

Barriers to e-commerce and competitive business models in developing countries: A case study

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Abstract

This paper integrates and extends research on e-commerce in the developing world. We use three categories of feedback systems—economic, sociopolitical and cognitive—to offer a simple model of e-commerce barriers in the developing world. We also examine characteristics of e-business models that can be successfully employed in developing countries. Then, we provide the case of an e-business model followed by a Nepal-based multiple international award winning online provider. This paper's theoretical contribution is to explain the 'hows' and 'whys' of e-commerce in developing countries and to identify clear contexts and attendant mechanism.

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1. Introduction

E-commerce arguably has a potential to add a higher value to businesses and consumers in developing countries than in developed countries [1–5]. Yet most developing country-based enterprises have failed to reap the benefits offered by modern information and communications technologies (ICTs) [6].

Some business models have emerged that overcome e-commerce barriers in developing countries. Yet in e-commerce journals, the developing world has received surprisingly scant attention. There are a very few analytical e-commerce studies in the developing world settings [7]. Moreover, empirical evidence in the developing world lags behind theoretical development. There have been calls for research on developing country-based enterprises' e-commerce strategy [7].

To fill the research void and this paper attempts to gain an understanding of e-commerce barriers in developing countries and illuminate successful e-business models. To

achieve this, we draw upon the literature to offer a model of e-commerce barriers in the developing world and illustrate a competitive business model employed to overcome some of the barriers. In the remainder of the paper, we first discuss the methodology. Next, relevant literature on e-commerce in developing countries is reviewed. Then, we provide a case study of a competitive business model employed by Thamel.com, a Nepal-based e-commerce firm. It is followed by a discussion of the case. The final section provides conclusion and implications.

2. Methodology: case based research

This study uses a single-case research design. We used multiple data sources. First, we collected and analyzed extensive secondary materials. Since Thamel.com had won multiple awards such as International Institute for Communication and Development (IICD) award and Global Knowledge Partnership (GKP) Tony Zeitoun award, there was a good amount of media coverage on the company. In the summer of 2004, we visited its Kathmandu offices and interviewed the company's CEO and marketing director. Subsequently, several rounds of email exchanges

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took place with both the CEO in Kathmandu and one of the founders at the US offices.

Yin [8] suggests that case studies are epistemologically justifiable when research questions focus on reasons behind observed phenomena, when behavioral events are not controlled, and when the emphasis is on contemporary events. Other researchers argue that case method is “appropriate and essential where either theory does not yet exist or is unlikely to apply, . . . where theory exists but the environmental context is different . . . or where cause and effect are in doubt or involve time lags” [9]. This study satisfies these criteria. There are persuasive arguments for thinking that e-commerce research is in an early stage of theoretical development, especially in the developing world. Studies on developing countries have also put assumptions of the “normal process” of Internet development to a “severe test” [10]. Thus, the generalizability of research conducted in the developed world is questionable in developing world’s context.

Multiple and single case studies have strengths and weaknesses [8,11–14]. Despite some disagreement, researchers agree that single-case studies are useful for inductive theory building, especially in the early development of a field of research [15] such as e-commerce in the developing world.

Case-based research requires a sampling approach focusing on theoretically useful cases [11,15]. In particular, best practices models provide good candidates for a case research methodology [11,15]. It is worth noting that as a multiple international award winner, Thamel.com’s model can be considered as a best practice model for e-commerce in the developing world.

Finally, there has been a good deal of debate on whether case research should be based on theory specified a priori or on grounded theory. Whyte [16] argues that, to be valuable, research should be guided by “good ideas about how to focus the study and analyze those data” (p. 225). On the contrary, Glaser and Strauss [17] suggested that evolution of a theory from the data is the basis for development of grounded theory rather than an imposition of a priori theory. Likewise, Van Maanen, Dabbs and Faulkner [18] suggested that investigators avoid prior commitment to any theory (p. 16). In this study, we follow Whyte’s approach. As such, the next section provides a theoretical framework related to e-commerce in the developing world and competitive business models.

3. Literature review

3.1. Barriers to e-commerce in developing countries

We analyze e-commerce barriers in terms of three categories of negative feedback systems: economic, sociopolitical and cognitive [19–21]. While economic and sociopolitical factors focus primarily on the environmental characteristics, the cognitive component reflects organizational and individual behaviors. Arguably, for the initial adoption of

e-commerce in developing countries, the cognitive component plays a more prominent role [22]. As organizations assimilate sophisticated e-commerce practices, environmental factors play more critical roles [22].

3.1.1. Economic barriers

Positive economic feedback occurs in the presence of increasing returns to scale [19]. Research has suggested that a slow Internet diffusion in developing countries has led to a low IT business value measured by performance and productivity [23,24]. Barriers associated with the lack of economies of scale in small developing countries are widely recognized. A study found that small sizes of many Caribbean nations inhibited the development of “clusters” for the IT industry [25]. Another study found adverse scale effects in the Tanzanian e-commerce industry [26].

Slow Internet diffusion in developing countries can be attributed to *market and infrastructural factors* controlling the availability of ICTs [27]. In Tanzania, for instance, a lack of electrical supply, a low teledensity and a lack of purchasing power resulted in a low rural Internet usage [28]. Moreover, manufacturers of ICT products focus on large distributors [29] often located in developed countries for their selling initiatives.

Unavailability of credit cards is also a major hurdle [28,30–32]. Past studies have found such problems for B2C e-commerce in Russia, India and Latin America [33,34]. In Asia, 35–40% of transactions are cash-based [32]. Other aspects of financial systems are also underdeveloped [35]. In the Caribbean, local banks do not process online credit card transactions [25] or other forms of electronic payment systems [36].

The Internet is also less attractive for traditional economic sectors (e.g., agriculture) that account for a significant proportion of developing countries’ economies. For instance, a study indicated that cost savings from e-commerce – as a percent of total input costs – is only 2% for firms in traditional sectors such as coal compared to 40% in electronic components [37].

Rapid growth of e-commerce in the US can be attributed to infrastructure already in place and an easy availability of a physical delivery system. Such systems are more rare in developing countries [33]. In the Caribbean region, logistics challenges are among major barriers to e-commerce diffusion [36]. It is difficult for small developing countries to attract FedEx and UPS to provide delivery services [30]. Finally, bandwidth availability is low in developing countries [38]. A lower bandwidth means that a longer time is needed to transfer data and hence a lower relative advantage of the Internet.

3.1.2. Sociopolitical barriers

Sociopolitical barriers can be explained in terms of formal and informal institutions [39–41]. They often tend to be more difficult and time consuming to overcome than technological barriers [42–45]. Social barriers are related with informal institutions. In Asia, personal relationships

are important in businesses and anonymous online relationships threaten established interpersonal networks [46]. Preference for personal face-to-face communications over e-mails and precedence of established relationships over the Internet’s inter-personal efficiency also work against e-commerce [47].

Political barriers are applied in an organized way by formally appointed groups. Many developing countries lack laws that provide legal validity of digital and electronic signatures (DES) [48]. Some developing countries treat ICT products as luxury items and impose import duty, surtax, value added tax, sales tax, etc. [49]. Weak formal institutions also lower consumer trust in e-commerce and willingness to buy online [35].

The literature provides abundant evidence that legal barriers are among major hindrances to e-commerce in the developing world. A survey conducted among Brazilian consumers indicated that the low e-commerce adoption rate was related to government regulations such as concern about privacy and security, lack of business laws for e-commerce, inadequate legal protection for Internet purchases and concern over Internet taxation [42]. Likewise, in China, a lack of ‘transactional and institutional trust’ related to the weak rule of laws was a major impediment to e-commerce [46,50].

3.1.3. Cognitive barriers

Cognitive factors are related to mental maps of individuals and organizational decision makers [51]. Some analysts argue that cognitive barriers are more serious than other categories of barriers in developing countries [49]. Many effects such as inadequate awareness, knowledge, skills, and confidence serve as cognitive feedbacks. For instance, the top management’s a priori evaluation influences cognitive bias toward e-business [19]. In developing countries, organizations’ human, business, and technological resources, a lack of awareness and understanding of potential opportunities, risk aversion and inertia often lead to a negative cognitive assessment of e-commerce [7,22,26].

Consumer’s lack of awareness [52] and knowledge of e-commerce benefits and their lack of confidence in service providers have also hindered e-commerce. For instance, in Latin America, a low rate of credit card usage can be attributed to the “lack of trust in than lack of access to” the credit card system [34]. Another survey found that the degree of trust in the postal network for a package worth US\$100 was strongly correlated with GNP per capita [53]. Likewise, concerns related to postal thefts were among major barriers to e-commerce in Trinidad [25].

A final consideration with cognitive barriers is related to general and computer illiteracy and a lack of English language skills [30]. Note that most software, human-computer interfaces and content on the Web are in English [54,55]. Estimates suggest that half of the populations of developing countries cannot speak an official language of their own country [35]. A lack of capability in English language has thus been a major inhibitor among non-English-

speaking consumers, especially the older generation [46]. In Slovenia, 75% of the population fluent in English used the Internet compared to only 1% of non-English speakers [44]. The number of sites in languages such as Quechua (10 million speakers in Bolivia, Ecuador and Peru) or Ibo (15 million speaker in Nigeria) “can be counted on the fingers of one hand—and none offer interactive features” [44].

Fig. 1 presents e-commerce barriers in developing countries. Fig. 2 presents how they influence pre-transaction, transaction and post-transaction phases [3].

3.2. E-commerce business models

In this paper’s context, a business model is a description of a company’s intention to create and capture value by linking new technological environments to business strategies [56]. Lam and Harrison-Walker [57] estimate that there are about 50 revenue-generating e-business models. Several approaches are used to describe these models. Researchers with marketing orientation use product, price, place, and promotion to describe e-business models [58,59]. E-business models are also expressed in terms of structural characteristics around the value chain of suppliers and buyers [60], IT systems and architectures [61], technical platforms [62], and security and traffic scale [63].

Lam and Harrison-Walker [57] rigorously analyzed business models employed by Internet companies and reduced them through the use of two-dimensional models. The two dimensions are *relational objectives and value-based objectives*. The relational objectives dimension is used to classify e-business models based on the Internet’s connectivity characteristic. This dimension entails determining

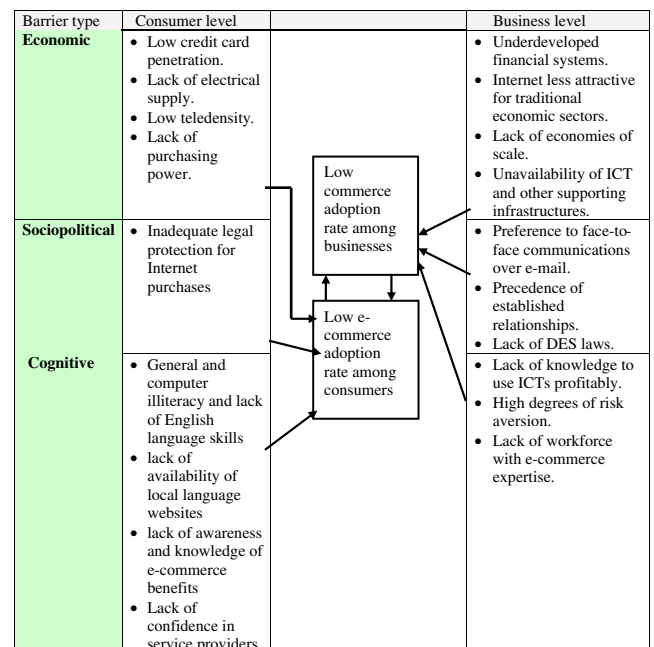


Fig. 1. Business and consumer-level e-commerce barriers in the developing world.

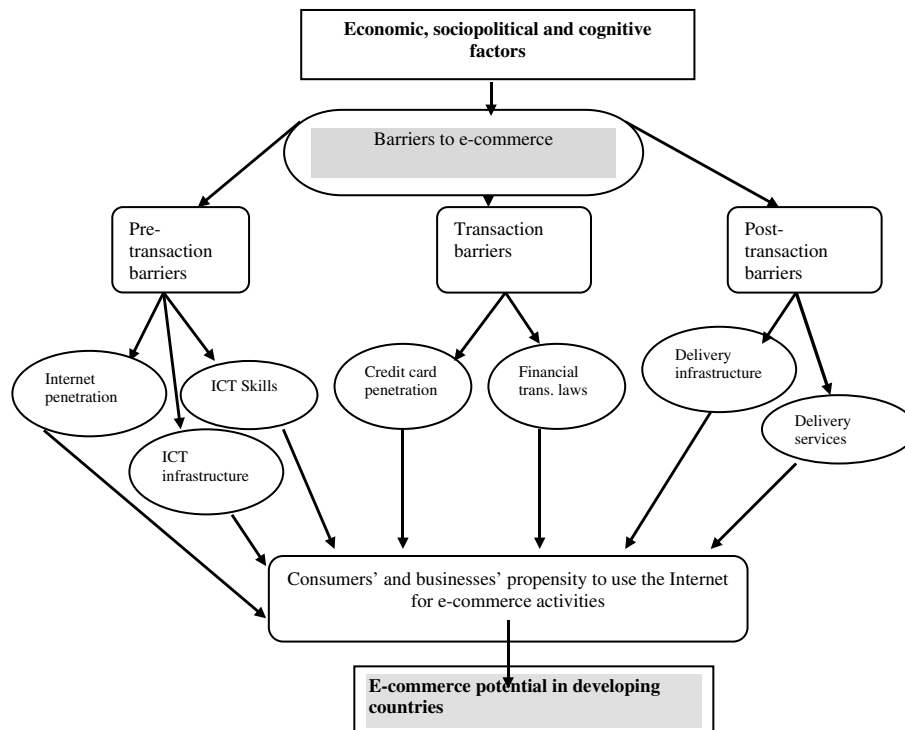


Fig. 2. Factors impacting the diffusion of e-commerce in developing countries.

the target market and connectivity related objectives. Value-based objectives are related to a value formula such as generation of revenues and others benefits (e.g., non-financial contributions such as increased marketing effectiveness or improvement in consumer attitudes).

All e-business models are not equally attractive in the developing world. For instance, in the shopping agent model, providers “assist consumers to find specific products and their best prices online” [57]. Since a very few firms sell products online, this model is not widely employed in developing countries.

Many service providers in developing countries have invented viable business models. Some argue that e-commerce can be a key competitive advantage if it is used effectively in these “imperfect” markets [64].

In looking at the ‘relational’ dimension, it is apparent that developing country-based e-commerce providers target the most e-commerce ready segments. For instance, a number of e-commerce companies in developing countries such as Tanzania [26] and Vietnam [64] are targeting the tourism industry. For developing country based e-commerce providers, expatriates are also attractive targets. Fraser and Wresch [25] found that e-commerce companies in the Caribbean faced demand from expatriates—for themselves, and for their relatives who still live at home.

Some e-business models in developing countries employ key ingredients in developed countries. For instance, many Caribbean companies have opted for remote hosting and setting up accounts in the US to do e-commerce related banking [25]. As an example, a Caribbean company asked

Amazon.com to handle financial transaction and to become a seller under the latter’s banner [25].

Developed country-focused e-business models need adaptation in the developing world. Cash-on-delivery used in India offers a case in point. In India, in 2000, 0.4% of the population owned credit cards and had an average annual spending of US\$40 [65]. Indians order merchandise online and pay in cash after the delivery. Cash-on-delivery makes sense in India because banks offer door-to-door cash delivery services, people keep large sums of cash at home, and large transactions are made in cash. Online purchases in China are also paid by a mail check, cash on delivery or a wire transfer [66]. Partnerships with developed world-based multinationals have also emerged to enable e-commerce. For instance, the Indian web portal, Rediff.com, has collaborated with Fed Ex.

E-commerce models initiated by private and public sectors tend to be different. For instance, the United Nations Conference on Trade and Development (UNCTAD) launched the Global Trade Point Network (GTPN) in 1992 to facilitate small and medium sized enterprises’ (SMEs) access to international market using e-commerce [67]. Digital Divide Data (DDD) in Cambodia, Vietnam and Laos [68] also has a successful model. In 2004, DDD had 140 employees [69] to digitize data from maps or documents for Western organizations. DDD’s employees are women, polio and landmine victims, orphans and other categories of internally displaced people [70]. Each day DDD workers enter data for 6 h and get English and computer training for 6 h [71]. In 2003, DDD typists earned

US\$16.25 a week working a 36-h week compared to \$11.25 for a 48-h work week at garment factories [72].

There have also been public-private partnerships [73]. In Argentina, the Education Ministry and a private company teamed up in 2001 to provide affordable Internet access and educational services to the country's schools and ten million students. The private company financed the project and expected payback from advertising revenue and e-commerce rights [74].

3.3. *Thamel.com's competitive business model – a case study*

Thamel.com was established in 1999 as a web portal. Its physical office is located in Thamel, a street in Kathmandu. In 2003, its business model won the International Institute for Communication and Development (IICD) award and Global Knowledge Partnership (GKP) Tony Zeitoun Award.

In the beginning [26,64], Thamel.com targeted tourists. Then the company shifted its focus on Nepalese expatriates. Like many Caribbean firms [25], the company found its niche as a gift provider to expatriates and their families. In 2001, 900,000 Nepalese lived outside the country. Nepalese expatriates tend to have a higher Internet adoption rates, a higher disposable incomes and a higher rate of credit cards ownership. This segment is thus more e-commerce ready with a greater value-creation opportunity. The company also targeted foreign expatriates living in Nepal. In 2004, 80% of Thamel.com's customers were Nepalese expatriates and the rest were foreigners. Thamel.com has also launched a web-based remittance system.

In 2003, Thamel.com's revenue was about \$1 million and the company expected to double it by 2005. The business model is built on word of mouth referrals [75]. In 2003, it served over 18,000 people in 25 countries [76]. To attract visitors, it also offers Nepalese news, e-mail services and real-time Internet chats [77].

In 2004, the company received 15–20 orders a day on its website during non-peak seasons and 300–350 during major holidays. Thamel.com has 500 local business affiliates, which products are featured on its website. The affiliates range from some of the biggest businesses in Nepal to street vendors with revenues less than US\$1000 per year [78]. In 2004, Thamel.com had 50 full-time employees. During major holidays, the company hired additional 100–150 employees mainly to deliver gifts.

3.4. *E-commerce barriers in Nepal*

3.4.1. *Economic factors*

The Internet was introduced in Nepal in 1994. In 1999, the year Thamel.com was established, Nepal had 35,000 Internet users or 0.15% of the total population [79]. By the mid-2004, Nepal had 50,000 active Internet users and 150,000 passive users which translate into less than 0.9% of the total population. As in the case of many developing countries [25,26], Nepalese e-commerce market lacks economies of scale.

Perhaps the most notable feature associated with Nepal's slow rate of e-commerce take off is low penetration rate of base ICTs (Table 1). The United Nations Development Program (UNDP) [80] has put Nepal in the "marginalized" category in ICT adoption. In terms of infrastructure, as of 2001, total bandwidth in Nepal was less than 4 Mbps [81].

ICT access charges are prohibitively expensive. Monthly fee to access the Internet 20 h a week in 2000, for instance, was more than the per capita annual income in Nepal ([82], Table 1) compared to 1.2% in the US [83]. Likewise, the cost for telephone calls to stay connected to the Internet for one day in 2001 exceeded the monthly ISP subscription fee [84]. Likewise, while credit cards have been recently introduced, the penetration rate is very low. Rao [85] quotes an IT advisor in Nepal: "We are still a cash-based society, and do not even accept checks, let alone credit cards".

3.4.2. *Sociopolitical factors*

In terms of legal framework, a classification of Asian countries by levels of the adoption of digital and electronic signature (DES) [86] has put Nepal at level 0: no legal recognition to electronic records. As of the mid-2004, Nepal had not enacted DES laws.

3.4.3. *Cognitive factors*

Cognitive barriers related to knowledge, skill and confidence related to e-commerce usage are even stronger. Estimates suggest that only 2% of the population is English literate in Nepal [87] and over half of the adult population is illiterate (Table 1). These problems are compounded by highly underdeveloped and unreliable postal systems. Insecurity, unreliability and theft are common problems in the postal system of Nepal.

3.5. *Thamel.com's relational/value objectives and business models*

3.5.1. *The relational objective*

In the beginning, Thamel.com targeted tourists visiting Nepal. The international tourism industry in developing countries is operated by large companies headquartered in developed countries [88]. Very little value addition is generated by local portals such as Thamel.com.

Next, let's consider Nepalese expatriates. This segment differs from tourism on the relational objective. Whereas *direct access* seems to be the relational objective for tourism, it is *network development* for expatriates. In network development as the relational objective, firms establish connectivity among multiple external parties [57].

3.5.2. *The value objective*

Culture is a common thread linking expatriates with their homeland. Goods with cultural value, appeal and content are thus attractive for this segment. An illustrative example makes this concept clearer. Thamel.com found that a goat has a tremendous cultural appeal. The goat is

Table 1
ICT related indicators in Nepal

	Nepal	Average for low-income countries
Internet users per 1000 people (2002)	3.4	13.0
PC penetration (% , 2002)	0.21	
No. of Internet service providers (2002)	18	
Telephone mainlines per 1000 people (2002)	16	32
Cellular subscribers per 1000 people (2002)	3	24
GDP per capita (US\$, 2002)	237	483
Population (million, 2003)	26.1	
Adult literacy rate (% , ages 15 and above, 2003)	48.6	60.8

Source: [79], UNDP, Human Development Report 2004: *Cultural Liberty in Today's Diverse World* (2004) <http://hdr.undp.org/reports/global/2004/>; UNDP's Human development indicators 2005; ITU, Policy Statement — Nepal (2002) <http://www.itu.int/plenipotentiary/policystatements/texts/nepal.html>.

an important sacrificial animal in Dashain, the biggest festival for Nepalese Hindus [89]. The peak season for selling goats for Thamel.com is during the Dashain season in October. Thamel.com's CEO put the issue this way:

Nepalese have celebrated Dashain for centuries. It is the greatest festival of the year and spiritually unites all Nepalese . . . An important part of the Dashain celebration is the sacrifice of a ceremonial goat (Khasi). To be able to include Khasi in the celebration is a blessing and, for many, a significant expense. We asked ourselves, "What if a family member living out of the country could send the gift of a Khasi to their loved ones back home?" [78].

Because of its tremendous cultural appeal, the concept of selling goats online received favorable responses from Nepalese living abroad [89]. The average price of a goat is US\$80. When Thamel.com first offered selling goats in 2001, it sold more than 500. After receiving orders for goats, the company negotiates with local goat herders, informs the gift recipient and makes arrangements to pick up the goat.

Experiences from other countries indicate that if a trustworthy electronic mechanism exists, funds transfer is attractive for expatriates [90]. Nepal receives about US \$1 billion a year from expatriates [91], or 20% of the country's gross national product (GNP). Electronic funds transfer is thus an obviously attractive market segment for Thamel.com in terms of economies of scope. Asian values of family orientation and collectivism combined with Nepal's low income level increase the value delivery potential and attractiveness of electronic fund transfer.

3.5.2.1. Outsourcing business functions to industrialized countries. Local technological and financial infrastructures are too underdeveloped to meet the company's needs for systems reliability, security and financial transaction [78]. The company has thus outsourced these functions to the

US Thamel.com. US also handles payment processing. Thamel.com's CEO said:

Local Nepalese ICT systems and services do not meet our needs for systems reliability, security and financial transaction management. To overcome this problem, we located these system elements in other countries, thereby employing the global ICT infrastructure provided by the Internet for the benefit of our customers throughout the world.

3.5.2.2. Partnership with the private and public sector. When Thamel.com launched its services, Kathmandu had no street addresses. It was thus difficult for Thamel.com's employees to find a gift recipient's home. With help from officials of Kathmandu municipality, the company overcame the delivery barrier. The CEO of the company says:

The delivery of gifts in a city and country without street addresses creates a real logistics problem. Often it is difficult for delivery people to find their destinations. To overcome these challenges, we worked with the Municipality of Kathmandu, using their GIS mapping system, to create delivery zones around well-known landmarks. Our customers now tell us the general location of the order recipient by giving us a reference landmark which we communicate to the delivery team assigned to a corresponding delivery zone.

The company is also collaborating with local banks for the fund transfer business. As of September 2005, the company was exploring the option for launching a direct money transfer platform from the US, Canada, the U.K. and the Middle East.

3.5.3. Thamel.com's business models

In terms of Lam and Harrison-Walker's [57] terminologies, Thamel.com's business model can be described as a combination of an Internet portal, a bundler of services, a manufacturers' agent and a virtual mall.

3.5.3.1. Thamel.com as an Internet portal. Two of the most popular models for a portal are: (a) free model which gives away some products and services in order to create high traffic and thus advertising opportunity; and (b) content sponsorship model which entails the creation of content, links, and services to attract visitors to generate advertising revenue [57,92]. The company has a content sponsorship model in place. In a small developing country with no potential for advertising revenues, it is difficult for a web portal to survive. The company's web portal-related revenue is insignificant compared with other sources.

3.5.3.2. Thamel.com's offering as a bundle of services. In Lam and Harrison-Walker's [57] typology, bundling relates to product or channel enrichment as a value-based objective. Thamel.com's bundling involves providing multiple services, which is critical because of a lack of e-commerce

support services in Nepal. The company delivers goods ordered on its website and facilitates payments. Proof of gift delivery is critical because the consumer of the gift lives far away from the buyer. A digital picture of gift delivery is captured and sent to the gift buyer as a proof of delivery as well as a thank you note [76,93]. Creative uses of simple and inexpensive technologies have thus further enhanced value delivery.

3.5.3.3. Thamel.com as a manufacturers' agent. A manufacturers' agent represents "more than one seller, and sometimes an entire industry, to sell specific types of products" [57]. In Lam and Harrison-Walker's typology, this model falls under network development as the relational objective and financial improvement as the value based objective. Big companies have web presences but Thamel.com helps stimulate their sales. For instance, cake businesses of a 5-star rated hotel increased by 30% after its collaboration with Thamel.com. Most of Thamel.com's vendors such as goat herders, however, do not have websites [94]. Thamel.com's site provides information on these vendors' products.

In this model, the agent's revenues come from user fees, advertising, etc. These are thus either user-paid (e.g., for Web content, products, or services) or provider-paid (e.g., advertising revenues, commissions provided by sponsors, etc.) [57]. Thamel.com is a provider-paid agent. Unlike well-known agents such as expedia.com and hotel.com, however, Thamel.com has a multi-industry representation. In 2004, Thamel.com featured over 7000 products representing diverse industries such as French Chiffon, Bavarian Chocolates, ceremonial goats, birthday cakes, silk saris and yak cheese.

3.5.3.4. Thamel.com as a virtual mall. In a virtual mall, a provider hosts multiple online merchants on its site (Lam and Harrison-Walker). Thamel.com's model can also be considered as a virtual mall. At present, the company plays a very limited role in this setting. Thamel.com powers and hosts the Khukuri (Nepali knives) Store (<http://www.nepalesekhukuri.com/>).

The trading relationship between two firms is a function of 'technological distance' between them [95]. As the affiliates' dependency on Thamel.com further increases, they will widen and deepen ICT adoption and the company may expand its role as a virtual mall. By 2004, a third of Thamel.com's 500 affiliates had increased ICT assimilation and about 80 of them had their own websites [76]. Thamel.com CEO describes how the dependency of its "affiliates" on the company grew over time:

Our Affiliates have recognized our ability to help them grow their businesses. Now some of them are coming to us to help them reach the international market. We have helped start (or motivated the start-up of) over 10 new web-based Nepalese businesses.

4. Discussion

The previous section provided an overview on Thamel.com's strategy to overcome some e-commerce barriers. For instance, the company targeted segments of the population that experience relatively fewer economic barriers (e.g., expatriates). Thamel.com located some functions in the US to bypass some of the legal barriers. To overcome cognitive barriers, the company provided delivery services as well as delivery confirmation via digital pictures of gift delivery. Thamel.com's Internet business model offers a number of lessons, especially for small developing countries like Nepal.

1. *In a developing country, a company's success depends on its ability to simultaneously deploy and manage multiple e-business models.*

Economic, sociopolitical and cognitive factors determine an appropriate e-business model. These factors determine which relational and value-based objectives best fit a market. The lack of economies of scale in a developing country prohibits the ability of the country's businesses to concentrate in one or a few e-business activities. Thamel.com's business model has thus focused on width rather than depth. Thamel.com's customers would have never bought products listed on the company's website if the company had just acted as a web portal. In addition to its role at the pre-transaction phase of e-business, Thamel.com also provided payment and delivery mechanisms that have facilitated e-commerce transactions. Its Internet business models also focus on multiple industry. Likewise, helping its affiliates to assimilate ICTs is central to Thamel.com's role as a virtual mall.

2. *In relatively small markets of developing countries, firms can add value by bundling together various products and services.*

Because of economic, sociopolitical and cognitive factors very few firms are willing to take risks. From the standpoint of a developing country-focused Internet provider, the lack of related support services inhibits the completion of e-commerce transactions. At the same time, however, firms have opportunities to deliver higher value by vertical integration and bundling various services.

3. *To deliver full potential, developing country-focused Internet business models are required to outsource some functions to the industrialized world.*

It is impossible for a developing country-based company to break all e-commerce related barriers. The only way to overcome some of the barriers is to locate some e-commerce functions in the industrialized countries. E-commerce barriers discussed above make it necessary to locate some functions (e.g., credit card processing for Thamel.com) to the industrialized world. Some functions, on the other hand, are to be performed outside to enhance the value delivery. Also while a typical Thamel.com consumer lives in Nepal, most of its buyers live

in industrialized countries. It thus can maintain geographical proximity with its customers by sourcing these functions to industrialized countries.

5. Conclusion and implications

The theoretical contribution of this paper is to explain the ‘Hows’ and ‘Whys’ [96] of e-commerce in the developing world. The above discussion indicates that economic, sociopolitical and cognitive factors play important roles in the adaptation of business models in the context of the developing world. We also discussed a case illustrating how a firm can respond to some of the factors.

Clearly, there is much to be learned about e-commerce in the developing world. There are thus a number of avenues for future research. First, all business models targeting the developing world are not equally successful. Future in-depth research is needed to address the following question: What factors differentiate successful and unsuccessful e-commerce business models in developing countries?

Second, Thamel.com’s model “worked” in Nepal, but may not be successful in other types of institutional setting. Our work also opens new areas of research in terms of how a business model responds to institutions. In the language of institutionalists [39–41], how does an e-business model gain regulative, normative and cognitive legitimacy in a developing country?

Third, Thamel.com flourished in Nepal is because the Nepalese e-commerce market is too small for multinationals like yahoo to be attractive. So a third question is: What is the optimum size of the e-commerce market for firms from developing countries to profitably exploit?

Fourth, the case presented in this paper illustrated Thamel.com’s influence on its business partners ICT adoption. All firms are not equally successful in influencing their partners’ technological portfolio. The next question is: What types of companies are likely to force their business partners to adopt ICTs?

Fifth, the government is more effective to deal with some factors (e.g., infrastructure) than private firms. A final question thus is: What is the optimum level of involvements for government and private organizations in combating various barriers discussed in this paper.

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