CRITICAL SUCCESS FACTORS FOR E-COMMERCE IN THAILAND:

CULTURAL AND INFRASTRUCTURAL INFLUENCES

Kittipong Laosethakul
Sacred Heart University, USA
laosethakulk@sacredheart.edu

William Boulton
Auburn University, USA
boulton@sacredheart.edu

ABSTRACT

The main purposes of this paper are to identify critical success factors (CSFs) for electronic commerce (e-commerce) in Thailand and explain the major influences behind these factors. Detailed case studies of nine e-commerce companies from different industries in Thailand were conducted. Results showed that social behavior and national culture, more specifically issues pertaining to trust and shopping behavior, were the major influences for the success of e-commerce in Thailand. The phenomenon could be partly explained by Hofstede's cultural dimensions. Thailand's infrastructure also played an important role in the success of its e-commerce development. The findings provide a framework to guide the development of e-commerce ventures in Thailand and other developing countries with similar cultures and infrastructures.

Keywords: Critical Success Factors, Cultural Influences, E-Commerce, Infrastructure Influences, Thailand

1. INTRODUCTION

The phenomenal growth of the Internet since the mid 1990s has fundamentally changed the global economy. The worldwide growth of this tool has been followed by the proliferation of e-commerce. An e-commerce and development report by the United Nations Conference on Trade and Development (UNCTAD) estimated total value of world e-commerce in 2002 at about US$2.3 trillion, and it is predicted to reach US$12.8 trillion by 2006 ("E-commerce and Development Report," 2002). A number of developing countries have adopted e-commerce hoping that it would boost their economies and competitiveness to a new level. In the words of Kofi Annan, the former Secretary-General of the United Nations,

> *E-commerce is one of the most visible examples of the way in which information and communication technologies (ICT) can contribute to economic growth. It helps countries improve trade efficiency and facilitates the integration of developing countries into the global economy. It allows businesses and entrepreneurs to become more competitive. And it provides jobs, thereby creating wealth ("E-commerce and Development Report," 2002).*

While the e-commerce value from developing countries was low, the same report estimated a compound annual growth rate of 69 percent for the 5 years following 2002. Despite this high potential growth, a number of failed e-commerce ventures in developing countries found themselves without viable business models for their regions. One possible explanation is that they simply copied e-commerce business models from developed countries. Martinson (2002) found that Chinese managers who adopted e-commerce business

models from developed countries ended up being disappointed because those models did not work well in China. According to Elliott Yuen, Chief Executive Officer of Dream Asian Limited, Asian companies must develop e-commerce/e-retailing business models that are more suited to the region's disparate cultures (Computimes, 2001). Successful e-commerce models from developed countries might not work well in developing countries due to the differences in business environments, information technology infrastructures, and cultural factors. However, best practices among developing countries are limited and not widely publicized for others in the same regions to follow.

Thailand is one of the developing countries endeavoring to find e-commerce business models suitable to its region. The purpose of this study is to explore critical factors that influence the success of e-commerce in Thailand. These factors are then analyzed and explained by the influences of country business and e-commerce-related infrastructure, and by Thai culture using Hofstede (1991)'s national culture dimensions. The critical success factors identified in this study can provide guidelines to develop e-commerce businesses for ventures in Thailand and other countries with similar business and e-commerce-related infrastructure and cultural influences, as well for those planning to enter the developing country markets.

2.   E-COMMERCE DEVELOPMENT IN THAILAND

Thailand is a Southeast Asian developing country with a population of 66 million. At the time of this research, conducted between late 2002 and early 2005, Thailand had seen a steady growth of Internet users from 4.8 million in 2002 to 7 million in 2004 (Internet World Stats, accessed Nov 7, 2006). Due to the increasing number of Internet users, the e-commerce volume in Thailand reached US$500 million in 2003 and US$750 million in 2004. However, according to E-commerce Growth in Thailand market research conducted by STAT-USA[1], the expansion of e-commerce business in Thailand could be moving at a much faster pace and the majority of companies in Thailand still find it difficult to aggressively engage in e-commerce. The difficulties include the shortage of IT infrastructure and a lack of confidence in the electronic legal framework and payment system.

The IT infrastructure is controlled by the Communication Authority of Thailand (CAT) because all long distance telephone and Internet connections pass through the CAT (Sophastienphong, 2001). A monopoly results in limited choices, high fees, and historically poor service. High Internet costs mean that few small and medium-sized enterprises (SMEs), which constitute 90 percent of Thailand's industrial capacity, do their businesses on-line. Even though CAT was slated to privatize the control of its domestic leased lines in late 2000 (Crispin, 2001), CAT still controls international connections as of 2006. CAT requires all Internet service providers (ISPs) to turn over a 35 percent stake in their companies in exchange for access to its international Internet Gateway (Crispin, 2000). This extra cost thereby affects ISPs' service prices and quality to customers. However, several ISPs began to offer a broadband Internet-connection, ADSL, in 2003. According to a Thailand Internet User Profile 2004 survey conducted by the National Electronics and Computer Technology Centre (NECTEC), the number of users of ADSL has increased from only 5,000 in 2003 to 250,000 in 2004. Despite the rapid growth of broadband users, they accounted for only 0.5 percent of the Thai population. Monthly fees for ADSL are between US$12 and US$25 with at least a

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[1] STAT-USA/Internet, a service of the U.S. Department of Commerce, is a single point of access to authoritative business, trade, and economic information from across the Federal Government.

six-month or one-year contract. The Internet users who were not yet ADSL customers commented that lower prices for this broadband service would make it more attractive.

The E-commerce Growth in Thailand Report also discussed the legal framework for e-commerce. The Thai government began to draft six pieces of e-commerce legislation in 1998 – the Electronic Transactions Act, Electronic Signature Law, Computer Crime Law, Data Protection Law, Electronic Funds Transfer Law, and Universal Access Law. The government expected these new laws would improve the security of e-commerce and give consumers and businesses increased confidence in the viability of B2B and B2C online transactions. The Electronic Transactions Act and the Electronic Signature Law were combined into one piece of legislation by the House of Representatives and came into effect in early 2002. The rest of the proposed laws are still in draft stage.

The Thailand Internet User Profile 2004 Survey reported that the top four reasons that prevent Thai consumers from making an online purchase were that they cannot see/feel products, they do not trust online merchandisers, they do not want to reveal credit card numbers, and processes are too complicated. The same survey also reported viruses and slow speed were the top two perceived problems concerning the Internet.

This snapshot of e-commerce development in Thailand shows several aspects of the environment that are distinct from those in developed countries like the US. While e-commerce in the latter countries can take advantage of their well-developed infrastructure, regulatory environment, and abundant Internet buyers, e-commerce ventures in Thailand have to find ways to overcome the many challenges found in the environment. Despite this fact, many e-commerce ventures in Thailand have successfully developed business strategies that fit their existing infrastructure, culture, business practices, resources, and rules and regulations. This raises an important question, "What are the factors that influence the success of e-commerce in Thailand?"

## 3.	CRITICAL SUCCESS FACTORS (CSFs)

The concept of critical success factor (CSF) was first developed in 1979 by John F. Rockart of MIT to help managers define the key information needed by top-level management (Rockart, 1979). Overwhelmed by reams of reports, executives tried to determine the most critical pieces of information so they could take the necessary actions and correct any problems that had arisen (Rockart, 1979):

> *Critical success factors… are… the limited number of areas in which results, if they are satisfactory, will insure successful competitive performance for the organization. They are the few key areas where "things must go right" for the business to flourish. If results in these areas are not adequate, the organization's efforts for the period will be less than desired. (p. 85).*

Critical success factors can be used to direct an organization's efforts in developing strategic plans (Monro and Wheeler, 1980), establish guidelines for monitoring a corporation's activities (Dickinson, et al. 1985), identify critical issues associated with implementing a strategic plan (Boynton and Zmud, 1984), and can be used by manager and organizations to help achieve high performance (Anderson, 1984). In the next section, the researchers categorize CSFs for e-commerce found in developed countries as a guideline for identifying CSFs for e-commerce in Thailand.

4.   CSFS FOR E-COMMERCE IN DEVELOPED COUNTRIES

Research on CSFs for e-commerce in developing countries is relatively limited. Therefore, CSFs for e-commerce in developed countries were used as a tentative roadmap for the researcher to understand the CSFs for e-commerce in Thailand.

From research on CSFs for e-commerce in developed countries, Huff, et al. (1999) advocated that e-commerce businesses should add value in term of content, convenience, disintermediation, reintermediation, price, and choice of products. Companies should start by finding a right niche market and segment geographically. It is also critical for companies to maintain their flexibility so they can quickly respond to a constantly changing environment. Strong security and scalability system are also critical to the success of e-commerce. Companies must be able to provide superlative customer service. In addition, business processes should be integrated in order to create an effective connected work flow. Last but not least, understanding the Internet culture is critical to the success of companies. Mahajan, et al. (2002) found that related industry experience of owners was critical to their e-commerce success and that successful e-tailers also integrated online and offline channel strategies. Reichheld and Schefter (2000) and Manchala (2000) emphasized the importance of customer trust, and Hagel and Rayport (1997) suggested that information security and privacy are crucial to the success of e-commerce.

Fiendt, et al. (2002) and Chappell, et al. (1999) conducted phone interviews with e-tailers and identified eleven CSFs for their e-commerce activity: content, convenience, control, interaction, community, price sensitivity, brand image, commitment and support from top management, partnership, process improvement, and integration. Content is the presentation of a product and service offered on a web site. Convenience is the usability of the web site for the purpose for which it was designed, for example, to assist buying or selling, or to find information, or to track a process. Control is the extent to which companies have defined processes that they can manage. Interaction is the individual-customer relationship building through pre-sales information and excellent after-sale support. Community is the process of relationship-building with groups of similarly interested individuals/firms through the exchange of information and service tailored to the needs of community. Price sensitivity is the price competition on the Internet. Brand image is the ability to build up a brand name using online and offline brand-building techniques. Commitment is a strong motivation for using the Internet and the will to innovate. Partnership is the extent to which companies use partnerships to leverage Internet presence and expand their businesses. Process improvement is the extent to which companies can change and automate business processes. Integration is the provision of links between underlying IT systems in support of partnership and process improvement.

Eid, et al. (2002) reviewed the existing literature to identify factors that influence the success of global B2B e-commerce marketing. The authors categorized these factors into five groups: factors related to marketing strategies, to web sites, to globalization, to internal issues, and to external issues. The marketing-strategy-related factors include having management support, setting clear strategic goals, integrating Internet channel/technology with marketing, choosing strategic partnerships, and selecting target markets. The web-site-related factors include online and offline promotion and valuable, accurate content that can be accessed rapidly and is easy to find. The globalization factors include understanding of foreign marketing environments, resources required for working globally, multilanguage web sites, culture considerations, and availability of international delivery. The internal-related factors include technological infrastructure, internal culture, the role of the sales force in implementing Internet marketing strategies, and employee training programs for new

equipment, software, source of information, and new processes. Two elements for technological infrastructure are computer literacy of all parties in the relationship or the transaction and the availability of equipment for access and services. Internal culture is the extent to which an organization is adaptable to change. External-related factors include trust, security, interorganizational relationship, affordable Internet access, and customer acceptance. Customer acceptance is the extent to which companies put special efforts to motivate customers to make a move to an online environment. These efforts include an efficient internal system that allows companies to respond quickly to customers' requests, questions, and comments, an easy-to-use web site, and rich functionality.

Hahn and Noh (1999-2000) explored the factors that inhibit the growth of e-commerce. They categorized variables into six CSFs: lower level of data security, inconvenient use, unstable systems, lack of information mind, dissatisfied purchasing, and social disturbance. Thornton and Marche (2003) also investigated factors that caused five high-profile e-tailers to fail, including the lack of industry experience in the specific sector of e-commerce managers, specific e-commerce business plans/strategy, record-keeping/adequate financial control, targeted marketing strategy, distinguished market position, effective customer service, and clear value proposition. They also found that e-commerce businesses that grow rapidly have greater risk of failure.

Sung (2004) investigated e-commerce critical success factors from e-commerce companies in Korea, Japan, and the US, and found that six out of 16 investigated factors are considered critical to the success of these companies. Customer relationship is critical in these countries. Ease of website usage, speed of systems, and low price are critical for Korea and Japan. Plenty of information is critical for Japan and the US. Delivery of goods/services is critical to Korea and the US. Privacy of information and security of systems are critical in the US.

Jennex, et al. (2004) studied the CSFs for small B2B e-commerce with companies in both developed and developing countries. The authors categorized factors into five groups: people, technical infrastructure, client interface, business infrastructure, and regulatory environment. Under the people category, worker knowledge skills are considered critical by all respondents. Project management skills are considered critical by all but non-US e-commerce providers. Language skills are considered critical by non-US e-commerce providers, who probably speak English as a second language. Under the technical infrastructure category, worker technical skills are considered critical. Under the client interface category, trust between client and provider, knowledgeable client contacts, and communication skill of client contacts are considered critical. Under the business infrastructure category, client contact methods are considered critical for e-commerce providers. Under a regulatory environment category, intellectual-property protection is considered critical to US e-commerce providers.

Phan (2003) identified the CSFs of e-commerce for Intel. These factors include strategic partnerships, quality of Internet connection, worldwide support and customer training, unfamiliar market avoidance, security protections, solid e-business architecture, customer needs, and personalized web content. In addition, e-business should complement companies' competitive strategies. Traditional management principles should not be neglected. Top management support is also critical to the success of e-commerce for organizations.

Chen, et al. (2003) identified CSFs for e-commerce based on a case study of an established retail company that used e-commerce as its second business channel. They suggested that companies should incrementally involve e-commerce business so they would

have time to learn an online channel and adjust their strategies and existing business practices to fit the needs of the new business environment. Companies should strategically allocate resources to meet the needs of their e-commerce business and should consider outsourcing e-commerce system development if they do not have capability and resource to develop the system in house. The authors also suggested that companies must understand their online customers' behavior in order to offer the right products and services. Companies should regularly measure their e-commerce business performance in order to adjust their online strategies.

Another stream of studies focused on success factors for B2B e-marketplaces. A.T. Kearney (2000), a global management consulting firm, suggested that choosing the right type of business model is critical to the success of an e-marketplace. A successful e-marketplace must be able to offer content that provides value to buyers and sellers, and engage in System integration within and between organizations. Brunn, et al. (2002) also identified several CSFs for e-marketplaces. They explained that it is crucial for e-marketplaces to build liquidity or the extent to which the number of buyers and sellers is high enough to create ongoing online trading and entice new buyers and sellers to trade on an e-marketplace. Other CSFs include creating values in supply chains, using strategic partnerships, choosing right technology, creating efficient functionality of web sites/services, choosing right target markets, and establishing trade rules and regulations in e-marketplaces.

From this extensive literature review, CSFs are categorized into 11 groups: Strategy, Web Site, Technology, Marketing, Logistics, Customer Relationships, Management, Workers/Employees, Business Processes, and External-related factors. The results are summarized in Table 1 at next page.

5.   CASE RESEARCH METHODOLOGY

In contrast to many studies examining CSFs for e-commerce in developed countries, few studies of CSFs for e-commerce in developing countries exist. For this study, a case research approach was conducted to explore the CSFs for e-commerce in Thailand in order to deal with the relatively high amount of uncertainty surrounding CSFs for e-commerce in the context of a developing country like Thailand.

Since the study explored CSFs for e-commerce at the country level, subject companies were selected from a variety of e-commerce and industries. A 2x2 matrix (Figure 1), based on a business focus and a business format, was used to guide the selection of successful Thai e-commerce companies. Here, the business focus represented the subject company's primary customer—the consumer (business-to-customer, or B2C) or the business client (business-to-business, or B2B). Criteria for considering a subject company as B2C e-commerce or B2B e-commerce depended on whether its main e-commerce revenue source came from consumers or business clients. The business format represented a subject company's primary business channel: an offline channel (traditional-dominated channel) or an Internet channel (online-dominated channel). A case company was considered as having a traditional-dominated channel or an online-dominated channel for e-commerce depending on whether its main revenue source came from non-Internet channels or Internet channels. Both business focus and business format were used in this study because they were widely recognized and used to categorize general types of e-commerce.

CSFs for E-commerce	Huff, et al., (1999)	Mahajan, et al., (2002)	Reichheld and Schefter (2000)	Manchala (2000)	Hagel and Rayport (1997)	Fiendt, et al., (2002) and Chappell, et al., (1999)	Eid, et al., (2002)	Hahn and Noh (1999-2000)	Thornton and Marche (2003)	Sung (2004)	Jennex, et al., (2004)	Phan (2003)	Chen, et al., (2003)	A. T. Kearney (2000)	Brunn, et al., (2002)
Strategy-related Factors															
Integration of online and offline strategies		x					x					x			
Clear strategic goals/specific e-commerce business plans/strategies							x	x				x			
Clear value proposition								x							
Choice of business model														x	
Critical mass															x
Strategic Partnerships, Outsourcing						x	x					x	x		x
Supply chain value creation															x
Web-site-related Factors															
Content (Value-added, Plenty, Personalized)	x					x	x	x		x		x			
Convenient (Ease of usage)	x					x	x	x		x					x
Trade rules and regulations															x
Multilanguage web site							x								
Privacy				x	x					x					
Technology-related Factors															
Security	x			x	x		x	x		x		x			
Scalability	x											x			
Stability								x				x			
Availability							x								
Speed of systems										x		x			
Marketing-related Factors															
Price	x						x			x					
Brand image							x								
Choices/selections of products/services	x												x		
Target market/Market segment/Market position	x						x	x				x			x
Online and offline promotion/advertising							x								
Sales force (marketing, promoting online services)							x								
Logistics-related Factors															
Delivery of products/services							x	x		x					

CSFs for E-commerce	Huff, et al., (1999)	Mahajan, et al., (2002)	Reichheld and Schefter (2000)	Manchala (2000)	Hagel and Rayport (1997)	Fiendt, et al., (2002) and Chappell, et al., (1999)	Eid, et al., (2002)	Hahn and Noh (1999-2000)	Thornton and Marche (2003)	Sung (2004)	Jennex, et al., (2004)	Phan (2003)	Chen, et al., (2003)	A. T. Kearney (2000)	Brunn, et al., (2002)
Customer-relationship-related Factors															
Customer/Supplier service/support, interaction	x					x	x	x	x	x	x		x		
Management-related Factors															
Industrial experience of management		x					x	x							
Knowledge of Internet culture	x														
Commitment/Support from Top Management						x	x				x				
Project management skills										x					
Management principles												x			
Resource allocation							x						x		
Performance measurement													x		
Control (e.g. Financial control, Growth)						x	x	x					x		
Workers/Employees-related Factors															
Technical capability							x				x				
Employee knowledge skills (understand client's culture and language)											x				
Organization-Culture-related Factors															
Adaptable to change (maintain flexibility)	x						x								
Business-process-related Factors															
Process change	x					x	x								
System Integration (Intra-organization/Inter-organization)	x					x	x								x
External Factors															
Customer trust		x					x				x				
Internet connection (affordability, speed, reliability)							x					x			
Computer literacy of customers							x								
Foreign language skills of clients											x				
Knowledgeable client contacts											x				
Intellectual property protection											x				
Social disturbance									x						

Table 1: Critical Success Factors for E-Commerce

The researchers asked an expert panel to select at least two successful e-commerce companies that fit into each quadrant of the 2x2 matrix. The expert panel included Thai academic researchers who were actively engaged in e-commerce-related studies, Thai business consultants whose clients' business was engaged in e-commerce, and CEOs and e-commerce managers from well-known Thai e-commerce ventures. After a pool of companies was identified, the researchers confirmed the business format focus directly with the companies. The researchers also determined whether these e-commerce companies were considered successful by using their return-on-investment or sale growth within the past four years. As a result, nine subject companies from different industries were selected (Table 2).

In each subject company, the researchers conducted in-depth interviews with owners, CEOs, key decision makers of e-commerce projects, and subordinates tied directly to e-commerce strategies and implementation. Open-end questions were used to investigate what factors interviewees believed were critical to the success of e-commerce. Responses were compared with the list of CSFs for e-commerce from the literature. The researchers also asked subject companies to explain their business models and practices in order to ascertain how they addressed CSFs for e-commerce.

	B-to-C	B-to-B
Online-dominated channel	HotelThailand.com Thaigems.com Tohome.com	Siam Cement Pantavanij
Traditional-dominated channel	ThaiTicketMaster.com Naiin.com	Officemate Value System

6.1   Convenient Web Site

All subject companies developed websites to provide their customers with convenient online shopping/business purchasing transactions. Website access was quick, the sites were easy to navigate, and all subject companies offered a large product/service selection with information that was easy to find. Online transaction processes were intuitive, involving only a few steps with clear instructions.

All B2C subject companies offered a variety of payment methods to customers. The majority of Thai online consumers were not credit-card holders, and those who used cards were cautious about using them online. Thaiticketmaster.com and Tohome.com, for example, offered a variety of payment methods including e-payment, money transfer, pay through cell phone, and pay at delivery.

B2B subject companies focused on providing customized websites that would be convenient for clients to use. Value System monitored clients' activities on its website in order to improve transaction processes and other value-added services such as creating sale reports and downloading product documents. In addition, its online service was available 24/7. Vendors who needed merchandise immediately could place orders at any time. Officemate customized its B2B web sites for individual clients to fit their distinct internal purchasing and approval processes, budgets, and types of office supplies. When an employee submitted an online purchasing request of office supplies through its web site, the e-mail request was sent directly to his/her authorities for approval. Once an online request had been approved by all involved parties, the system would generate an electronic transaction for Officemate so shipment could be made on the following day. Purchasing reports were also available for clients on the web sites. Another vendor, Siam Cement, developed an online feature that allowed its own vendors to submit a construction project proposal for a volume discount. If a proposal was approved for a particular vendor, a separate online account was created. A discount was automatically applied to the vendor every time the vendor placed online orders for that project. This model encouraged vendors to rely on its self-service web site rather than on the company's call center and sales force.

6.2   Quality of Internet Connection

While there were several web-hosting companies in Thailand to choose from, the quality of Internet connection there was generally still unreliable. Nothing hurt Thai e-commerce ventures more than visitors not being able to access the web sites, causing companies to lose credibility and potential sales. According to Siam Cement, dealers wasted 59% of their time on communication from end-to-end due to the slow speed of the Internet. All subject companies carefully selected Internet service provider/web hosting companies capable of offering reliable uptime, large bandwidth, and database technologies that could handle multiple entries, and strong technical support. Successful Thai online merchants also looked at the popularity of web hosting companies to ensure that they had sufficient members and a steady growth of new members. The study found that subject companies, such as Thaigem.com and HotelThailand.com, that had the majority of their customers in foreign countries, used web hosting located in the US so that speed and reliability of Internet connections would not be an issue. Others, such as Siam Cement and Value System, used more than one web hosting company so that they would have a backup if one failed to provide service at any moment.

6.3   Online Security and Privacy

With the increasing frequency of online fraud, the major concern of Thai customers was whether an online merchant was trustworthy and had the capability to protect their

information from online intruders. Foreign customers also had concerns about online security and privacy because they were not familiar with Thai web sites. All subject companies verified that security was critical to the success of e-commerce in Thailand. Secured Socket Layer (SSL) and Verified by Visa were two common tools employed by the subject companies. They also made efforts to ensure that the policies describing web site security and privacy were clear and easy to understand.

6.4   Strong Information Technology Capability

Thailand still lacked qualified personnel in information technology (IT) who possessed strong e-commerce-related IT knowledge and experience. All B2C subject companies were among the earliest firms adopting e-commerce strategies, and, thus, recruiting qualified IT personnel proved a challenge. Several B2C subject companies such as Thaigem.com, HotelThailand.com, and Tohome.com started their in-house IT with only one or two qualified IT personnel. However, they continually developed their in-house IT capability and skills required for e-commerce businesses. As of 2005, Thaigem.com had a strong IT department of more than 30 IT employees who had been trained in-house. Tohome.com hired a reputable IT firm to develop and maintain its e-commerce system. When its business volume grew to certain point, it started developing an in-house IT department so its web site and online service could respond faster to customers and changing strategies. ThaiTicketMaster.com also developed an in-house IT department. Its online system was integrated to its web site and its ticket-sale booths. Regardless of locations, customers could see available tickets and seat numbers in real time. Because the reputation of its online service was recognized by other industry players throughout Asia, ThaiTicketMaster.com was hired to develop the online ticket reservation for other similar ventures in Asia. All of the B2C subject companies conducted e-commerce business earlier than their rivals, and thus their IT knowledge and skills gave them a competitive advantage. According to Thaigem.com, a number of Thai gem traders could not successfully enter the online market due to the lack of IT capability, and some competitors even tried to hire IT personnel from Thaigem.com. Due to their size and reputation, it was easier for the B2B subject companies to attract qualified IT personnel than it was for the B2C subject companies. Some of B2B subject companies already had strong IT departments or IT partners. Siam Cement, for example, spun off its IT department to establish IT-One, a 50-50 joint venture between itself and Accenture, a leading US consulting company. The joint venture allowed Siam Cement to gain world class e-commerce-related IT capability and skills. Pantavanij bought its e-procurement software from CommerceOne, a well-known US-based company for e-procurement solution software. Technical support was provided by Freewill Solution Co, which was a major shareholder of Pantavanij. Both Officemate and Value System developed their in-house IT, as did the B2C subject companies. Officemate was the only player in its industry that had IT capability to provide e-purchasing service for business clients and Value System was the only player in its industry that had IT capability to provide true e-commerce service, not just a web site, to its vendors.

6.5   Brand Name Recognition

Thai customers were not yet heavy Internet users, and, thus still lacked awareness of specific e-commerce web sites. The B2C subject companies actively promoted their web sites through offline channels: Naiin through its nationwide network of retail stores, and ThaiTicketMaster.com through event promoters that used a variety of channels from newspapers to television to broadcast radio. Tohome.com promoted its web site through posters on sky trains, search engines, and popular Thai community web sites. Thaigem.com used search engines, its presence on eBay, and trade shows. HotelThailand.com promoted its web site through search engines to reach foreign customers, and used a variety of media from

magazines to joint-promotion programs with credit-card companies to reach domestic customers.

In general, a strong brand name not only created Thai customer awareness, but also gave potential targets confidence about an online merchant. The study found that B2B subject companies relied heavily on their sales and marketing teams to promote their e-commerce services: Siam Cement, Pantavanij, and Value System relied on their sales forces to promote their online services; Officemate relied on catalogs, magazines, and delivery cars. HotelThailand.com and Officemate attended e-commerce-related conferences or events as guest speakers for public exposure.

6.6   Product Selection and Availability

All subject companies in this study provided a large product selection so Thai customers were more likely to find what they were looking for on their web sites. For example, Thaigem.com, the largest online gem store in the world, offered more than 500 gem types and listed over 1.6 million individual gemstone and jewelry items. HotelThailand.com offered a large hotel/resort selection. Number of hotels/resorts was in exotic locations and not offered by any other websites. It also provided a variety of tour, car rental, and domestic air ticket reservation services. Tohome.com, the largest online retailer in Thailand, offered a variety of popular retail merchandise, including electronic products such as laptop computers and digital cameras, and books, CDs, and DVDs. ThaiTicketMaster.com sold tickets for the majority of concerts/events in Thailand. Naiin, the largest lifestyle book and magazine publisher in Thailand, carried a large number of its books and magazines on its Naiin.com web site, as opposed to other retail web sites that usually carried only the newest and most popular books. Siam Cement offered well over 50,000 cement-and-building materials on its web site, and Officemate's contained over 8,000 stationery items. Pantavanij had a large number of sellers and power buyers trading on its platform. Value System carried over 20,000 items of IT merchandise on its web site.

However, a large product selection meant nothing if products were not available. The convenience of offline shopping at retail stores and traditional purchasing processes in Thailand made product availability critical to the success of B2C subject companies, as it was to the success of all B2B subject companies. According to Value System, this factor was critical to its online service because the majority of online vendors needed their merchandise immediately. An online ordering service allowed them to place an order at any time without waiting for a sales person. Most subject companies integrated their web sites with their back-end operation, thus allowing them to keep track of product availability and provide accurate information about it on their web sites.

6.7   Delivery

One of the major concerns of Thai customers was whether online orders would be delivered in a promised timeframe. While the Thai post office was often used for delivery, our research found that Thai customers did not have confidence in its service. When a shipment was delayed or damaged, a customer immediately lost trust in the online merchant. To overcome this problem, all B2C subject companies offered a variety of shipping methods including the post office, messenger service, and in-store pickup. Shipping over 2,000 items daily, Thaigem.com was one of FedEx's largest customers in Thailand. It offered a flat-rate shipping cost and guaranteed that products would be delivered anywhere in the world within 48-72 hours. Business clients also needed assurance that merchandise be available and would be delivered on time. In many cases, merchandise was used as raw material or resold to clients' customers. If products were not delivered as scheduled, clients would lose business.

The researcher found that the delivery service could be a major challenge for B2B e-commerce ventures due to the inefficiency of the Thai logistical infrastructure. The Thai post office lacked the capacity to implement large-scale business delivery. Moreover, third party logistics providers in Thailand were expensive, and only large B2B organizations could afford their services. Value System, Siam Cement, and Officemate had their own logistic networks, which allowed them to deliver merchandise around the country within a promised time frame. Pantavanij also offered value-added logistics service to its clients. Siam Cement was one of Pantavanij's six largest conglomerate founders and had one of the most extensive logistics network in the country. This allowed Pantavanij to work with Siam Cement to offer logistics service to its clients.

6.8   Customer Service and Customer Relationship

Service played an important role in Thai society. Customer service was used by Thai businesses to build personal long-term relationships with clients. Having strong customer relationships allowed them to develop trust and loyalty. According to the sales manager of HotelThailand.com, Thai customers felt that they could develop connection with the company by talking with customer service personnel who, in return, would provide them with extra care and better offers. In most B2C and B2B subject companies, a call center and online chat were common methods used to provide customer service and support. Tohome.com, for example, called first-time customers after the transaction to ensure that they felt comfortable with the company's online service. Value System and Officemate monitored their clients' online activities. When clients had any problems using their web sites, the companies immediately assisted them through a phone call. Besides the call center, Naiin.com used MSN chat to answer customers' questions about books/magazines, ordering processes, and returns policy. This, in turn, built customers' confidence in its online service.

The researchers observed that customer support and strong relationships with clients helped business clients facilitate adoption and implementation of an e-commerce system. In many cases, an online service often required some degree of systems integration with clients' backend systems or required clients to change their business processes, such as procurement methods. Siam Cement required its vendors to change their purchasing system and practices. Its long-term relationship with vendors facilitated this transition from the old to the new system, with strong customer support provided through the company's sales force and online training. Value System used its sales force, which had strong relationships with vendors, to encourage them to place orders through an online system. While vendors had to put more effort into learning how to use a new system to place online orders themselves, the sales force put more time and effort into developing marketing programs for them.

6.9   Industry Key Success Factors (KSFs)

The researchers found that all subject companies emphasized how critical their e-commerce businesses meet the key requirements within their industries. These key requirements were different from one subject company to another depended on the nature of each subject company's industry. For example, Naiin.com provided large book/magazine selections, which was a key requirement for online booksellers. Pantavanij successfully recruited six of the largest conglomerates in Thailand, which in turn attracted a large number of suppliers. A critical mass or a large demand-supply relationship was an industry key success factor for an e-marketplace. Based on management literatures, these key requirements are called industry key success factors (KSFs). Ohmae (1982) stated that KSFs were vital factors to the success of any companies competing within the same industry group. Corresponding to the KSFs, a company used existing skills/capabilities and/or developed them in order to compete in the industry (Katelhohn, 1998). Hofer and Schedel (1978) noted that usually KSFs varied from

one industry to another and normally depended on the economic, technological, and competitive characteristics of each industry. In this study, it was found that all subject companies met their industry KSFs.

Strategy-related Factors		Logistics-related Factors	
Integration of online and offline strategies		Delivery of products/services	X
Clear strategic goals/specific e-commerce business plans/strategies		Customer-relationship-related Factors	
Clear value proposition		Customer/Supplier service/support, interaction	X
Choice of business model		Management-related Factors	
Critical mass		Industrial experience	X
Strategic Partnerships, Outsourcing		Knowledge of Internet culture	
Supply chain value creation		Commitment/Support from Top Management	
Web-site-related Factors		Project management skills	
Content (Value-added, Plenty, Personalized)		Management principles	
Convenience (Ease of usage)	X	Resource allocation	
Trade rules and regulations		Performance measurement	
Multilanguage web site		Control (e.g. Financial control, Growth)	
Privacy	X	Workers/Employees-related Factors	
Technology-related Factors		Technical capability	X
Security	X	Employee knowledge skills (understand client's culture and language)	
Scalability		Organization-Culture-related Factors	
Stability		Adaptable to change (maintain flexibility)	
Availability		Business-process-related Factors	
Speed of systems		Process change	
Marketing-related Factors		System Integration (Intra-organization/Inter-organization)	
Price		External Factors	
Brand name	X	Customer trust	X
Choices/selections of products/services	X	Internet connection (affordability, speed, reliability)	X
Target market/Market segment/Market position		Computer literacy of customers	
Online and offline promotion/advertising	X	Foreign language skills of clients	
Sales force (marketing, promoting online services)		Knowledgeable client contacts	
		Intellectual property protection	
		Social disturbance	

Table 3: CSFs for E-Commerce in Thailand vs. CSFs for E-Commerce in Developed Countries

7.   ANALYSIS OF THE FINDINGS

The study found that almost every identified CSF for e-commerce in Thailand fell into one of the categories of CSFs for e-commerce in developed countries (Table 3). The industry KSFs did not completely fit into CSFs for e-commerce from developed countries. One possible explanation is that all CSFs for e-commerce in developing countries (Table 3) are company-level CSFs. The industry KSFs, however, are industry-level factors. Because the study did not focus on a particular industry and subject companies were selected from different industries, these factors were different from one company to another and specific to each company's industry. However, the industry experience of management factor (Table 3) could be used to explain KSFs on some level because it was through industry experience that management understood how its industry operated and the key areas that the company must meet in order to operate successfully.

At the current stage of e-commerce development in Thailand, the number of leading e-commerce ventures within the same industry and the number of online customers was low, and thus, the real challenge in conducting e-commerce in the Thai market was not to compete with other online competitors, but to convince Thai customers to shop online or use online services. That is why subject companies focused their effort on factors directly related to customers, not competition. The researchers also observed that, except for industry KSFs, most of the CSFs were influenced by two factors: convenience and trust (Figure 2).
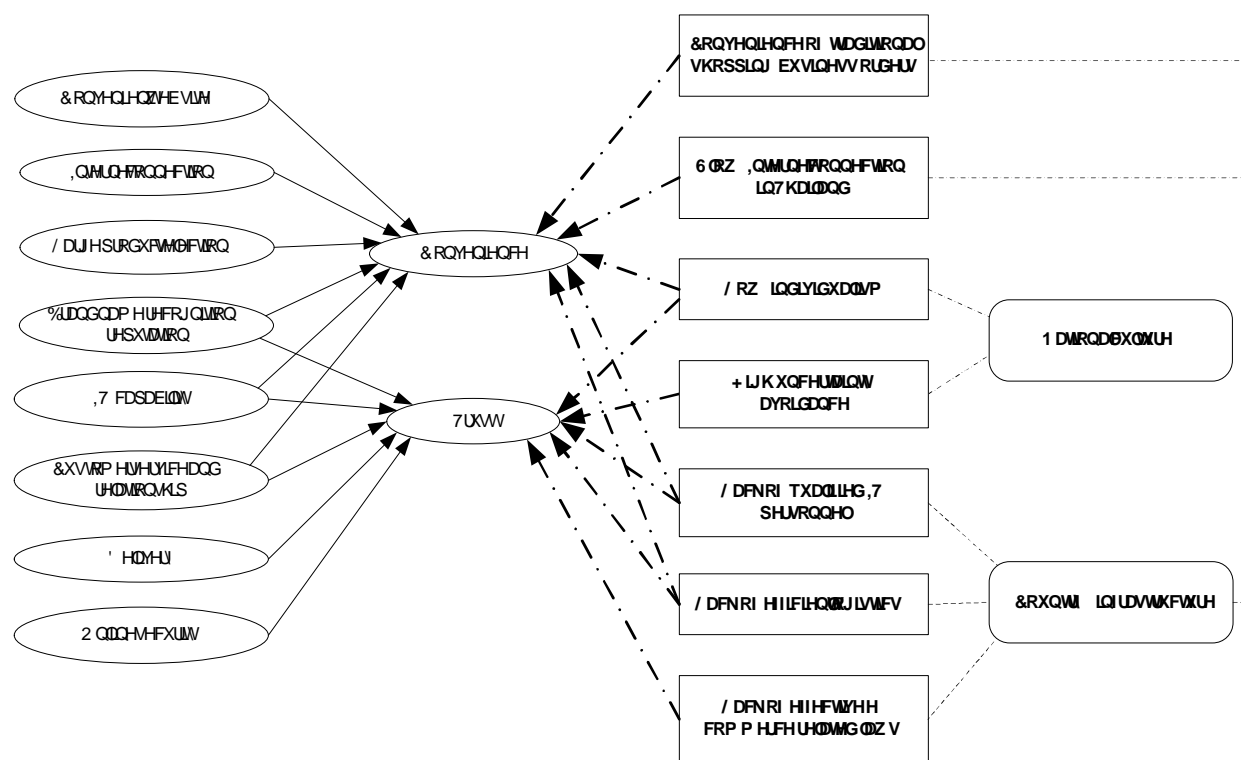

Figure 2: Influence of Thai Culture and E-commerce-related Infrastructure on the CSFs for E-commerce in Thailand.

Regarding convenience, the majority of Thai customers did not yet embrace an online lifestyle, and thus often compared the convenience of traditional shopping with that of online shopping. In Thailand, especially in large cities, shopping was convenient because there were a large number of conventional shopping centers, superstores, convenience stores, and newsstands. A newsstand, for example, sold almost everything including books and magazines, cell phones, and food. There were also numerous all-night retail stores. Shopping

centers were located on almost every corner, so Thai customers could buy almost anything from any single location.

As for Thai business clients, they preferred placing orders directly with familiar sale personnel through phone and fax to placing orders online. There were two main reasons for clients to move to online services. First, most businesses in Thailand were SMEs, that lacked strong computer literacy and were not familiar with online services. Second, clients could negotiate prices or special offers with sale personnel on the phone call or in person. Sale personnel also provided services such as checking product prices and availability, and faxing product documents and invoices to clients. With such convenient traditional services, clients tended to resist changing their old practices. To convince customers to shop at its web site or use an online service, an online merchant had to deliver a web site that provided a similar or better level of convenience.

Reasons against Internet Purchases	Percent
Do not trust merchandisers	63.6
Cannot see/feel products	57.3
Too complicated	41.0
Do not want to reveal credit card numbers	40.6
Concern for loss/damage (shipment)	33.6
Do not have credit card	23.9
Do not want to wait for goods	21.6
Expensive	16.2
Do not know web site for shopping	11.4
Do not want to buy foreign goods	8.1
No interesting products	6.5
Not interested	27.8

Table 4: Reasons Against Internet Purchases in Thailand
(Internet User Profile of Thailand, 2005, p. 97)

The findings from the National Electronics and Computer Technology Center (NECTEC) survey can be used to support these findings and explanations. NECTEC conducted the Internet User Profile of Thailand[2] survey in 2005, revealing the reasons that prevented respondents from online shopping (Table 4). The same survey also revealed perceived problems concerning the Internet in Thailand (Table 5). Highlighted items show factors causing inconvenience for online shoppers. While the survey focused on Thai consumers, not business clients, the findings help explain to a certain degree why the subject companies focused their effort on convenient web sites, quality of Internet connections, large product/service selections and availability, and brand name recognition. The subject companies tried to develop web sites that had simple, intuitive transaction processes, and various payment and shipping methods. The choice of Internet service providers affected the speed of web site access. Large product selection allowed customers to save time purchasing what they were looking for in one place. Brand name promotion created customer awareness of the web sites.

The need for convenience can be explained by Thai culture. In Hofstede's (1991) study of "national culture dimension," Thailand received 20 points on a 100-point individualism index (IDV)[3]. Individualism is the extent to which members of society look after their own interests rather than those of the group. Thailand's low score indicates that

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[2] The survey received 21,880 responses from Thai Internet users.
[3] With a DVI of 20, Thailand was ranked at 20, which was considered low compared with other countries. (The US DVI of 91 ranked at 1).

Thai society is more collectivist than individualist, whereas online shopping/business purchasing, compared to traditional practices, is more individual and impersonal because it is a self-service process. Thai culture is the service-oriented culture. Thai people and Thai businesses enjoy providing services and receiving services. Through personal communication with customer services or sale personnel, Thai customers feel that they can develop relationships with them, and in return, their interests will be looked after in forms of extra care, extra service, and even discount. The helps explain why the subject companies focused their effort on customer service and customer relationships or human-touch activities. By providing a call center, sales support, and online chat, customers could have or maintain direct communication with a company and feel that online shopping/business purchasing in Thailand is more personal and less individualistic processes.

Perceived Problems	Percent
Virus	66.3
Speed	54.9
Junk mail	42.5
Pornography	36.9
Impolite/Inappropriate content	33.6
Expenses	26.5
Data integrity	25.9
Hacking	23.7
Privacy	23.1
Network reliability	17.9
Lack of regulatory laws for web-based commerce	17.1
…	…

Table 5: Perceived Problems Concerning the Internet in Thailand
(Internet User Profile of Thailand, 2005, p. 80)

Regarding trust influence, Thai consumers do not trust unknown online merchants. They are concerned with the capability of online merchants to fulfill orders as promised. Thai customers frequently hear about online fraud, which undermines their confidence in online merchants. At the same time, they do not have confidence in Thailand's legal system or trust Thai banks to protect them from online fraud. They are also concerned whether online merchants would protect their privacy. For Thai consumers, online purchasing is still considered a high-risk process. For business clients, the risk of using an online service is also high because some online services required a certain level of system integration or process change. In many cases, once integrated, business clients have to commit to the service of a single online merchant. Because the majority of Thai business clients still have limited knowledge and understanding of e-commerce businesses, they are perceived risky when compared with the benefits from online services. The finding from the NECTEC survey supports this explanation (Tables 4 and 5). Among these items, the lack of trust in online merchandisers, concern about using a credit card online, concern about loss and damage from shipping, viruses and hacking, and the lack of regulation contribute directly to the lack of trust on online shopping processes.

This lack of trust in online shopping/business purchasing can also be explained by Hofstede's (1991) IDV index and uncertainty avoidance index (UAI). Thailand's low IDV score also means that relationships and connections play critical roles in this collectivist society. This explains why the subject companies used their customer service as a channel to

develop relationships with customers. Hofstede (1991) gave Thailand 64 points out of 100 on the UAI[4] index. Uncertainty avoidance indicates a society's level of tolerance for uncertainty. In an effort to minimize the level of uncertainty, a society tries to control everything in order to eliminate or avoid the unexpected. If a society has high uncertainty avoidance characteristic, it will not readily accept change and becomes risk-averse. Online shopping/business purchasing requires new behaviors that could be considered as risk-taking. This explains why the subject companies focused their efforts on brand-name promotion, online security, delivery, customer service and relationships, and technical capability. Brand-name recognition and reputation builds customer confidence about an online merchant. Online security gives Thai customers assurance that their information would be protected. A clear return-exchange product policy gives customers some confidence that the subject companies will be responsible if products are lost or damaged during the delivery process. Good customer service leads to long-term relationships, which help establish trust with customers. Strong IT capability allows online merchants to deliver efficient back-end systems and powerful web sites to customers, and in return establish customer trust in their services.

The researchers also found that all B2C subject companies and Value System offered competitive prices and promotions to encourage customers to purchase merchandises on their websites. While competitive price and promotion may not be factors in establishing trust with customers, they may be used as incentives to offset the risk of online transactions and inconvenience of online business purchasing. According to the CEO of Tohome.com, first-time customers were usually concerned about the risk of online shopping on an unfamiliar web site. The company used a lowest-price-guaranteed strategy and variety of promotions to offset the risk of online shopping and expedite consumers' buying decisions. After customers had positive experiences with Tohome.com, they were more likely to come back and cared less about price. Today Tohome.com does not use the lowest-price-guaranteed strategy, but the company has seen more than 50 percent of its customers return.

However, competitive price and promotion are not identified as critical to the success of e-commerce because such is not the case for B2B subject companies. The researchers found that B2B subject companies used business process improvement and cost saving as incentives to their clients. Officemate did not focus on competitive prices for its office supplies; instead it focused on improving clients' purchasing processes, and as a result lowered their procurement cost. Pantavanij also tried to convince clients that it could help them improve their procurement processes and save procurement costs.

8.   STUDY LIMITATIONS

The researchers found that there are a limited number of successful e-commerce companies in different industries and different types of e-commerce models. While the 2x2 matrix facilitated the selection and comparison of the subject companies, its dimensions could be considered too broad. For example, there are different types of B2B e-commerce, such as electronic marketplaces, electronic auctions, and general electronic wholesaling. Because we could not find a successful company in every type of B2B e-commerce, the subject companies might not perfectly represent the total e-commerce population. Furthermore, when researchers tried to find a common set of CSFs for e-commerce across the matrix, several specific factors that were critical to e-commerce in a particular quadrant were ignored. Online-dominated channel B2B e-commerce ventures, for example, might not fully benefit from the framework (Figure 2).

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[4] With a UAI of 64, Thailand was ranked at 30, which was considered high compared with countries. (The US UAI of 43 ranked at 46).

9.   CONCLUSION AND FUTURE RESEARCH OPPORTUNITIES

The study has identified and examined nine CSFs related to e-commerce in Thailand: convenience of the web site, quality of Internet connection, IT capability, large product selection, online security and privacy, brand name recognition and reputation, customer support and relationship, delivery, and industry KSFs. Except for the ninth and final factor, industry KSFs, all the remaining CSFs were influenced by convenience and trust that can be explained by Thai business and e-commerce-related infrastructure and Hofstede (1991)'s cultural dimensions.

The ten identified CSFs for e-commerce (Figure 2) could be used to guide Thai e-commerce ventures by prioritizing resources and effort. At this stage of e-commerce development in Thailand, Thai e-commerce ventures need to understand the behavior of online customers. The researchers found that all subject companies put effort into collecting customer profiles and conducting market research in order to understand their target customers. They emphasize the convenience of their web sites and efficient online service in order to establish trust with customers.

Knowledge of these CSFs for e-commerce could also guide the Thai government in support e-commerce development. The Thai government needs to focus on three main areas. First, it must complete the development of e-commerce regulatory laws in order to facilitate the development of e-commerce activities. Second, it must encourage education institutions to supply larger number of qualified IT personnel for the e-commerce market. Third, it must privatize its telecommunications system (CAT) in order to lower the cost of international connections.

This CSFs guideline could also be applied to other developing countries with similar business and e-commerce-related infrastructures and national culture. According to the United Nations Conference on Trade and Development (UNCTAD, 2002), inefficient e-commerce-related infrastructures are common in developing countries. A study of e-commerce among Asia Pacific SMEs conducted by PriceWaterhouseCoopers in 1999 and published in 2002 revealed that trust and confidence were major inhibitors in the adoption of e-commerce by SMEs in low-GNP countries such as Thailand. Security, legal concerns, and liability issues were all identified as critical concerns for SMEs. In addition, there are a number of developing countries with similar Hofstede (1991)'s culture dimensions to Thailand's. Table 6 shows some developing countries with similar cultural dimensions.

Country	Individualism Index (IDV)	Country	Uncertainty Avoidance Index (UAI)
Philippines	32	Thailand	64
Mexico	30	Ecuador	67
Malaysia	26	Czech Republic	74
Thailand	20	Brazil	76
China	20	Venezuela	76
Indonesia	14	Colombia	80
Venezuela	12	Mexico	82

Table 6: Examples of Hofstede's Cultural Dimensions in Other Developing Countries (www.geert-hofstede.com)

Should other countries' e-commerce ventures follow this CSFs guideline, they must apply it with care. For example, China had the same level of IDV as Thailand, which means that China is a collectivist society, where relationships and connections play critical roles in

Chinese businesses. Martinsons (2001) found that institutional deficiencies played a major challenge in e-commerce development in China. Successful Chinese e-commerce companies responded by developing or leveraging relationships with involved parties, such as government agencies and banks, upon trust and mutual benefits. Their connections enabled them to overcome regulatory, financial and logistic issues.

The CFSs for e-commerce guideline is still in the early stage of development. To confirm and solidify the guideline, first, a large-scale survey and quantitative research method should be conducted. Second, each quadrant of the 2x2 matrix should be investigated in order to overcome the over-generalization problem of the 2x2 matrix. A third alternative to overcome the over-generalized 2x2 matrix is to focus on e-commerce within a particular industry. Last, research should continue to investigate how CSFs for e-commerce in Thailand have evolved since the original case studies because some e-commerce–related infrastructures and online customer behaviors change over time. For example, as the number of Thai online customers' increases, customers probably will embrace an increasing online lifestyle, or the legislation may approve the remaining e-commerce laws. As a result, certain CSFs may no longer be critical and, thus, e-commerce ventures could focus their effort on new critical areas.

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