanced. These theories are organized into two distinct schools of thought and are described in the sections that follow.

**Better Organizational Performance through Differentiation**

In the past three decades, important theoretical perspectives from the school of strategic management have emerged, advocating that competitive advantage is the key to better organizational performance (Teece et al. 1997). These theories include the competitive forces framework (Porter 1980; Porter 1985), the RBV (Barney 1991; Peteraf 1993; Wernerfelt 1984) and the dynamic capabilities approach (Teece et al. 1997).

The competitive forces framework depicts five competitive forces exerted on an organization by the external environment. Its utility lies in systematically considering each of these forces to identify alternative means that impede these forces or influence them in its favor (Porter 1980; Porter 1985). Competitive advantage results from avoiding the threats presented by the five competitive forces and exploiting the unique opportunities they offer (Mintzberg 1988). The RBV, on the other hand, perceives an organization as a “bundle of resources and capabilities” (Montealegre 2002, p.515). Its core proposition lies in exploiting “valuable, rare, inimitable and non-substitutable resources” and capabilities to create unique value for an organization (Barney 1991). From a similar perspective, the dynamic capabilities approach asserts the importance of “dynamic capabilities”. These specific organizational and strategic processes allow managers to alter their resource base in dynamic environments to generate new value-creating strategies (Eisenhardt and Martin 2003) that serve to create a series of temporary competitive advantages in rapidly changing business environments.

Although each of these theories addresses a different facet of organizational strategy, and the intricacies of each theory are certainly beyond the scope of this paper, an important commonality lies in their advocacy of firm heterogeneity. Differentiation, the process of achieving heterogeneity, refers to the act of offering a product or service that is perceived to differ from its competitors’ offering on any physical or non-physical characteristic including price (Dickson and Ginter 1987). The three different theoretical perspectives represent the different ways of rationalizing differentiation: differentiation as a response to environment threat and opportunities, differentiation as a consequence of exploiting strategic resources and capabilities and differentiation as a response to rapidly changing organizational environments through dynamic capabilities.

Differentiation creates heterogeneity among firms, and through heterogeneity, a firm achieves competitive advantage as it offers a unique value proposition not simultaneously being offered by any current or potential competitors (Barney 1991). This enables the firm to avoid market competition or even create a local monopoly (Deephouse 1999). In addition, following the assumptions that the market for societal resources is finite, and that the societal resources necessary for the survival of an organization tend to be divided among firms occupying the same organizational niches, heterogeneity also allows a firm to avoid competition for these resources as it occupies a unique organizational niche (Baum and Singh 1994). Consequently, organizational performance is enhanced as competitive advantage allows the firm to charge higher rents, while the easier acquisition of societal resources ensures a greater probability for organizational survival (Deephouse 1999). An overview of the theories that advocate heterogeneity and the mechanism through which it leads to enhanced organizational performance is provided in Figure 1.

**Better Organizational Performance through Isomorphism**

In spite of the academic and practical contributions of the strategic management theories that advocate differentiation, they do not explain the observation that organizations of the same type tend to be broadly similar in terms of assets, structure and business processes despite being geographically dispersed (DiMaggio and Powell 1983; Oliver 1988; Scott 2001). In a parallel development within the school of organizational sociology, important population-level theories emerged in the late 1970s and early 1980s that sought to provide an explanation for this phenomenon. Two of the most prominent of these theories are organizational ecology (Hannan and Freeman 1977) and the neo-institutional theory (DiMaggio and Powell 1983; Tolbert and Zucker 1996).

Similar to the strategic management theories highlighted earlier, there is an important commonality between the two organizational sociology theories although the core premises of the theories are significantly different. The commonality lies in the concept of isomorphism, defined as a constraining process that forces one unit in a population to resemble other units that face the same set of environment conditions (Hawley 1968). A key difference
however, is that each theory offers a different explanation for why isomorphism occurs. According to organizational ecology, isomorphism occurs mainly due to the influence of the external environment. Competition for the same resources among organizations occupying the same organizational niches leads to a natural selection process, which expels weaker organizational forms and results in isomorphism among the organizations that better fit the environment (Oliver 1988). The neo-institutional theory, on the other hand, posits the importance of "social fitness": the acquisition of a form regarded as legitimate within a given institutional environment (Scott 2001). The role of social factors is emphasized over economic or efficiency factors in driving isomorphism (Scott 2001). These factors including coercive isomorphic pressures from regulatory bodies or parent organizations, mimetic isomorphic pressures from other organizations with ties to the focal organization, as well as normative isomorphic pressures associated with professionalization (DiMaggio and Powell 1983).

Conformity results from isomorphism, and through conformity, organizational legitimacy is achieved. Legitimacy is a generalized perception or assumption that the actions of an entity are desirable, proper or appropriate within some socially constructed system of norms, values, beliefs and definitions (Suchman 1995). Questions and actions challenging an organization’s reliability, rationality and legitimacy are collectively termed legitimacy challenges (Hirsch and Andrews 1984). These legitimacy challenges diminish the ability of a firm to acquire resources from external parties such as customers, suppliers and regulators (DiMaggio and Powell 1983) and by attaining legitimacy, the legitimacy challenges are avoided resulting improved organizational performance (Deephouse 1997). An overview of the theories that advocate conformity and the mechanism through which it leads to enhanced organizational performance is provided in Figure 2.
When viewed as a whole, the advocacies of both schools of thought appear to be contradictory. On one hand, theories from the school of strategic management advocate firm heterogeneity as the key to gaining competitive advantage and reduced competition for resources which leads to enhanced organizational performance. On the other hand, theoretical perspectives from the school of organizational sociology posit that firm heterogeneity leads to legitimacy challenges, and subsequently, difficulty in resource acquisition and poorer organizational performance.

The findings from our case study resolve this apparent paradox by suggesting that the effect of heterogeneity or conformity on performance is contingent on the state of the organizational environment. When the organizational environment is in a state of equilibrium, heterogeneity leads to competitive advantage (Deephouse 1999; Newbert 2007), reduced competition for societal resources (Baum and Singh 1994) and consequently, improved organizational performance. However, when the environment is in a state of revolution, conformity helps an organization to avoid legitimacy challenges (Hirsch and Andrews 1984) and consequently, improve its probability of survival. To facilitate data analysis, the punctuated equilibrium paradigm (Gersick 1991) was first used to define two states of the organizational environment: equilibrium and revolution. A brief review of the core tenets of the punctuated equilibrium paradigm is presented in the section that follows.

**The Punctuated Equilibrium Paradigm**

The way people conceive change is heavily influenced by Darwin’s model of evolution: change is perceived as a slow stream of small mutations gradually shaped by natural selection into distinct forms (Gersick 1991). A competing view that emerged from the field of evolutionary biology (Eldredge and Gould 1972) suggests that enduring periods of gradual revolution are punctuated by sudden revolutionary periods of rapid and dramatic changes (Sabherwal et al. 2001). Overwhelming evidence in support of the punctuated equilibrium paradigm has been observed in diverse fields ranging from organization research (Tushman and Romanelli 1985) to scientific fields (Kuhn 1970), and can be applied to explain fundamental transformations in the organizational environment (Gersick 1991).

The punctuated equilibrium paradigm centers on the concept of a deep structure; defined as the set of fundamental choices a system has made of the basic parts which its unit will be organized and the activity patterns that will maintain its existence, which limits change in a stage of equilibrium but disassembles, reconfigures and enforces transformation during a period of revolution. During a period of equilibrium, the deep structure of the system is subjected to two forces of disruption; internal changes that pull parts and actions out of alignment with each other or the environment and external changes that impacts the system’s ability to obtain resources, and incremental solutions that counter these forces are sought to preserve the system’s inertia (Gersick 1991).

While the internal and external shifts do not by themselves cause revolutionary change, they may suggest and create a need for change or in the extreme case, invalidate the existing deep structure. The actual trigger for revolutionary periods may manifest in two ways; the arrival of newcomers to crisis situations, a scenario where newcomers are attracted or recruited to help correct failures that result from inappropriate deep structures, or the system’s arrival at key temporal milestones, where current members of the system feel that a temporal era have ended and consciously decide that the approaches they adopted for the era are no longer relevant (Gersick 1991). The revolutionary period involves a wholesale upheaval and dismantling of the existing deep structure (Gersick 1991), and is characterized by a series of tumultuous and discontinuous change (Tushman and Romanelli 1985). The brief but dramatic revolutionary period concludes when new deep structures are initialized and subsequently installed within the system.

**Research Methodology**

The case research methodology (Walsham 1995; Walsham 2006) was utilized for this study. Case research is particularly appropriate for the purpose of this study as we are interested in “how” the use of web technologies leads to better organizational performance (Walsham 1995). Further, the adoption of this methodology stems from recognizing that the e-business strategies and activities of an organization are inherently multi-dimensional and complex, making it more appropriate to examine the phenomenon by interpreting the shared understanding of the relevant stakeholders (Klein and Myers 1999).

For the purpose of this study, we needed to examine an organization that has successfully employed web technologies to improve organizational performance across a variety of different contexts. The HWZ case is
particularly appropriate as the organization allowed us to trace the evolution of its e-business strategies from a state of market stagnation during the time of its inception, through a tumultuous phase brought on by the dotcom crisis, before returning to the relatively stable phase that persists in the Singaporean IT publications industry today.

An extensive review of relevant literature was first conducted to identify pertinent concepts and theories to create a theoretical foundation for guiding data collection (Walsham 1995). Research access was negotiated and granted in September 2005 with a total of 18 interviews conducted with key members of HWZ’s top management, staff, investors and community members over a period of one and half years. This longitudinal approach in studying HWZ’s strategies carries two synergistic advantages. It facilitated both a comprehensive study of its past activities and decisions, as well as an opportunity to observe current practices, strategy formulation and execution within the organization over an extended period of time. Additional interviews were also conducted with sources in the IT publications industry to get an unbiased, accurate picture of the industry across different time periods.

Each interview took approximately an hour and was tailored based on the role of the person interviewed. When potentially sensitive information is sought, confidentiality and anonymity was offered to the interviewee to allay any fear of speaking (Walsham 2006). The questions asked were open-ended and exploratory in nature and were designed to elicit information on the process of web assimilation at HWZ. Each interview was recorded on tape and transcribed for data analysis. It was designed to be non-leading, yet at the same time non-passive as the interviewee was encouraged to speak openly, to allay any fears due to the recording of the interview. Data from the interviews were supplemented by company publications, newspaper articles, company brochures and the corporate website. Notes from direct observation were also used to corroborate the data obtained.

Data analysis was carried out by moving back and forth between empirical data, relevant literature and the emerging theory (Eisenhardt 1989; Glaser and Strauss 1967; Walsham 2006). Notes taken during each interview were organized into themes after each field visit (Walsham 2006). For every finding or theme that emerged, the data was checked to verify that it was supported by at least two sources (Klein and Myers 1999). Based on these notes and the data collected from supplementary sources, a detailed narrative of the evolution of HWZ’s e-business strategies was created to condense the voluminous amount of data into a more manageable form (Montealegre 2002). The narrative was subsequently compared with existing literature to shape the emerging theory (Klein and Myers 1999; Walsham 2006).

With subsequent iterations of data analysis, the nascent theory was verified with the research participants and their feedback was actively sought (Klein and Myers 1999). The data analysis process continued in strict adherence to the principle of the hermeneutic circle (Klein and Myers 1999), until it was possible to comprehensively explain the findings of the case studies and no additional data can be collected, developed or added to improve the developed model (Glaser and Strauss 1967).

**Case Description**

**Organizational Background**

HWZ is the top rated IT media website in Singapore with more than 32 million page visits per month. Providing localized IT news, product information and numerous member-centric services such as hardware price lists and discussion forums in Singapore, HWZ has distinguished itself as a rare e-commerce success story in Singapore, prompting comparisons between its founders Jackie Lee and Eugene Low, and Google’s Larry Page and Sergey Brin in The Business Times, a major newspaper in Singapore. A 2004 survey of IT media websites among Singaporean web surfers found that HWZ was estimated to control 29.7% of the market share in the Singapore IT publications industry. CNET Asia, in second place, only had a 9.9% market share. The achievement is admirable considering that HWZ began as a hobby for its founders on a S$1,000 capital.

The initial manifestation of HWZ was the Singapore Overclocker’s Group (SOG), a special interest group hosted under the umbrella of SingaporeOne, a Singaporean government e-commerce initiative. The SOG primarily catered to the needs of a niche community of CPU overclockers, allowing members to post their CPU overclocking results and hardware configurations. Despite the relatively small size of the CPU overclockers community, the SOG became so overwhelmingly popular that it effectively took up 90% of SingaporeOne’s total bandwidth within a month of its inception. Unable to cope with the traffic that the group was generating, the management of SingaporeOne had no choice but to disband the special interest group.
With assistance from the management of SingaporeOne, the founders of HWZ were eventually granted a S$20,000 seed fund from the Infocomm Development Authority of Singapore, a statutory board established by the Singapore government to promote and develop the IT industry in the country. With this grant, HWZ was founded on August 9, 1998 in a small factory space measuring a mere six by four meters, running on home equipment contributed by its founding members. The initial capital at the time was only enough for one server and six months of bandwidth charges.

Revolutionizing the Industry (August 1998 – Late 1999)

The IT publications industry in Singapore at the time of HWZ’s founding was stagnated and saturated with numerous local (such as Tech, Gravity and Singapore Computer Magazine) and foreign printed magazines (such as Chip, PC World, Wired, Computerworld and PC Magazine). In addition, online IT publications include well-established, well-funded foreign IT websites (such as CNET, Tom’s Hardware, SharkyExtreme and PCWorld.com), as well as local initiatives such as Hardware-one.com.

Despite the market saturation, the founders of HWZ identified an important opportunity in the IT publications industry. The management of HWZ realized that that foreign publications could not cater completely to the needs of local computer enthusiasts as the information was generated primarily for the US or European audience: The products reviewed in these publications were often unavailable locally, and the prices were often outdated or listed in foreign currency. And while local publications included localized content, the local publications were often not comprehensive as they lacked the required funding, credibility and market reach. Based on this insight, HWZ moved quickly to exploit the opportunity by positioning themselves as a provider of comprehensive local product reviews and prices. Four key strategies, with an emphasis on the quick delivery of a unique value proposition, were employed by HWZ in the local market.

Firstly, HWZ established hardware testing laboratories to generate its own product reviews. Thus, content generated by HWZ was more relevant in the local context since testing was done only on products available in the local mainstream market. Moreover, its content was generally perceived as more credible because the product reviews were done by genuine content experts with reproducible, extensively described experiments and benchmarking tests carried out in laboratories. Secondly, HWZ consciously decided not to charge its members for the information they provide. This formed a critical advantage over printed IT publications as users usually had to pay anything from S$7.50 to S$17.00 for an IT magazine. HWZ’s revenue would come mainly from online advertising, a viable alternative during the period of the dotcom bubble. Thirdly, HWZ formed strategic partnerships with local IT vendors in order to provide daily updated product prices and information on product availability to its customers. Finally, HWZ undertook extensive measures to nurture a strong sense of community among its members. One of HWZ’s co-founders described this strategy:

“Right from the start, we wanted to make our discussion forum more interactive. So Jackie (CEO of HWZ) and I would reply directly at the forum to anyone who had questions for us. We also organized outings and barbeques to get to know our members better. The main thing was to make our forum sticky, and to boost participation and encourage discussion. So we identified the people we saw as key contributors and opinion leaders, and invited them for tea, giving them freebies such as our HWZ T-shirts, and even privileges, such as forum moderator status.”

HWZ’s unique value proposition allowed it to establish itself as a massively popular online portal for hardware price guides and technical reviews in Singapore. At the end of 1999, official membership exceeded 40,000, with a webpage impression count of over 16 million per month, and an annual online advertising revenue of around S$300,000. But despite its early success, new challenges were about to emerge as the IT publications industry took a dramatic turn.

Surviving the Revolution in the IT Publications Industry (Early 2000 – Late 2004)

The impact of HWZ’s entry into the IT publications industry, and the onset of the dotcom crisis in the year 2000, saw the IT publications industry plunged into an environment of turmoil and uncertainty. The General Manager of HWZ described the challenges faced during the time:

“The dotcom crisis was a very trying period for HWZ because we were a pure-play dotcom and were dependent on online advertising for revenue. When many of these dotcoms closed, the venture capitalists behind the ventures were badly affected. Some sank together with their investments while others had to cut back drastically on the level of
funding for existing dotcoms. In the case of HWZ, three venture capitalists that had pledged to invest in HWZ had to withdraw even though HWZ faced no operational problems.”

Following the closure of many IT publications within the industry, the management of HWZ realized that the company must adapt to the changed business environment in order to remain competitive. They also realized that an over-dependency on online advertising for revenue made the company vulnerable to the uncertainties the new Internet technology carried. Based on an analysis of potential and existing advertisers, they subsequently identified an untapped segment of advertisers who were reluctant to advertise online. The Product Manager of HWZ explained the mindset of these advertisers:

“Some advertisers were more conservative and didn’t like to advertise online. They wanted something that they could see, touch or hold. Online advertising didn’t do it for them.”

The decision to carry out an unprecedented reverse clicks and mortar strategy was made to meet the needs of the conservative advertisers, which eventually led to the launch of the HWM magazine. Marketing the idea of the magazine first to the current online advertisers, and then to the conservative advertisers who have never advertised with HWZ, the management of HWZ were surprised by the enthusiasm and reception they received. Moreover, with a large existing base of community members forming the initial readership of the planned magazine, selling the magazine became much easier. This ready base of initial customers was also highly attractive to potential advertisers. The General Manager of HWZ described the synergistic value of coupling online and printed products:

“We had a win-win situation here. On one hand, our community was ready to support us by buying our magazine. On the other hand, with HWM out in newsstands, our brand reach increased and we could get more people to come to HWZ too. This, I believe, is a new way of doing business.”

The reverse click and mortar strategy proved to be the lifeline that HWZ needed to survive. The Managing Director of HWZ describes the impact of the reverse clicks and mortar strategy:

“Going into print made the difference for our survival as a company. I don’t think we would have survived the dotcom crisis if we didn’t.”

HWM was launched to great success in July 2001 and achieved a circulation of over 10,000 a month with its inaugural issue. Within months, it became the best selling IT magazine in Singapore, edging out several well-established competitors such as PC World (Singapore) and Chip. HWZ’s success inevitably attracted new entrants to the IT publications industry. Several local IT vendors; some of whom were previous partners of HWZ, were now eyeing HWZ’s lucrative business and sought to imitate its business model. In addition, with the launch of HWM magazine, the price advantage HWZ possessed over printed IT publications was lost. In response to the new challenges, the management of HWZ, encouraged by the success of the reverse Clicks and Mortar strategy in Singapore, saw the possibility of replicating its online-offline strategy in countries within the region.

“Portalites” which provided online, country-specific content to HWZ members such as the price lists of IT products in their country and content in their native language were subsequently created in countries such as Malaysia, Thailand, the Philippines and Australia. Offline, HWZ launched in quick succession, HWM (Malaysia) in December 2002, HWM (Thailand) in November 2003, HWM (Philippines) in December 2004 and HWM (Indonesia) in May 2005. Meanwhile, HWZ also pursued incremental diversification into related products to expand its product line. Gameaxis.com; devoted exclusively to computer gaming, was created in February 2002 to cater to the needs of HWZ’s computer gaming community. Xboaxis.com; devoted to the Microsoft Xbox gaming console, was created soon after in November 2002. Two new printed magazines GameAxis Unwired; dedicated to computer gaming, and Photol; dedicated to digital photography, were also launched in August 2003 and December 2003 as part of HWZ’s diversification strategy.

The regionalization and diversification strategy brought more advertising revenue to HWZ. As a result of these strategies, official membership figures of HWZ exceeded 100,000 and the annual revenue from both online and offline advertising grew to approximately S$4million by 2004. However, HWZ’s regional, online-offline business model had inevitably made them more similar to their established, multinational competitors. A member of HWZ’s growing foreign community illustrated the new challenges faced by HWZ as a result of the growing similarity:

“They (referring to HWZ and its multinational competitors) are quite similar so I don’t exactly go to just one website. For example, I prefer CNET Asia’s coverage of the latest tech gadgets, but I go to HWZ’s forum because there are many people there.”
Diversifying into Other Industries (Early 2005 – Present)

With Internet advertising back on the uptrend since late 2003, the upheaval in the IT publications industry because of HWZ’s entry and the coinciding dotcom crisis has settled, as organizations began to come to terms with the new rules of competition and business paradigm. To sustain its growth and profitability, HWZ today is attempting to replicate its success in the IT publications industry at other industries with the successive launches of Carma (an online-offline motoring publication), Inside Golf (an online-offline golf publication) and Jetaway (an in-flight magazine for budget airlines Valuair and JetStarAsia). The Managing Director of HWZ elaborated on HWZ’s latest strategy:

“The development of new products is all about growing the business. We believe that we have already established ourselves (in the area of IT in Singapore). So we asked ‘How can we use our existing resources, IT infrastructure and know-how to expand our business in areas that we are more likely to succeed?’”

While HWZ’s latest strategy has not arrived at fruition, its profits and market share continues to grow. Key stakeholders of HWZ are similarly positive about its latest move. One of HWZ’s main investors provided a ringing endorsement of its latest strategy:

“I think HWZ is in a very good position because they are in the space which mixes online and offline (media). As our society advances, we are seeing a shift that is beginning to happen where online content is beginning to grow at the expense of offline content. So HWZ is in a good position to exploit any opportunities that arise as a result of this shift. Assuming that they do not lose track of their competencies, growth is certain. The only thing that is not certain is the pace of its growth.”

HWZ was acquired by Singapore Press Holdings Limited, the leading media organization in Singapore on September 29th 2006. Figure 3 summarizes the evolution of HWZ’s key strategies from its inception in 1998 to date.

Discussion

The story of HWZ and its growth from a small start-up to an industry-leading organization in spite of changing environmental conditions makes it interesting to examine how their use of web technologies in support of their e-business strategies have evolved over time. At first glance, it is immediately apparent that HWZ has employed both strategies that lead to heterogeneity and conformity. To begin our discussion, we first define two states of the IT publications industry according to the punctuated equilibrium paradigm (Gersick 1991). Next, we analyze how web assimilation at HWZ has led to the attainment of different organizational objectives in different environmental conditions before presenting a process model of how web assimilation leads to organizational performance, inductively derived from the HWZ case.
Environmental Changes from the Perspective of the Punctuated Equilibrium Paradigm

Using the punctuated equilibrium paradigm as a theoretical lens to examine the transition of the Singaporean IT publications industry, the organizational environment can be defined to be in a state of equilibrium from 1998 to end 1999. The deep structures (Gersick 1991) of the organizational environment, consisting of the rules of competition and business paradigms in the IT publications industry, were well-established. The only changes that occurred within the industry were the occasional entry or departure of a magazine, resulting in a stable and predictable environment.

Just before the inception of HWZ, three major sources of disruption to the deep structures manifested within the organizational environment. Corresponding to Gersick’s (1991) typology of internal and external sources of disruption to deep structures, internal sources of disruption include the market saturation of the IT publications industry and the unmet demand of the local IT enthusiasts while an external source of disruption stems from the growing popularity of the Internet and the possibilities it offered to the IT publications industry.

These sources of disruption do not in itself trigger a state of revolution although the latent forces of disruption suggest a strong need for change (Gersick 1991). Temporal stability still exists within the environment, but organizations within the environment are already experimenting with the possibilities offered by the sources of disruption. In the context of the IT publications industry, both established firms such as PCWorld and potential new entrants such as HWZ recognized the potential of the Internet and were all simultaneously developing new business initiatives based on web technologies, resulting in unpredictability in the organizational environment.

The transition towards the revolutionary phase that occurred within the IT publications industry was eventually triggered by two factors, the arrival of a newcomer with fresh perspectives to resolve the crisis situation - manifested in the entry of HWZ to the IT publications industry, and the arrival of a key temporal milestone - manifested in advent dotcom bubble and the subsequent dotcom crisis that followed (Gersick 1991). During the revolutionary phase that lasted between early 2000 and late 2004, the IT publications industry in Singapore was unstable and unpredictable. Natural selection forces (Hannan and Freeman 1977) were at its peak, forcing the closure of many “weaker organizational forms” in the industry.

With the passing of time, and as the surviving organizations come to terms with the changes and are adapting accordingly, the organizational environment returns to a state of equilibrium with the initialization of new deep structures, rules of competition and business paradigms (Gersick 1991). The recovery of online advertising, and the declining rate and magnitude of change observable in the industry since early 2005, are indicative of the formation of new deep structures, and corroborate the notion that the IT publications industry has returned to a state of equilibrium. Figure 4 summarizes the evolution of the IT publications industry from the perspective of the punctuated equilibrium paradigm.
Different Strategies for Different States of the Environment

By conceptually dividing the evolution of the IT publications industry into a state of equilibrium and a state of revolution, the different ways through which web assimilation may lead to better organizational performance emerge. In the first equilibrium phase, the organizational environment was in a state of equilibrium characterized by market stagnation and saturation, as well as low rates and magnitude of change. During this phase, web assimilation facilitated the key strategies of HWZ and contributed to its performance in two key ways.

Firstly, HWZ established an e-business to achieve widespread distribution for the localized content generated by their hardware testing laboratory. In addition, the e-business facilitated the decision to provide its content at no charge for its community members, and help to disseminate the accurate and timely information they received from their strategic partners to their intended audience. This helped to exploit the unique market opportunity that the founders of HWZ identified which differentiated HWZ from their competitors. They could produce timely, local content that their foreign competitors could not, they were perceived to be more credible and offered a more comprehensive coverage of local products as compared to their local competitors, and their content came at no cost compared to printed IT publications.

Secondly, the use of an online discussion forum facilitated HWZ’s efforts in nurturing a strong community that eventually proved fiercely loyal to HWZ through its history. HWZ’s virtual community became a strategic resource (Barney 1991) that its competitors could not easily imitate, and their close relationship with their community members allowed them to hone a rapid sense-and-respond capability to anticipate changes in the organizational environment.

Through differentiation, HWZ achieved an important competitive advantage as none of its competitors could match its unique value proposition. In addition, attracting community members became much easier as there were no readily available substitutes in its early years. The influence of web assimilation on organizational performance is evident from the rapid growth of its community and its advertising revenue.

During the revolutionary phase of the IT publications industry, the role of web assimilation in facilitating HWZ’s new strategies was evident once again. During this phase where natural selection forces (Hannan and Freeman 1977) were at its peak, HWZ’s key strategies were focused on conformity to legitimate organizational forms. Web assimilation enabled HWZ’s reverse clicks and bricks, the regional expansion and incremental diversification strategies, which transformed HWZ into a multinational, online-offline business that resembled well-established foreign competitors such as CNET, PCWorld and PC Magazine. The legitimacy gained from imitating the forms of their more established competitors allowed HWZ to attract the more conservative advertisers to their offline product, and the revenue from offline advertising was critical to HWZ’s survival especially during the dotcom crisis.

Finally, as the IT publications industry returns to the equilibrium stage that persists to date, web assimilation supported HWZ’s radical diversification strategy that attempts to replicate its success in a diverse range of industries. Web technology once again enabled HWZ to differentiate itself from its competitors, which cemented its competitive advantage and attracted new investors to the company. The improvement in organizational performance is evident from the sustained growth in revenue, membership and the confidence of its investors. Figure 5 provides a diagrammatic summary of how web assimilation at HWZ led to improved organizational performance through different states of the IT publications industry.
From Web Assimilation to Organizational Performance

The case of HWZ reveals five different paths through which web assimilation can lead to better organizational performance (refer to Figure 6). When the organizational environment is in a stage of equilibrium (Gersick 1991), web assimilation can be used to facilitate organizational strategies that helps an organization avoid external threats or exploit unique opportunities (Porter 1980; Porter 1985), exploit strategic resources and capabilities (Barney 1991; Peteraf 1993; Wernerfelt 1984) and rapidly respond to dynamic environments (Teece et al. 1997). Through these strategies, firm heterogeneity is achieved which leads to reduced competition for societal resources (Baum and Singh 1994), competitive advantage (Deephouse 1999; Newbert 2007), and consequently, better organizational performance.

Conversely when the organizational environment is in a state of revolution, web assimilation can be used to facilitate organization strategies that make the organization isomorphic to the optimal organizational form (Hannan and Freeman 1977), or the social pressure from rules, shared understanding, values, norms and expectations from the institutional environment (Dimaggio and Powell 1983; Scott 2001). These approaches lead to conformity, which helps an organization avoid legitimacy challenges (Hirsch and Andrews 1984), and consequently, leads to better organizational performance.
Conclusion

Summary

Using a theoretical lens constructed from five of the most pertinent organizational theories that offer different prescriptions on how to improve organizational performance, we analyze a case study of web assimilation at HWZ, a Singaporean IT media company that grew from a small e-commerce start-up to the industry leader within a short span of nine years.

Our findings suggest that when the organizational environment is at a state of equilibrium (Gersick 1991), web assimilation can help to differentiate an organization from its competitors by facilitating organizational strategies that help the organization avoid external threats and exploit unique market opportunities (Porter; 1980; Porter 1985), exploit strategic resources and capabilities (Barney 1991; Peteraf 1993; Wernerfelt 1984) and respond quickly to changes in the organizational environment (Teece et al. 1997). Through these strategies, firm heterogeneity is achieved which leads to reduced competition for societal resources (Baum and Singh 1994), competitive advantage (Deephouse 1999; Newbert 2007), and consequently, better organizational performance.

On the other hand, when the organizational environment is at a state of revolution (Gersick 1991), web assimilation can support organizational strategies that help an organization conform to an organizational form most suited for surviving the environment or rules, social norms and expectations to achieve legitimacy. Through legitimacy, an organization avoids legitimacy challenges (Hirsch and Andrews 1984), which leads to a greater probability of organizational survival.

Limitations and Future Research

This article is not without its limitations. A particular criticism that is commonly directed at studies using the case research methodology is the problem of generalizability (Walsham 2006). While it must be readily acknowledged that statistical generalization is impossible from a single case study, generalizations can take the form of concepts,
theories, specific implications or rich insights (Walsham 1995; Walsham 2006), and it is possible to generalize non-statistically from case description to theory, as in the case of this article, within a single case study (Lee and Baskerville 2003; Walsham 2006). Nevertheless, future research can be directed at statistically validating propositions of this study, so that the boundary conditions of the theory can be better defined.

A second limitation is that despite our efforts to be as inclusive as possible, we acknowledge that it is impossible to exhaustively describe all the possible ways through which web assimilation may lead to better organizational performance within a single study. While we are bounded by feasibility concerns and the limits of the data collected, future research can certainly investigate other possible paths that have not been examined in this study. One might begin by looking at other organizational theories offering competing prescriptions for improving organizational performance. Possible theories include the resource dependence theory (Pfeffer and Salancik 1978), the strategic conflict theory (Shapiro 1989), and the social capital theory (Nahapiet and Ghoshal 1998).

Contrasting our findings with prior research, it is noteworthy that our findings appear to be in conflict with recent developments in dynamic capabilities literature that suggest that dynamic capabilities are more effective in dynamic markets (Eisenhardt and Martin 2003). One possible explanation is that the definition of a dynamic or high velocity market in the literature refers to an environment where rapid changes are the norm, where the equilibrium state is one of rapid change. This is in contrast with our definition of the revolutionary state according to the punctuated equilibrium paradigm, which refers to a complete upheaval of the business paradigm within the industry. The distinction between the two definitions, and the implications for web assimilation and organizational strategy, certainly represent possible avenues that future research can ascertain and explore.

**Theoretical and Practical Implications**

This study has important implications for both research and practice. For IS researchers, this study has contributed to the understanding of the business value of web technologies by specifying the process through which web assimilation leads to better organizational performance. By adopting a process-oriented perspective of the events that unfolded at HWZ, we were able to inductively derive a process theory that identifies five possible paths that the process can take. This process theory complements existing variance theories that demonstrate a statistical association between web assimilation and organizational performance (e.g. Zhu et al. 2004; Zhu and Kraemer 2005), and provides IS researchers with a stronger argument in the new “productivity paradox” debate.

For organizational researchers, while the theories from the two schools of thought presented in this article have developed in parallel and continue to command the research interest of many organizational researchers today (see Acedo et al. 2006; Scott 2001), the relative merits of heterogeneity and conformity remain a perennial source of controversy and debate (Deephouse 1999; Barreto and Baden-Fuller 2006). This study hints at a possible contingency solution to this paradox of heterogeneity by suggesting that the effectiveness of strategies that lead to either heterogeneity or conformity is contingent on the fit between business strategy, technology and the organizational environment. By validating this proposition and testing the influence of a wider array of contingency variables on the heterogeneity-performance relationship, a conclusive solution to the paradox may yet emerge. An important contribution of this article thus lies in laying the foundation of a bridge that may bring together two vibrant, yet divergent schools of thought. By synthesizing the vast cumulative knowledge of the opposing schools, organizational researchers on either sides of the divide can only benefit from the rich cross-fertilization of ideas.

For practitioners, this study highlights the importance of tying web assimilation to broader organizational objectives. While IT per se rarely leads to better organizational performance (Carr 2003; Martinsons and Martinsons 2002), the HWZ story demonstrates that web technologies can be a powerful tool for enabling organizational strategies to effect performance gains (Henderson and Venkatraman 1999; Powell and Dent-Micalef 1997). Practitioners can use this insight when considering new investments in information or web technologies. In addition, if existing investments in web technologies have not translated to better organizational performance, the process theory developed in this article can help managers and practitioners to identify the “missing link” in the process, so that they may adopt the appropriate remedial measures to re-align their investment to the path of success.

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