Software Outsourcing in Vietnam:
A Case Study of a Locally Operating Pioneer[1]

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Abstract

This paper explores the following question of key interest to researchers and practitioners concerned with offshore IS outsourcing in developing countries: How are potential offshore partners operating in developing nations to mature to be considered more attractive to suitors? Indeed, for firms located in what Carmel (2003) refers to as Tier Four, or less developed IS producing and exporting nations, an advancement to become a strategic partner challenges conventional wisdom and theoretical expectations. However our work has identified a firm that has become a strategic partner despite being headquartered in a Tier Four country. In exploring this question and examining our exemplar firm, the paper makes three key contributions: *First*, the contemporary context for offshore outsourcing in a Tier Four nation (Vietnam) is explored, illustrating the nation's advantages as well as key challenges that limit expansion. *Second*, against this backdrop we offer a case study of a successful strategic partner that has emerged *despite* being headquartered in a Tier Four nation. A theory-grounded analysis of the firm, Glass Egg Digital Media, provides a lens for identifying success factors that enable firms in developing nations to emerge as strategic technology outsourcing partners. *Finally*, we end by exploring how existing models for considering firm attitudes toward offshore outsourcing can be expanded and we highlight potential areas for future research. Our work demonstrates the important interplay of firm, industry, and national factors in enabling a firm operating in a Tier-Four nation to make the leap to strategic partner.

Keywords: Information Systems Outsourcing, Offshore Outsourcing, Vietnam, Developing Nations, Strategic Partnering, Video Game Industry, Multimedia

1. INTRODUCTION

Earlier work on global technology outsourcing (Carmel and Agarwal, 2002) contends that information systems organizations will evolve from being bystanders and experimenters to proactive portfolio managers, strategically outsourcing IT services from a buffet of world-class firms. But a critical question remains – how are potential offshore partners to mature to be considered more attractive to suitors? Such challenges are particularly daunting for outsourcing candidate firms in less developed nations. For example, firms located in nations at the bottom of Carmel's (2003) four-tier taxonomy of software exporting nations must overcome a variety of challenges related to infrastructure, cultural and socio-political issues, and partner bias (Heeks, 1999; Coward, 2003).

Using a methodology employed in similar studies of technology in developing nations (Goodman and Press, 1995; Dedrick and Kraemer, 2001; Chidamber, 2003), this paper leverages information gathered from recent in-country site visits, state-side communication, and a content analysis of secondary sources, and by doing so offers three specific contributions related to the research question outlined above. *First*, the market for offshore outsourcing in a Tier Four nation (Vietnam) is explored, illustrating the nation's advantages as well as key challenges that limit expansion. *Second*, we offer a case study of a successful strategic partner that has emerged despite being headquartered in a Tier Four nation. A theory-grounded analysis of the firm, Glass Egg Digital Media, provides a lens for identifying success factors that enable firms in developing nations to emerge as strategic technology outsourcing partners. *Finally*, the summary explores how existing models for considering firm attitudes toward offshore outsourcing can be expanded. The paper offers researchers a thoughtful, theory-grounded interpretation of a growing offshore outsourcing market in a developing nation and introduces and interprets conceptual techniques. Practitioners will gain insights regarding the specific pros and cons of outsourcing work to developing nations with specific information offered on the Vietnamese markets. Firms may also be able to better recognize the factors associated with choosing a Vietnamese partner, either for investment or to share project work.

2. OUTSOURCING TO VIETNAM: THE BENEFITS

Carmel (2003) provided a useful taxonomy for classifying and comparing software exporting nations. This taxonomy places most OECD nations as well as major offshore outsourcing nations (e.g., India, Israel, and Ireland) in the top tier, while Vietnam is classified in the fourth tier. For further comparison, Tier One nations have had firms actively producing software for export for fifteen or more years, they have clusters of several hundred or thousands of software exporting firms operating within their borders, and they have export revenues in excess of $1 billion. Tier Four nations have been exporting software for five or fewer years, have only a few dozen or less software exporting firms, and have software export revenues of less than $25 million annually. However, despite the lack of development of the Vietnamese software industry, we have identified the case of a firm operating in-country which has emerged as a strategic outsourcing partner.

The first contribution of this paper introduces the benefits and challenges associated with outsourcing software projects to facilities or partners operating in Vietnam. An examination of the in-country environment is not only useful for those considering outsourcing to this region, this exercise provides a background for filtering our theory-contradicting finding that a Tier Four nation can indeed support a strategic outsourcing partner.

When many Americans consider Vietnam, the first images to come to mind are rarely associated with technology. Yet the world's twelfth most populous nation has a rapidly growing technology sector. Annual IT spending in Vietnam was estimated at $1 billion in 2002 (Schwartz, 2002), and the market is expected to grow 25-30 percent a year through 2010, making it one of the fastest growing tech markets in the world (Schwartz, 2002).

While Vietnam suffers from a variety of market conditions that typically limit technology expansion, the market has been so tech-starved that demand-pull is outweighing the many in-country challenges. A significant portion of the surprising rise in Vietnam's tech sector is fueled by the development of an indigenous outsourcing industry catering to offshore contract work. By 2001, roughly 30 software development companies were operating in Vietnam. And while much of this work remains small-scale and low end, the list of organizations outsourcing projects to Vietnam is impressive. Anheuser Busch, Bayer, BMG, BP, Cisco, Critical Path, Daiwa, Fuji, IBM, Merrill Lynch, Nortel Networks, NTT, the

State of Oklahoma, and Sony have all outsourced development to Vietnam, either directly or through third-party outfits. And while India might initially be considered an offshore rival, several Indian firms have also been active in Vietnam. India's Aptech, NIIT, and Tata Consultancy Services (TCS) have each opened training centers in Vietnam and TCS has even deployed Vietnamese programmers at one of its centers in Mumbai.

Several factors favor Vietnam for IT outsourcing including lower production costs, a skilled labor pool, a growing number of government incentives, national stability, and a large overseas expatriate community. Each of these is described below.

2.1 Production Cost

One of the most compelling reasons for software project outsourcing in general and offshore outsourcing in particular is production cost (Hu et al., 1997; Ang and Straub, 1998; DiRomualdo and Gurbaxani, 1998; Lacity and Wilcocks, 1998; Levina and Ross, 2003). Carmel and Agarwal (2002) see production costs (i.e. development costs) as being the driver behind the first three stages of their four-stage work maturation model. While specific estimates on the cost savings in taking software projects to Vietnam vary, all show very compelling price differentials. For example, Lopatin (2001) suggests that developing software in Vietnam is 90% cheaper than in the United States, and between one third and one seventh the cost of developing in India. Research Vietnam, an in-country outsourcing intermediary, claims that software outsourcing costs in Vietnam are half the cost of Indian rivals (South China Morning Post, 2002). These figures are echoed by Andersen Vietnam, which estimates that current charge-out rates of Vietnam-based developers are about $20,000 per person per year vs. $40,000 in India. This price differential is expected to increase as Indian firms mature and the eventual market recovery allows them to raise prices to post-recession levels (EU Business Asia, 2002).

2.2 A Strong Labor Pool

The population of Vietnam is young, literate, and increasingly interested in technology. Roughly 60 percent of the population is age 25 years or younger and many are distinctly pro-Western, regarding the war with America as a legacy of the prior generation. The literacy rate of 97 percent is among the world's highest, roughly equal to the rate in the US, Ireland, and Russia and well ahead of India. And while technology fields are relatively new to the Vietnamese higher education system (Goodman and Press, 1995), these disciplines attract some of the best Vietnamese students each year. Primary education emphasizes science, math, and logic providing a solid base for later training. Vietnam currently graduates some 20,000 technical engineers each year. As a testament to the quality of the talent, Vietnamese programmers were ranked second out of more than 60 nations in the 1999 International Software Olympiad (Schmid, 2000). Further, researchers have moved recently to propose a more comprehensive, interdisciplinary IS curriculum for the Vietnamese institutions of higher education (Huy et al., 2004).

When partner firms have different native languages, these can increase transaction costs. Transaction costs have been suggested as being significant in determining whether a firm will choose to outsource projects or not (Ang and Straub, 1998; Qu and Brocklehurst, 2003). Language skills in Vietnam pale when compared to the rich pool of native speakers in outsourcing hotspots of India, Ireland, and Canada. However, the Vietnamese benefit from an alphabet based on Roman characters and a historical legacy that has created a greater awareness of French and English than many East Asian rivals.

Given the growing demand for in-country work, firms compete hard to retain talent. Significantly, staff attrition rates are lower when compared to Indian and the US onshore development (Lopatin, 2001). Low attrition rates foster familiarity between client and

contractor and help ensure the project continuity that can be critical for timely and successful deployment (Davenport, 1998).

2.3 Stability
Although still considered oppressive by western standards, the Vietnamese government has proven to be both stable and secure and is now widely recognized as 'legitimate' by the world's major trade nations. In the late 1990s, the Clinton administration took steps to normalize relations with Vietnam, signing a sweeping trade agreement in 2000. Relatively positive relations with neighboring countries have been promoted, particularly in the wake of recent concerns regarding Indian projects being impacted by tensions with Pakistan (Carmel and Agarwal, 2002) and further tensions on the Korean peninsula. And in an age of heightened security concerns, it is noteworthy that in 2002 Vietnam ranked as the safest nation in Asia for US travelers.

2.4 Government Incentives
The nation's communist government presents significant challenges for rapid economic liberalization, however the nation is clearly moving to open markets and offer incentives, particularly in the IT sector.

By the late 1980s, the government had largely abandoned socialist planning. After the failure of its economic policies led to a severe food crisis in the mid 1980s, the communist leadership began to institute a series of reforms in 1988 termed *doi moi* ("new thought"). The 1990s brought a boom-bust cycle that has led to a further maturing of the government's understanding of world markets. While many early investors flooded into the market, but initially struggled to wring profits from Vietnamese investments (Far Eastern Economic Review, 1998), the situation has since improved significantly. The local government has learned from early mistakes, and intense involvement from foreign governments and multinationals has helped to create a more positive environment. The strongest example of such improvement can be seen in the IT sector, which the Vietnamese government sees as one of the nation's keys to economic growth.

In June 2000, Vietnam's prime minister Phan Van Khai signed a decree to build and develop the country's software industry. Since the signing of the decree, the government has provided a variety of financial incentive packages. The government has kept import duties on IT products low and has introduced a set of tax and other incentives for IT firms. Businesses involved in software production and services, both local and foreign-invested, are exempt from corporate income tax for four years from the date they generate taxable income. Software products will receive a zero VAT (value added tax) rate and be free from export tax. The government allows for foreign investment and most significantly full foreign ownership of Vietnamese firms involved in the technology sector. Setting up a software firm is also considered easier than creating service firms in sectors like advertising, which may be considered more sociopolitically sensitive (Schmid, 2000).

Further reforms and investments are targeted at infrastructure and training. In February of 2003, in an effort to advance a more competitive and responsive tech sector, the government significantly restructured the leading state-owned technology entity, the Financing and Promoting Technology Corporation (FPT). The FPT has now been divided into three firms; FPT Information Systems Company (a state owned systems-integrator and software developer), FPT Distribution (the firm which owns the master distribution contracts with IBM, HP, Cisco, Microsoft, Oracle, and other large firms), and FPT Internet, which controls Internet activities in both Hanoi and Ho Chi Minh City. Such moves presage further deregulation and an increasingly positive attitude toward domestic IT competition. The government has also promoted the development of Vietnam's most modern software park,

Quang Trang Software City, which opened in March 2001. When this park is fully completed, it will house over 10,000 programmers. To further grow the tech sector, the government has issued a decree to train an additional 50,000 information-technology workers by 2005. By this time, the government hopes that Vietnam's software industry will contribute $500 million to the annual gross domestic product. India-based Aptech is designing courses for the effort, while an aid package from the Japanese government has helped provide funds.

Foreign government and NGOs are also interested in developing the Vietnamese IT sector. With funding from several donor countries, the International Finance Corporation has established the Mekong Delta Project Development Facility to support the development of private, domestically owned small and mid-sized enterprises in Vietnam, Laos, and Cambodia.

2.5 The Vietnamese Diaspora: Viet Kieu
Having local representatives that can effectively operate across cultures can be key to the success of global projects such as offshore outsourcing (Carmel and Agarwal, 2001; Adler, 2001; Coward, 2003). Vietnam's painful past has yielded a resource that is now helping to revitalize the nation's economy - the Vietnamese diaspora, known as *Viet kieu*. More than 2 million people left Vietnam after the Vietnam War. Well over 1 million of these expatriate Vietnamese live in the United States, many working in technology industries. The Hanoi government had distrusted the Viet kieu, but is now courting the overseas Vietnamese as a source of capital and expertise. Vietnam currently offers Viet kieu business personnel a range of incentives from tax breaks to direct ownership of homes and businesses. As such, it is not surprising that some of the first offshore outsourcing efforts have been pioneered by returning members of the Vietnamese diaspora.

3. OUTSOURCING TO VIETNAM: THE CHALLENGES
Despite Vietnam's promise, a host of issues limit the nation's potential growth as a dominant player in offshore outsourcing. These issues are related to government policies, infrastructure, and comparative limitations of both population and current outsourcer size when compared with alternative sites.

3.1 Government-related
The present government clearly struggles with finding what it feels is an appropriate balance between pro-market and pro-socialist ideology, often with mixed results. While success and progress in the IT sector is notable, particularly when compared with other sectors, the nation has been slow to broadly execute the second phase of *doi moi* or modernization. The Vietnamese government continues to suffer from a reputation for slow-moving, corrupt and capricious relations with foreign firms (Goodman and Press, 1995) as well as a lack of transparency and legal protection for firms doing business in country.

Much opportunity for economic reforms exists. The economy of the communist nation is based on the Vietnamese *dong*, a non-convertible currency. Economic reforms slowed noticeably following the regional crisis of 1997, and foreign investment dropped precipitously, although it has begun to come back. The banking sector is also considered fragile, with the bulk of Vietnamese bank loans still going to state enterprises, of which roughly 60 percent are unprofitable or only marginally so (Marshall and Zeisiger, 1999). Further, although relations with the United States are improving, normalized trade is a relatively recent phenomenon that may limit outsourcing of projects that have even cursory relationships with defense industries.

3.2 Technology Infrastructure

Vietnamese Internet connections are often slow and expensive and there are strict controls on the flow of information. While the government has pledged to address the problem of telecommunications costs, Vietnamese telecommunications are considered among the costliest and most restricted in Asia (Peng, 2002). A 128K leased line can cost $2,000 per month and international phone calls are among the most expensive in the world.

The tension between the openness of the Internet and its potential for positive economic impact is often at odds with the long-standing censorship policies of the current regime. The government is liberalizing Internet restrictions on privileged organizations, particularly those associated with IT projects with Western customers. However, the Internet was banned in Vietnam prior to 1997, and attitudes toward Net use remain rigid. Two Vietnamese 'cyberdissidents' were jailed in 2002, one received a four year sentence for posting Internet essays criticizing the Vietnamese government, the other received a 12 year sentence for e-mailing information to dissidents abroad. The Culture and Information Ministry has also proposed several restrictive measures including requiring Internet café's to monitor patron activities and requiring Vietnam-based websites to obtain licenses and seek approval each time content is changed (Associated Press, 2003). The government continues to block hundreds of potentially useful commercial Internet sites for most users, however a gateway solely targeted at enabling software companies to bypass Internet restrictions has been promised (Levander, 2000). It remains to be seen how such policies are perceived by trade partners when comparing Vietnam to other outsourcing destinations.

3.3 Workforce Limitations

While the nation continues to advance its training program for technology workers, Vietnam is still largely an agrarian society. The US Commercial Service in Ho Chin Minh City reports that 80 percent of the population's 80 million people still live off the land, and nearly 40 percent of the population lives in poverty. English skills among the local population, while better than most regional rivals, are still limited. Western-style management training programs are rare, and given that foreign investment remains a relatively new phenomenon, project management and general business skills among the local population remain in short supply.

Also as in many developing nations, piracy is rampant. This dynamic has the unusual effect of encouraging the local software market to remain focused on providing products for export. Indeed, in 2001 it was estimated that one in every five dollars in local IT contracts were for projects delivered outside Vietnam (Yen, 2001). The lack of dependable intellectual property protection will restrict the growth of the domestic software industry as well as limit the appeal of Vietnam as a market for high-quality imported software and training materials.

3.4 Scale

For all its growth and promise, the Vietnamese market for quality export-oriented software services is still very small. In fact, while this paper frequently draws comparisons with the Indian market, the two are significantly different in scale and capabilities. Software exports alone in India topped $6.2 billion in 2001 (EU Business Asia, 2002), a figure that is over six-times larger than Vietnam's entire IT market. Vietnamese firms will also have to grow to be considered for larger, more comprehensive deals. There are only a few firms that have over 100 developers and no outsourcing firm currently has the deep talent pool of 500 plus developers common among the larger global outsourcing firms in other countries.

4. GLASS EGG – AN OUTSOURCING SUCCESS

4.1 Firm Background

Located in Ho Chi Minh City (Saigon), the heart of Vietnam's economic renaissance, Glass Egg Digital Media LTD is an offshore software development company specializing in multimedia projects. The firm operates in three principal business segments: computer and video game development, web programming and content development, and 3D animation. Glass Egg currently has 67 employees. All are based in Vietnam, hence the firm carriers out all development work in-country. The firm has done work for clients in Europe, Asia, Australia, and the Americas and boasts an impressive client list that includes some of the leading firms in computer game development and advertising. The firm's headquarters are located in an international standard modern facility with a building-wide redundant power supply to deal with the city's occasional blackouts.

The senior management team is a group of five Americans with more than 20 years of collective experience in the multimedia industry. The firm's General Director, Phil Tran, was born in Saigon and emigrated to the US in 1975 when he was just 13 years old. He graduated from UC Berkeley and moved back to Vietnam in 1995 to work for a law firm before he established a multimedia production studio for a California company that was one of the law firm's clients. Steve Reid is the firm's CFO. A Harvard-trained MBA, Reid previously worked as a Management Consultant for McKinsey & Company. Charles Speyer, is the firm's Executive Producer, Animation. Speyer has served as producer and art director for over twenty TV commercials in Vietnam.

While Glass Egg was founded in 1999, Phil Tran and many of the senior staff have been working together as a firm since 1995. The group previously worked for a Ho Chi Minh City firm that held an exclusive development contract with the failed Morgan Interactive, a San Francisco-based developer focusing on low-end edutainment game titles. From 1995-1998, the Vietnamese firm developed roughly 20 projects for Morgan, many based on popular American children's books. The San Francisco firm had aspirations to grow from being a developer to a publisher, however margins from the Vietnamese unit were not enough to fuel the failed expansion effort. After Morgan's failure, the Vietnamese firm was left with a uniquely skilled and experienced work force.

Tran hired the production team, quickly secured $400,000 in initial venture funding and the emergent independent firm became known as Glass Egg, incorporated in the British Virgin Islands in February 1999. Glass Egg Digital Media (Vietnam) Limited is a wholly owned subsidiary of the British Virgin Islands company and retains a license to operate as a 100 percent foreign-owned company in Vietnam[2]. The firm has no joint venture partner. The initial funding for the venture was provided by Dragon Capital's VEIL (Vietnam Enterprise Investment Limited) fund, the largest Vietnam-dedicated investment fund.

4.2 Businesses

The firm's core business is multimedia systems. The firm's core skillsets of computer graphics, programming, and project management are reinforcing and translate across the firm's three business segments: computer video games, web programming and content development, and 3D animation (see figure 1). These segments are not only fast growing, but industry dynamics and evolution favor firms that are able to harness offshore talent.

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[2] It is important to note that although Glass Egg is incorporated in the British Virgin Islands (BVI), the firm operates entirely within Vietnam. The firm has no employees or offices in the BVI. Many nations allow liberal rules for foreign incorporation such as the provision of investor tax limits and increased ability to attract foreign direct investment (FDI). Glass Egg's existence as a BVI entity is limited to filed papers.

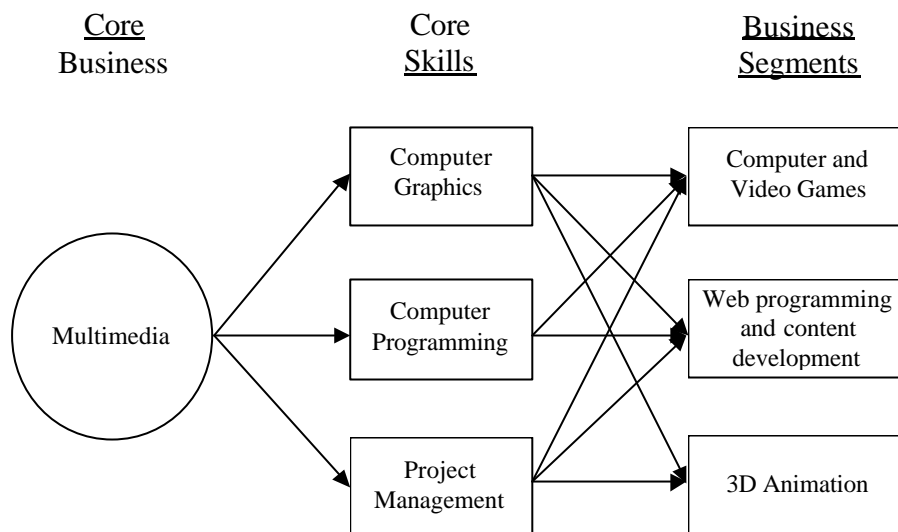| Core Business	Core Skills	Business Segments

Figure 1: Skill and Segment Synergies

Over the past decade firms have gained increased access to the technology necessary to create complex multimedia projects. While detailed multimedia projects such as 3D animation initially used proprietary tools, new efforts rely on commercial software such as 3D Studio Max, Maya, and SoftImage, many of which can be easily extended via custom or third-party plug-ins. Trends in processor speed and cost have also made rendering software available on relatively inexpensive hardware, lowering the startup costs to complete detailed work. As such we observe a common pattern where an industry has become increasingly commoditized, in this case shifting competitive advantage from firms owning proprietary technology to those with high artistic and technical skill and low-cost advantages (Christensen et al., 2001; D'Aveni and Gunther, 1994). The firm's efforts in each of the three segments are described below.

4.2.1 Video Game Development
While diversified across three segments, the video game industry represents Glass Egg's most successful segment and a key component of its future growth. The firm has worked on projects for a number of industry leaders including 3DO, Activision, Atari/Infograms, Disney Interactive, Electronic Arts, Fox, Harper Collins, Microsoft, Nintendo, Marvel Comics, Mattel, McGraw-Hill, Microprose, Simon and Schuster, T*HQ, and Warner Bros.

The video game industry remains attractive for Glass Egg, both due to its growth and due to the changing dynamics of competition. In the United States, this sector has been one of the few solid growth areas in the tech sector in the years following the Internet bubble. Approximately 60 percent of Americans routinely play computer or video games and more than one third of all US households now have at least one game console in their homes. To appreciate the impact of the industry consider that the most successful console game, Sony's Playstation 2, now accounts for over half of Sony's operating profits. And the customer base is maturing along with the industry - the average computer game player is 28 years old, and nearly half are women. In the United States, the video game industry is now larger than the motion picture industry's domestic box-office gross (Naughton, 2003). One of Glass Egg's areas of artistic expertise, auto racing games, has proven to be a particularly strong segment of the computer game market. Consumers spent $1.7 billion on racing games in 2002, and

games are now seen as vehicles to create buzz about new automobiles. In fact, Porsche launched the Cayenne and Mazda the RX8 in separate video games (Naughton, 2003).

And while the market for new systems is growing, the market for legacy systems (earlier generation units) can draw new titles for years after hardware has been superceded by a new product, expanding the market for low end games. From 1996 to 1998, the total sales of PC game titles under $30 increased from 50 percent to more than 70 percent of the total market. Offshore firms may be particularly well suited to take advantage not only of complex work for increasingly expensive titles, but also for creating new content on older consoles that remain in use (Glass Egg 2000). As publisher margins have been reduced, there is an increased pressure to find lower cost development alternatives.

Two types of firms are engaged in the game software industry: producers and developers. *Producers* assume the function of sales and marketing titles. Leading companies include Activision, Electronic Arts, and Infograms. *Developers* are responsible for creating the game design, programming, and art production. Increasingly elaborate video games with rich, detailed graphic environments are raising the cost of game creation. The publisher finances the product costs as an advance against a royalty. The royalty can range from 10-25 percent and is normally calculated as a percentage of gross margin (excluding distribution and marketing expenses). Production costs, sales volume, retail prices, and royalties can vary dramatically depending on target market, the strength of the license, and the skills and experience of the developer. Edutainment titles retailing for less than $30 and with a production cost of less than $500,000 are targeted at smaller markets (less than 200,000 units). High end products can offer retail prices of $50 or more and production costs of over $5 million, with sales of hits easily topping 1 million units. Production costs represent approximately 15-20 percent of top line game revenues.

As such, developers are increasingly relying on sub-contractors to handle various independent components of the development process. For example, Glass Egg has handled track and car design in a variety of racing games, as well as providing programming and project management for sub-components. This disaggregation of the game industry has developed the firm, allowing it to initially bid on smaller projects, while gaining expertise and credibility and growing into larger, more integrated development projects.

4.2.2 Web Programming and Content Development
Industrial standardization lowers prices and shifts industry dynamics to favor low-cost producers (Porter, 1985; Walters and Toyne, 1989). This dynamic appears to be at work in the Web Programming and Content Development market as well. In this market, the firm's skills have been leveraged on several projects creating interactive web sites. Web project development relies largely on PC-based client/server technology, meaning that a testing and development environment can be acquired at a relatively low comparative cost. Glass Egg leverages in-house expertise in Java, C++, HTML, SQL, Flash, and various web scripting languages, and staffers continually upgrade their skills as the industry evolves.

The smaller scope of web projects has allowed the firm to more quickly move beyond subcontracting to handle entire projects for clients. Interactive sites are a particular area of expertise, given the firm's experience in both game and advertising-oriented 3D modeling. The firm has acted as the sole contractor on entire online game projects for clients, including concept development, art work, programming, project management, and quality assurance.

The firm has also secured a production agreement with a San Francisco based digital marketing agency to provide programming services for a fixed monthly retainer. This offshore work will help the firm grow this segment. Further, as the regional and local market for web development develops, Glass Egg will be positioned to leverage its experience and expertise close to home, serving Vietnamese, East-Asian, and Australian markets.

4.2.3 3D Animation

Glass Egg also provides 3D animation services, primarily for television commercials and promotional films. Contracting partners include worldwide advertising agencies J. Walter Thomson, McCann-Erickson, Ogilvy & Mather, Satchi & Satchi, as well as VTV (Vietnam Television). Glass Egg's animation work can be seen in commercials for Dutch Lady milk brand, Toan My stainless steel products, Baygon insecticides, Pantene shampoo, and the Saigon Water Park. When developing 3D content for local advertisers, the firm's partners handle issues of content sensitivity with governmental authorities, freeing the firm to focus on graphic content that has already been cleared through authorities.

4.3 Success Factors

Returning to the central research question driving our inquiry – how are firms able to emerge from the largely negative environment in Tier Four nations to become strategic partners? Our analysis suggests an interplay of issues associated with firm, industry, and national factors that are explored in detail below.

4.3.1 Senior Management Team

A key factor for Glass Egg's success is the firm's senior management team. Glass Egg's founding team is made up of individuals that bring a diverse skill set to the table. The firm's Viet Kiu founder, a US citizen born in Vietnam and educated at an elite US University, is able to bridge Vietnamese and English speaking cultures. This vital bridge has helped the firm navigate the challenging Vietnamese bureaucracy, and has helped the firm overcome cultural differences between local employees and respective western management, investors, and clients. The senior team is also highly experienced. They possessed a deep industry knowledge and a record of project accomplishment prior to the founding of Glass Egg, and many benefited from seeing the missteps taken by an earlier US-based partner.

4.3.2 Post-Reform Timing

The firm has emerged at a time when the Vietnamese government has learned painful lessons from earlier bureaucratic missteps and has made important strides to streamline foreign investment. Glass Egg has benefited from these improved governmental policies from its inception - the firm's application to produce software and animation for export was approved by the People's Committee after just 15 days, a startlingly quick time in a nation known for bureaucratic delays.

Glass Egg further benefits as one of the initial local success stories in an industry highlighted for special state-sponsored privileges. In addition to the tax breaks and financial incentives for technology firms that were highlighted earlier, Glass Egg is not required to have a local joint venture partner. The firm is a 100 percent wholly owned limited liability company, organized as a subsidiary of a foreign firm. As is practice for many nations seeking to attract foreign investment, Vietnam allows this to be a paper distinction. All of the firm's employees and management are based in Ho Chi Minh City and all client contact is handled through the Vietnam office This distinction leaves it free of government intervention, mismanagement by less experienced or ill-equipped partners, and strengthens the firm's margin position. Also, the slowdown in foreign direct investment following the 1997 financial crisis has actually had a positive impact on the firm, allowing it to recruit better people as fewer foreign firms were in-country or expanding to compete for local talent.

4.3.3 Development Trajectory Symbiotic with Industry Changes

The growth of video game industry is increasingly mimicking those of the Hollywood studios, where producers seek outside developers to create titles, while production houses provide financing and marketing. Web service firms and other systems integrators are increasingly relying on subcontracting as well, leaving offshore firms positioned to offer appealing cost advantages in the recession economy and beyond. Starting as a subcontractor allowed the firm to gain legitimacy and establish its reputation, grow scale, and cultivate management expertise. The firm's skill set deepens with each project, while growth creates a regional scale benefit, offering a time-based sustainability to these competitive advantages (VanderWerf and Mahon, 1997; Mata et al., 1995). Tran says this dynamic is allowing the firm to 'bootstrap' its way into the premium game market. The diversity of its three core skills in animation, programming, and project management have assisted this advancement and helped the firm broaden and diversify its customer and project base. While East Asia has long been a center for animation, Glass Egg's in-house programming and project management talent can help it grow its project work. For example, when approached by Mattel to do the artwork on a 3D racing game, Glass Egg's prototypes demonstrated a software 'engine' to animate the graphics which was technically superior to the original US code. As a result, the firm won the entire bid for both art and programming. This growth parallels low-to-high segment moves seen in other Asian markets, such as those for autos and electronics in Japan and Korea (Bartlett and Ghoshal, 2002).

4.3.4 Cost

Glass Egg's project work is priced at roughly 30 percent below comparable developers in the US, Europe, and Australia, however its developers earn salaries $1/10^{th}$ to $1/20^{th}$ their US counterparts. Even when the salaries of non-citizen management are factored in, the firm earns margins in excess of 50%.

Nearly all products are exported and contracts are denominated in US dollars, while local salaries and most expenses are paid in the non-convertible Vietnamese dong. While limited foreign exchange for the dong presents problems for importers, it creates an opposite benefit for outsourcers by greatly reducing foreign exchange risk. Payments from clients are also funneled through the offshore parent, eliminating problems converting dong to dollars. When the government tax holiday expires this will also legally minimize local tax exposure.

4.3.5 Workforce

The firm considers the development of a strong team of local Vietnamese management essential to the success of their operation (Adler, 2001; Carmel and Agarwal, 2001). The firm has nurtured a team of Vietnamese middle managers, all of whom are conversant in English and are capable of operating with a large degree of confidence and autonomy. Many of the current ranking Vietnamese managers have been with the firm over five years, since the group's earlier association with Morgan Interactive.

All of the programmers have graduated near or at the top of their class from Vietnam's most prestigious technical universities. All of the firm's graphic artists have been recruited from traditional art disciplines. The firm's design team includes formally trained sculptors, painters, and cell animators. The prospect of working for Glass Egg can be particularly attractive for an artist – as artists universally struggle to find paid employment to finance their passion. Members of the Glass Egg team state that their 'day job' is profoundly rewarding and lucrative – a rarity among talented artists. Many employee cubicles are adorned with paintings and sculptures showcasing the occupants 'offline' talents.

Many of the firm's potential recruits are initially paid just $50 a month as they complete a six-month training program. Those who are eventually hired are paid roughly

$4,000 a year, where comparable US talent would earn $70,000-$100,000 (Knecht 2001). Initially only 2 in 10 trainees are offered full-time work at Glass Egg. Despite these odds, talented artists and programmers are eager for an opportunity to compete to get free, high-level training and experience in the Glass Egg environment. Those invited to stay are treated well. While salaries seem low by US standards, they are at the high end of the Vietnam pay scale. Managers make an effort to get to know and provide mentorship to all employees. The firm has sent selected employees to international game expos in the United States. For individuals, such trips would otherwise be both difficult to arrange and financially prohibitive. The firm feels that these travel perks can be an enormous incentive and can engender enduring loyalty. Further, by traveling to trade shows, Glass Egg's staff can size their work up by broadly surveying the international competition.

Quotes from the firm's contracting partners are a testament to the firm's talent and include statements such as:

- "…Glass Egg is in the 80th percentile compared with US companies… clearly the animators know how the human body moves." – Senior VP, Activision
- "Glass Egg's art and animation is beautiful." – Executive Producer, Hasbro Interactive
- "We traveled in Asia looking for 3D product studios. We consider Glass Egg to be the experts in 3D animation in Asia." – VP Production, Nickelodeon

4.3.6 Financial Backing

Being a successful, visible, early leader has allowed Glass Egg to secure additional funding to fuel its progress toward its growth targets. In December of 2002, the firm secured some $3.0 million in additional funding, $1.75 million of which came from the International Finance Corporation, the private sector development arm of the World Bank Group, the rest coming from Dragon Capital, the firm's original investor.

4.4 Direction and Challenges

While we have illustrated how Glass Egg has become a strategic partner despite being located in a Tier Four nation, it is also critical to examine the issues that may limit or shape the firm's development. These factors relate to the perception of a firm's stability, an important factor in signaling vendor choice and adoption (Gallaugher and Wang, 2002) and considered critical in the selection of an offshore outsourcing partner (Carmel and Agarwal, 2002).

Glass Egg has remained obsessively client-focused, while broadly sketching a strategic plan for short, mid, and long-term advancement. The firm's long-term goals in its three areas are indeed aggressive. In the video game market the firm hopes to become an independent developer of video games for major console systems (Playstation 2, Xbox), offering 5 to 10 titles a year at $1 million in revenue each title. In web development, Glass Egg aspires to grow into an integrated web services company with a presence throughout Asia. In 3D animation they hope to produce their own children's cartoon targeted at the Saturday morning US market.

The firm's geography, the source of so many of its advantages also presents the greatest obstacle for its advancement. Vietnam's reputation as a closed society and technological backwater is problematic. As one US executive claimed, telling clients that a firm's programmers were in Vietnam is 'a door slammer' (Levander, 2000). Glass Egg's Phil Tran is well aware of this, stating "our biggest competitor is fear on the part of clients. That's what we have to overcome".

As Glass Egg convinces firms in its segments to look to Vietnam, it runs the risk of generating local competitors as well. While time has offered the firm scale and skill advantages and an impressive portfolio of client-satisfying projects, local competition is

inevitable, while regional competition remains strong. The firm is regularly considered with regional centers of excellence in 3D animation in Thailand, Hong Kong, and Singapore, as well as East Asian animation powerhouses South Korea and Japan.

Finally, it is recognized that the firm aspires to grow in a way not unlike that of its former failed US partner, Morgan Interactive. Glass Egg management is keenly aware of the example of Morgan's failure. However, all recognize that advancing the firm from subcontractor to developer, systems integrator, and entertainment producer involves an enormous cash commitment and a set of skills that the firm is still developing. The new funding has provided an opportunity for the firm's planned establishment of a small office in Los Angeles. Such a presence is seen as a critical advantage in outsourcer choice (Coward, 2003), and it is hoped that this presence will allow the firm to cultivate relationships to secure a wider variety of entertainment projects and to more closely monitor technology developments in entertainment multimedia. However the cost of this presence represents a significant expense unfamiliar to a firm that has always operated in the low-cost world of Ho Chi Minh City. Larger scale products where the firm is the lead developer, rather than a subcontractor, further expose the firm to the industry's hit-miss cycle. While low margins can insulate it from some of the risks faced by higher cost rivals, larger projects will undoubtedly demand greater investments and entail more substantial risks.

5. INTERPRETATION AND SUMMARY
Although firms located in Tier Four nations face tremendous adversity, in this case study we have shown how a firm (Glass Egg Digital Media) can emerge despite being located in a Tier Four environment (Vietnam) to become a critical partner for many of its clients. The dynamic examined synthesizes many earlier tenants of outsourcing and strategic management research, and illustrates how firm, national, and market/industry factors can shape an environment that allows an organization to mature into a strategic partner in a way that challenges the theoretical and heuristic orthodoxies, a primary goal in case-based IS research (Lee, 1989).

While many of the world's largest firms are outsourcing to Vietnam, most of this work consists of small-scale and low-end projects. Carmel and Agarwal (2002) have proposed a four-level framework whereby firms move through states as global outsourcers (bystander, experimenter, cost-focused, and strategy-focused). In an effort to advance theory, we propose an extension to this theory in that firms consider nations in similar ways. Rather than considering all nations as equal, a firm may be a strategic outsourcer in one country, but an experimenter in another. The choice to enter a new market is largely based on the characteristics of potential partner firms. Most firms outsourcing projects to Vietnam are in the experimenter stage. Glass Egg, however, is uniquely positioned to be among the first firms in Vietnam considered a strategic partner.

The case of Glass Egg presents a striking illustration of factors that should be cultivated by would-be outsourcers located in Tier Four nations. These include the *involvement of an experienced, cross-cultural senior management team*. The Glass Egg team is made up of industry veterans who are exceptionally well-credentialed to counteract client concerns associated with entering a new, emerging, and relatively unknown market. While production costs in Tier Four nations should remain low, provided an adequate labor pool is available, transaction costs associated with coordinating projects across cultures and over many time zones can create challenges that discourage clients (Qu and Brocklehurst, 2003). The management team's familiarity with both the local culture and the culture of their clients counteracts these concerns and lowers transaction costs associated with deals. The *local workforce* is also critical. Glass Egg has harnessed a pool of Vietnamese engineers and artists and has provided extensive, rigorous training built around a competitive screening process.

This has enabled the firm to develop a talent pool that is not only globally competitive on a production cost basis, but is also extremely competent.

Timing has also played a significant role in the firm's success. By entering the market for offshore software development at a time when the government is sufficiently supportive, foreign investment laws have improved, and worldwide demand for services is on the rise, Glass Egg has been able to thrive. *Industry Choice* has also been critical. Helped by the project-nature of its work and the specifics of its target markets, the firm has been able to neutralize some of the concerns that plague broader IT outsourcing. Video-games and animation rarely need follow up enhancement and maintenance work. Once a project is completed the outsourcer can move on to the next effort. This removes the risk premium common among purchasers of IT (Gallaugher and Wang, 2002) and is likely to fuel acceptance of what today is widely perceived as an unorthodox destination for software project outsourcing. Finally, these factors collectively have helped the firm secure two rounds of *financing* that are critical for a firm's development and expansion.

The development of Glass Egg has prompted us to propose a maturity mechanism for Tier Four software firms pursuing global markets. Intellectual property concerns and the relatively small size of local markets prompts firms to begin with small project work largely for international clients, perhaps providing components of a larger effort. Once credibility has been established (either through earlier projects with the same firm, or with strong efforts from well-known partners and projects) then firms move to a greater level of project autonomy – becoming the lead or sole outsourcer on a project. Finally, the firm grows to the point where it has strengthened its skills, particularly in management and marketing, and can enter the market as an independent software developer – offering its own products to the global market. Glass Egg has emerged through the first two-phases of this work, and is now entering the third. Such a path can be particularly attractive in developing nations like Vietnam, where in-country management experience is limited and where partnered projects allow staff an opportunity to continually improve skills and develop confidence.

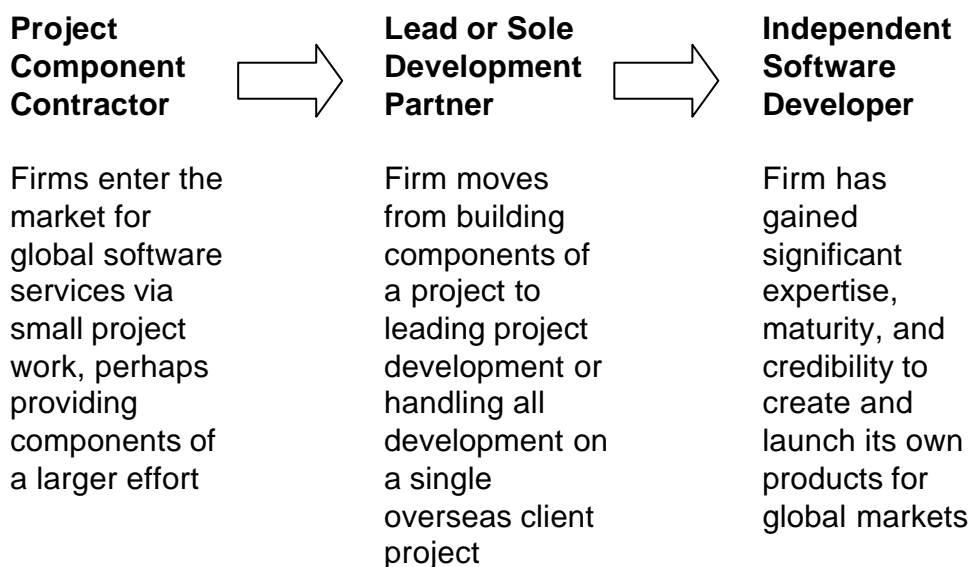| **Project Component Contractor**		**Lead or Sole Development Partner**		**Independent Software Developer**
Firms enter the market for global software services via small project work, perhaps providing components of a larger effort	⟹	Firm moves from building components of a project to leading project development or handling all development on a single overseas client project	⟹	Firm has gained significant expertise, maturity, and credibility to create and launch its own products for global markets

Figure 2: One Model for the Evolution of Software Exporting Firms in Tier Four Nations

Future research could focus on firm emergence into this third phase. Such maturity is likely strongly related to and can thus leverage foundational enterprise growth and maturity research in the entrepreneurship literature, as well as the literature related to firm size, age,

and other resources (Bruderl and Schussler, 1990). However, the context of international outsourcing also entails a shift from supplier to competitor (Gallaugher, 2002) as well as a cross-cultural dimension that has yet to receive adequate research attention.

Our analysis here has presented useful insights regarding a poorly understood and emerging market for information technology outsourcing. We have identified a case that challenges prevailing conventional and theoretical wisdom and have advanced theory by identifying the interplay that exists among firm, industry, and national characteristics. The next step in this research is to further develop the identified models and test their appropriateness with a wider variety of firms – each with varying degrees of firm and national development.

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