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Influences of Culture, Geography and Infrastructure on Website Localization Decisions

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Influences of Culture, Geography and Infrastructure on Website Localization Decisions

Abstract

Purpose – the paper examines the role played by culture, geography and infrastructure on European airline's decision to launch market-specific websites.

Design/ methodology/ approach – Logistic regression analysis based on 440 observations of home-target country dyads collected from websites of nine European airlines, and supplemented by additional sources of macro level indicators. The unit of analysis is the country dyad.

Findings – cultural distance between home and target country, geographical distance between home and target country, website traffic volumes originating from target country, demand conditions in target country, and competition intensity in target country all influence the decision to launch local sites. The cultural dimensions of individualism, masculinity, power distance, and uncertainty avoidance, as well as the legal, commercial and IT infrastructures in target countries don't impact the same decision.

Research limitations/ implications – the study's findings are limited contextually to B2C e-service models, the airline industry and the European origin. Other industries, business models or regional origin of firms may exhibit different patterns.

Originality/value – the study shifts the research focus from what constitutes website localization into what dictates localization efforts' implementation. Surprising findings suggest that counter to earlier suggestions infrastructural conditions and cultural dimensions' levels in target markets do not predict the launch of local sites, and that geographical distance impact decisions related to the geography neutral medium of the Internet.

Keywords – Website, Localization, Culture, Cultural Distance, Electronic Commerce, Electronic Marketing

Paper type – Research paper

1. Introduction

A key dilemma in international marketing is the tension between standardization and adaptation of marketing strategy and mix (Ryans et al. 2003, Szymanski et al. 1993, Theodosiou and Leonidou 2003, Vrontis 2003, Vrontis and Thrassou 2007). Proponents of standardization herald cost reduction efficiencies riding the waves of globalisation and market convergence trends, while supporters of adaptation point to a complex reality of lasting variations across country markets requiring the firm's attention and commitments for long-term profitability.

This dilemma is also becoming increasingly relevant in the context of Internet-based international commercial activities, where the use of a globally uniform Internet technology is constrained by the local embeddedness of commerce, as is recognized in a limited but growing body of literature (Grant and Bakhru 2004, Elbeltagi 2007, Okazaki 2004, Tixier 2005, Guillén 2002, Singh et al. 2004, Singh and Boughton 2005, Fujimoto et al. 2007). This dilemma is often associated with the challenge of 'Website Localization', which is becoming even more important when one considers that websites have been suggested to have the potential of both supplementing and replacing physical presence in foreign markets (Shneor and Flåten 2008, Vila and Küster 2004, Forsgren and Hagström 2001, Petersen et al. 2002), and that website design which is congruent with national culture will foster consumer online purchasing (Gong 2009).

Current research into website localization focuses on identifying localization elements and their impact on user perceptions of websites (Cyr and Trevor-Smith 2004, Singh et al. 2006, Singh et al. 2004, Tixier 2005, Chakraborty et al. 2005), identification of cultural depictions in country specific websites (Singh and Baack 2004, Singh and Boughton 2005, Singh et al. 2005a, Okazaki 2004, Sinkovics et al. 2007), and website localization measurement (Singh and Boughton 2005, Singh et al. 2009).

Conceptually, website localization was defined as the process of customizing a website for a specific cultural group so that it seems natural or "local" to members of that particular culture (Singh et al. 2009); hence, being consistent with notions of adaptation as prevalent in international marketing literatures.

The current paper seeks to contribute to this body of knowledge by switching the research focus. Instead of examining what constitutes website localization and what kind of impacts it has on consumer behaviour, the focus here is on assessing the roles played by various factors in firms' website localization decisions. More specifically, the study will focus on examining

the impact of socio-cultural factors on website localization, based on the logic that localization is in essence, adaptation to local environments. Viewing culture as an important milestone in the international business environment, this study will focus the analysis on cultural dimensions and distance perceptions, supplemented by a number of additional environmental conditions.

Such effort will be based on a suggested operationalisation of Javalgi and Ramsey's (2001) framework of four infrastructures that are expected to influence e-commerce growth in foreign markets, including: technological, commercial, socio-cultural, and governmental-legal infrastructures. In addition, cultural distance, physical distance and demand conditions will also be evaluated. Hence, the four infrastructures plus demand reflect conditions in the potential target markets, while cultural and physical distance reflect relative positions of target markets in relation to the home market.

The impact of these factors will be examined with respect to the choice between launching and not launching a market-specific website for different country markets.

Finally, since website localization strategies were found to be more relevant for B2C (Business-to-Customer) business models (Singh et al. 2004, Singh et al. 2005a), involving transactions which occur between individual customers and a business which uses the Internet for trade (Ince 2003); and since service industries have witnessed an increase in international trade due to the diffusion of e-commerce (Javalgi et al. 2004), this study focuses the analysis on B2C e-services in general, and soft e-services in particular. E-Services were classified as either 'hard' or 'soft', where hard e-services deal with getting goods or services to customers, and 'soft' e-services are concerned with issues of website design, data information readiness, and transactions (Douglas et al. 2003). One of the international service industries to be significantly impacted by Internet diffusion and e-commerce growth is the airline industry (Buhalis 2004, Driver 1999). And, therefore, the current study will focus on airline e-service websites' localization.

First, a brief review of website localization motivations and limitations will be presented, followed by a suggested list of factors, which are expected to play a role in Internet-based cross-border activities, with a special focus on socio-cultural factors. Based on which, ten hypotheses are suggested, linking the conditions in target markets and their expected effect on website localization decisions. A regression analysis follows, using data collected from European airlines' websites and secondary sources of macro level indicators. Finally, results are discussed while highlighting key findings, acknowledging limitations, and suggesting further research venues.

2. Website localization motivations and limitations

Localization, or national differentiation strategies, may be applied to online activities in various forms, the most common of which involve cultural and language adaptations of websites. Earlier studies found that the web is not a culturally neutral medium (Singh et al. 2003) and that culture impacts format, layout, and design of e-commerce websites (Lo and Gong 2005, Cyr and Trevor-Smith 2004, Cyr et al. 2005, Simon 2001), as well as content depictions (Singh et al. 2005a, Okazaki 2004, Singh et al. 2005b, Singh et al. 2003, Singh and Baack 2004, Singer et al. 2008).

According to Luna et al. (2002) culturally adapted websites reduce the cognitive efforts required from the visitors to process information on the website, which in turn leads to easier navigation and the development of favourable attitudes towards the website. In this context, various studies indeed show that the extent to which websites are localized positively impacts customer preferences (Singh et al. 2004), purchase intentions (Singh et al. 2006), and has the potential to increase online sales (Tixier 2005); all indicating that an understanding of the phenomenon and its characteristics is of great value for firms active internationally, and may be a source of competitive global advantage (Lynch and Beck 2001).

While, in principle, these findings encourage firms to engage in website localization efforts, the extent to which websites are actually localized varies. In fact, Tixier (2005) showed that firms often opt for a 'glocalisation' strategy, rather than pure localization, where global branding is united with adaptability to specificities of national expectations without going through complete localization. Such notions are further supported in other studies showing that although host country adaptations are evident in MNCs' websites; these do not constitute complete transformations to local cultural needs (Singh and Baack 2004, Singh and Boughton 2005, Singh et al. 2005a, Sinkovics et al. 2007).

3. Suggested factors and their impact

Various authors (Grant and Bakhru 2004, Guillén 2002, Quelch and Klein 1996, Chen 2007, Samiee 1998) claim that although Internet is both a product and a vehicle of globalization, it doesn't eliminate the impact of location-specific factors, pressures and structural constraints. However, earlier studies examining the role of environmental factors in Internet-based commercial activities haven't looked into website localization as such, and focused on variations of Internet usage levels and online consumer behaviour patterns.

In a study explaining Internet shopping patterns across countries Lim et al. (2004) showed that cultural variables, such as the interaction effect between individualism-collectivism and the uncertainty avoidance dimensions, accounted for 14 percent of the explained variance in their sample. Furthermore, the combined explained variance of market conditions reached 63 percent, including elements such as – national income level, economic growth rate, educational level, unemployment rates, and crime rates. These findings are consistent with a growing literature indicating that cultural dimensions are a sub-set of environmental conditions one must account for when designing online international activities (Rothaermel et al. 2006, Kshetri and Dholakia 2002, Lim et al. 2004).

In a different cross-country study examining e-commerce activities, Oxley & Yeung's (2001) found that although physical infrastructure explains a large portion of the variation in Internet use, a supportive institutional environment is critical for developing actual e-commerce activities. And therefore, institutional environments must facilitate transactional integrity, especially in ensuring the 'rule of law', and in the availability of credible payment channels. In the same spirit, Guillen & Suarez (2005) have also undertaken a comprehensive cross-country analysis of Internet use, and found that Internet growth is driven not only by socio-economic status, cost or accessibility but also by regulatory, political and sociological variables; where governments can implement policies that enhance Internet use.

A useful framework defining the various infrastructural conditions assumed to impact e-commerce growth in foreign markets was suggested by Javalgi and colleagues (Javalgi and Ramsey 2001, Javalgi et al. 2004). This framework includes four types of infrastructures, including - information technology (IT) and telecom, socio-cultural, commercial, and government and legal infrastructures. This study adopts this framework for examining the impacts each of these factors may have on website localization decisions, while expanding it to also include industry-specific demand in target markets, and the relative position of target markets in terms of cultural and geographic distance between home and target countries.

3.1. IT and telecommunication infrastructure (ITTI)

ITTI is reflected by the penetration of and access to computers, Internet, communications, and information exchange infrastructures. According to Colby and Parasuraman (2003) the diffusion of e-services is influenced by the technological readiness of their intended users, as they rely on technology and devoid of the human element in traditional service. Therefore, it's here assumed that an advanced IT infrastructure enhances the e-readiness of its users, making them more susceptible to e-commerce activities in general, and e-services in particular.

Indeed, a number of studies have shown that technological maturity of target markets was a key criterion for firms' online market selection (Tiessen et al. 2001, Borsheim and Solberg 2004, Forsgren and Hagström 2001).

Higher levels of e-readiness also imply more knowledgeable and demanding customers of the services offered online (Tiessen et al. 2001), and in such markets firms may be expected to launch a local site. This logic fits well with notions of Internet-driven customer empowerment, where firms need to make greater efforts to understand and meet customer needs (Kucuk 2008, Rezabakhsh et al. 2006). Therefore, the following proposition is suggested:

> **H1**: The higher the level of IT infrastructure in a target country the higher the likelihood that a market-specific website will be launched.

3.2. Socio-cultural infrastructure (SCI)

SCI includes organizations, institutions, social systems and associated relationships, and the processes by which resources are distributed between them. Elements such as language, education level, belief and value systems, traditions and habits, are all assumed to influence technological innovations' adoption and creation (Javalgi and Ramsey 2001). More specifically, culture has long been recognized as a key factor underlying systematic differences in behaviours (Steenkamp 2001), and as explaining differences in adopting products and services (Javalgi et al. 2004). And in order for a website to be an effective vehicle for communication across cultures, cultural sensitivity must be taken into account in its content design and structure (Fletcher 2006).

Perceptions of cultural distance have been repeatedly acknowledged in classical internationalization literature to impact market selection, entry patterns and strategies (Johanson and Vahlne 1977, Johanson and Wiedersheim-Paul 1975). According to such approach, the less culturally distant a target market is the lower are the levels of resource commitments and knowledge necessary for successfully serving that market. And, furthermore, cultural proximity facilitates trust, which smoothens negotiations between partners to an international transaction (Debabi 2010).

Therefore, firms may opt for common standardized sites rather than market-specific sites in those markets they perceive as less distant, where service is more cost effective and knowledge is perceived to be more easily attained. Furthermore, firms may be influenced by what Yamin & Sinkovics (2006) defined as the Virtuality Trap, where Internet enhances

perceptions of cultural similarities and blurs cultural differences. Accordingly, the following proposition is made:

> **H2**: The higher the cultural distance between home and target country the higher the likelihood that a market-specific website will be launched.

Moreover, once operating in a certain foreign market, firms may develop sufficient familiarity with the local culture to be able to adapt its marketing practices and communications to local needs. Here, website-based activities are of no exception, as was shown in studies indicating that website design is rich with cultural depictions, differing significantly between countries within and across organizations (Okazaki 2004, Sinkovics et al. 2007, Singh et al. 2005a, Singh et al. 2005b, Singh et al. 2003); as well as that certain cultural dimensions impact the very diffusion of business-to-consumer e-commerce (Gong 2009).

While it is agreed that no limited set of dimensions can exhaustively describe the culture of societies in their full richness and complexity (Steenkamp 2001), for both parsimony and remaining within disciplinary convention, this study will use Hofstede's cultural dimensions. By using Hofstede's (2001) four original cultural dimensions – individualism, masculinity, uncertainty avoidance, and power distance, one may derive a number of hypotheses about website adaptations aimed towards higher levels of congruence with local cultural preferences. Indeed, earlier research showed that Hofstede's cultural dimensions impacted online market entry decisions of Internet firms (Rothaermel et al. 2006), which manifested themselves in the launch of local sites.

First, individualism reflects the level to which members of a society are primarily concerned about themselves and their immediate family rather than with society at large. In highly individualistic societies one expects more self-centred approaches, where end customers value being treated as a unique target audience separate from other groups; hence, also exhibiting higher demand for localized formats of service. In this context, individualism levels in target markets were found to impact market entry actions of US Internet firms in the form of local sites' launch (Rothaermel et al. 2006). On the other hand, more collectivistic societies may be contempt with standardized service formats serving large groups of people. Such cultures may be less demanding in terms of having market-specific sites dedicated to their own group. Alternatively, lack of motivation for localization investments in collectivistic cultures may be justified by findings in earlier studies, which suggested that limited uptake of e-business in Arab and Asian cultural contexts may be explained, among other things, by the preference of

these collectivistic societies for face-to-face personal communication versus impersonal online communications (Fujimoto et al. 2007, Hwang et al. 2006, Elbeltagi 2007, Yasin and Yavas 2007). Thus, the following proposition is suggested:

> **H3**: The higher the level of individualism in a target country the higher the likelihood that a market-specific website will be launched.

Second, masculinity reflects the extent to which a society values dominance, performance and successes, while femininity is associated with societies valuing harmonization, consideration towards others, and quality of life. In this context, earlier research showed that masculinity levels in target markets impacted market entry of US Internet firms in the form of local site launch (Rothaermel et al. 2006). Here, masculine societies may view localized service as recognition of their own importance, dominance and power, while feminine societies may accept more standardized formats of service as reflecting harmonious and inclusive processes. Moreover, when considering the proximity between Hofstede's (2001) masculinity and House et al.'s (2004) performance orientation dimensions, one can suggest that the preference of high performance orientation societies for direct and explicit communication may be more in tune with website localization efforts than ambiguous and subtle communication styles preferred by low performance orientation societies. Finally, and specific to the airline context, since customers from masculine cultures were found to be more likely to buy business class tickets than those from feminine cultures (Hofstede 2001), one can argue that airlines are more likely to invest in localization in markets where a larger share of customers buy premium price tickets. Therefore, the following proposition is suggested:

> **H4**: The higher the level of masculinity in a target country the higher the likelihood that a market-specific website will be launched.

Third, uncertainty avoidance captures the extent to which societies are comfortable with uncertain and difficult-to-interpret situations. According to de Mooij (2000), the property of Internet as an unstructured means of communication may be more difficult to accept in high uncertainty avoidance cultures. Accordingly, uncertainty avoidance levels in target markets negatively affected market entry decisions of US Internet firms and hence the launch of local sites (Rothaermel et al. 2006). Here, cultures characterized by high levels of uncertainty avoidance may be less keen on the impersonal format of Internet service, and may be

inherently sceptical towards relatively new modes of transaction, in effect discouraging firms from investing in localized versions of their sites for these target markets. On the other hand, since societies more tolerant of uncertainty are also viewed as those more open to innovations (House et al. 2004, Hofstede 2001), and assuming that e-commerce remains a relatively new transaction format in most countries, an openness to engage in e-commerce may be more widespread in low uncertainty avoidance cultures, encouraging firms to localize their sites in such environments. Accordingly, the following proposition is suggested:

> **H5**: The higher the level of uncertainty avoidance in a target country the lower the likelihood that a market-specific website will be launched.

Finally, power distance concerns the level to which unequal power distribution is accepted by the members of a society. Earlier research has shown that assertiveness and power distance play a critical role in decisions related to investments in foreign market service, such as when deploying expatriates (Brock et al. 2008). In our context, power distance levels in target markets were found to positively affect market entry decisions of US Internet firms in the form of investments in local sites' launch (Rothaermel et al. 2006). According to de Mooij (2000), the equality values implicit in Internet does not fit with business practices of high power distance cultures. This suggests that cultures with low tolerance towards social inequality may embrace Internet-based formats of service especially for their class elimination properties, and may feel comfortable with standardized rather than especially dedicated service formats. On the other hand, cultures where inequality is the accepted norm may exhibit aversion of common Internet-based service formats, and may demand to reduce any standardization aspect of such services, and hence prefer localized sites. Therefore, the following proposition is suggested:

> **H6**: The higher the levels of power distance in a target country the higher the likelihood that a market-specific website will be launched.

3.3. Commercial infrastructure (CI)

CI includes the availability, convenience, and quality of services provided by financial institutions, IT organizations and professionals, and market research organizations. Moreover, the growth of e-commerce is dependent on the emergence of a new Internet-related industry, not only enabling the technology but also ensuring security, reliability and affordability of

Internet-based services (Javalgi and Ramsey 2001). An innovation and business friendly environment is closely associated with liberal and free economy, flexible finance, investment, trade, and labour regimes, as well as high levels of property rights protection. A free economy may be more conducive to Internet dissemination and more supportive to e-commerce growth domestically and internationally (Oxley and Yeung 2001, Guillén and Suárez 2005, Kshetri and Dholakia 2002). Therefore, the following proposition is suggested:

> **H7**: The more economically free the environment in a target country the higher the likelihood that a market-specific website will be launched.

3.4. Government and legal infrastructures (GLI)

GLI is related to balancing the safeguard of consumer rights, industry promotion, and national interest protection. These may include issues such as taxation and electronic payment regulations, as well as concerns of security, privacy, liability, preventing cross-border fraudulent activity, copyright protection, database protection, adherence to local advertising regulations, etc (Javalgi and Ramsey 2001). The quality of the national legal framework may be captured through the extent to which the rule of law prevails and is enforced in a particular market. The rule of law has been acknowledged earlier as critical towards ensuring transactional integrity, which promotes e-commerce development (Oxley and Yeung 2001). Markets where the rule of law prevails may exhibit greater pressures towards localization of service formats, both since operating within them requires strict adherence to local regulations, and since firms feel more protected against transaction failures and law violations by customers and competitors. Therefore, the following proposition is suggested:

> **H8**: The higher the levels of the rule of law in a target country the higher the likelihood that a market-specific website will be launched.

3.5. Demand conditions (DC)

DC refers to market size and demand volumes' estimations for a firm's offering. Building on transaction cost economics logic, it is here assumed that larger markets offer more opportunities and therefore more incentives for firms to invest (Rothaermel et al. 2006). In such markets costs associated with localization efforts will be outweighed by the potential benefits. Accordingly, a number of studies examining Internet-related firms showed that market potential in terms of size and volume estimations has influenced online market entry

activities (Borsheim and Solberg 2004, Rothaermel et al. 2006, Forsgren and Hagström 2001), including the launch of local sites. Furthermore, a study by Tiessen et al. (2001) suggested that firms tend to adapt their sites to foreign markets where they conduct significant levels of business, identifying a propensity to invest in website localization for markets based on demand. Therefore, the following proposition is suggested:

> **H9**: The higher the demand levels in a target country the higher the likelihood that a market-specific website will be launched.

3.6. Physical distance (PD)

Earlier research, in the offline internationalization context, has shown that geographical distance is associated with internationalization behaviour patterns, where the more distant a country is the lower it's in foreign market entry priorities (Clark and Pugh 2001), and that it has a distinct impact on foreign market entry decisions separate from that of psychic distance (Dow 2000). However, when considering online services, Internet is often believed to neutralize physical location constraints, while allowing continuous access to customers across geographies and time zones (Lituchy and Rail 2000, Afuah and Tucci 2003). Therefore, one may expect that unlike offline efforts, physical distance as such should have no impact on decisions related to website localization. Accordingly, the following proposition is suggested:

> **H10**: Physical distance between home and target country will have no influence on the likelihood of market-specific website launch.

4. Methodology

4.1. Context

Since Internet's impact is especially pronounced within the context of the travel industry in general (Buhalis 1998, Law et al. 2009, Law et al. 2010, Rayman-Bacchus and Molina 2001) and the airline industry in particular (Buhalis 2004, Driver 1999), and since airlines have been found to use Internet for establishing their brand names and enlarging their market segments (Law and Leung 2000), it was assumed that such context would be most beneficial for the purpose of the current analysis. Moreover, since website localization strategies were found to be more relevant for B2C business models (Singh et al. 2005a, Singh et al. 2004), and since

service industries have witnessed an increase in international trade due to the diffusion of e-commerce (Javalgi et al. 2004), the author has chosen to focus the analysis within the context of the commercial airline industry.

4.2. Unit of analysis

The unit of analysis used in this study is the Export Dyad. Export Dyad is defined as a combination of different home and target countries. These country combinations reflect an airline's home country of operations on the one hand, and a relevant foreign market in which that airline is operating, on the other. A 'relevant' foreign market is where an airline is either operating through a physical ticketing office, a country-specific website, or a combination of both physical office and country-specific website. Indirect forms of market service were not considered, as their localization is often outside the scope of the particular airline's efforts.

4.3. Sample

The dataset of export dyads, as created by the author, is based on a systematic content analysis of 9 European airlines' websites, which took place during August 2009. The chosen airlines represent firms of different size, regions within Europe, as well as memberships in the industries' various leading alliances (see Table 1). The common thread uniting all these airlines (beyond their European origin) is the use of a common strategy for serving international markets online, operating differentiated country-specific websites for most of the foreign markets in which they operate. The airlines included represent 15.8% of all IATA (International Air Transport Association) registered European commercial passenger airlines in 2009, and 39.13% of those airlines using the same glocal e-strategy (country-specific websites rather than a global website or a language only differentiated website).

In total, the dataset comprised 540 export dyads. 100 of which were excluded from analysis due to missing data on some of the variables. Therefore, 440 dyads were analyzed, 317 of which represent dyads served through a market-specific website, and 120 dyads served only through a physical presence in the market, and without a country website. The remaining 3 dyads are special cases where specific countries were served through a regional website with no local presence or country-dedicated site. In 311 of the 317 dyads country websites were used parallel to a physical presence in the markets, and only in 6 observations did airlines serve a foreign market through a country website without having a physical presence there.

Table 1. Airline descriptives

Airline	**Home Country**	**Region**	**Alliance (2009)**	**Year of Est.**	**Annual Turnover (2008)** In Million Euros	**Number of Employees (2007-2008)**	**Fleet size (2009)**	**Number of Export Dyads (Home-Target Markets)**
Aer Lingus	Ireland	Northern Europe	N/A (withdrew from the One World Alliance)	1936	1,357	3,900	42	Total – 30 Local Site – 21 No Local Site – 9
Brussels Airlines	Belgium	Western Europe	N/A (expected to join the Star Alliance)	2006 (Sabena in 1923)	984	3,000	45	Total – 63 Local Site – 34 No Local Site – 29
Czech Airlines	Czech Republic	Central Europe	Skyteam	1923	907	5,479	50	Total – 67 Local Site – 45 No Local Site – 22
Iberia	Spain	Southern Europe	One World	1927	5,450	20,000	140	Total – 55 Local Site – 45 No Local Site – 10
KLM	Netherlands	Western Europe	Skyteam	1919	8,028	33,000	117	Total – 81 Local Site – 72 No Local Site – 9
LOT	Poland	Eastern Europe	Star Alliance	1929	791 (in 2007)	3,600	51	Total – 43 Local Site – 27 No Local Site – 16
Lufthansa	Germany	Central Europe	Star Alliance	1926	24,870	108,123	534	Total – 99 Local Site – 84 No Local Site – 15
Malev	Hungary	Eastern Europe	One World	1946	487 (in 2007)	2,971	27	Total – 42 Local Site – 31 No Local Site – 11
TAP	Portugal	Southern Europe	Star Alliance	1945	1,952	6,300	69	Total – 60 Local Site – 20 No Local Site – 40

Notes: All data was collected from the respective airline's corporate websites and annual reports for 2008, or 2007 when 2008 was unavailable.

4.4. Data collection procedures

Content analysis is a tool widely used in studies examining web communications and website design elements (Singh et al. 2009). All country-specific websites in the sample were content analyzed during August 2009 by two researchers simultaneously. Where differences emerged the two researchers discussed the gaps until an agreement was reached on each case. However, since all ratings were based on an objective observation – whether a feature was available on the site or not, very few cases were actually debated.

4.5. Dependent variable

For the first analysis, concerning the decision whether to launch a country-specific website or not, a dummy variable was created (LOS), where the value 'one' signified launching a market-specific website for a particular foreign market, and zero signified serving such a market only via a local physical ticketing office or an official representative agent.

4.6. Independent variables

The hypotheses presented above addressed ten factors that are expected to influence a firm's decision to launch local sites for particular target markets.

4.6.1. IT Infrastructure

Technological infrastructure levels were captured through the Ln value of International Internet bandwidth (IIB) measured in bits/second/person for each country in 2007, adopted from the April 2009 World Bank ICT at a Glance country reports (The World Bank 2009). The variable is used here as a proxy for differences in quality of e-commerce supportive Internet infrastructure across countries.

4.6.2. Socio-Cultural Infrastructure

Socio-cultural infrastructure levels are captured through five different variables representing – cultural distance between countries, and four cultural dimensions within countries. Cultural dimensions are captured by country scores along Hofstede's four original cultural dimensions – power distance (PDI), individualism (IND), masculinity (MAS), and uncertainty avoidance (UAI). Scores used are those recorded and estimated in the original study (Hofstede 2001) and supplemented by additional country scores from later research (Belarus from: Kustin 2006, Ukraine from: Mitry and Bradley 1999, Latvia and Lithuania from: Huettinger 2008).

Additional and later studies have suggested alternative conceptualizations of cultural dimensions, most famous of which is the GLOBE study (House et al. 2004). However, a re-analysis of GLOBE 2004 data resulted in five meta factors, which according to Hofstede (2006) corresponded with his own original dimensions.

Cultural distance (TCD) was calculated using Kogut & Singh's (1988) composite index built on the deviation along each of Hofstede's four cultural dimensions of each target country (in which an airline operates) from each home country (the airline's home); these deviations are corrected for differences in variances of each dimension and then arithmetically averaged.

It should, however, be noted that criticism of this index exists, especially with respect to its underlying assumptions about symmetry, stability, and linearity as presented by Shenkar (2001). And while alternative indexes have been suggested (i.e. Brock et al. 2008), in the absence of a clearly superior alternative overcoming all challenges, this study will follow others and use the Kogut & Singh index while acknowledging its limitations.

4.6.3. Commercial Infrastructure

Commercial infrastructure is captured through the 2009 country Business Freedom (BF) sub-scores of the Economic Freedom Index, as published by the Heritage Foundation (Miller and Holmes 2009). The BF score measures the ability to start, operate, and close a business, while being based on ten related factors – time, cost, number of procedures, and minimum capital for starting a business; time, cost, and number of procedures for obtaining a license; and time, cost, and recovery rates associated with closing a business.

4.6.4. Government and Legal Infrastructure

Government and legal infrastructure is captured through the Software Piracy Rate (SPR) scores adopted from the 2008 Business Software Alliance Global Software Piracy Study (BSA Business Software Alliance 2009). The score measures the rate of pirated software out of total software installed on private computers in a certain country during a year. Where pirated software represents the gap between total software and paid software installed during a year. The logic here suggests that high rates of SPR correspond with inadequate levels of government and legal infrastructure to secure online transaction integrity.

4.6.5. Demand Conditions

Demand conditions were captured by figures of air Passengers Per Capita (PPC) ratios calculated based on data from the 2007 World Development Indicators Report (The World

Bank 2007), which were re-scaled to reflect figures per million inhabitants. Here, data is mostly from 2005, but when missing - figures from earlier years were used.

4.6.6. Physical Distance

Physical distance (PHD) is captured as the distance between two capital cities, measured as the Ln (number of kilometers), as used in earlier studies (Dow 2000).

4.7. Control variables

Earlier research showed that higher website traffic volumes influences firms' tendency to launch market-specific websites (Kotha et al. 2001). Therefore, website traffic (VISIT) is used as a control variable. For this purpose, the percentage figures of traffic originating from each target market out of the total non-domestic traffic to an airline's website was used. Traffic figures by country of origin were taken from the Alexa.com Site Information pages during August 2009 (Alexa Internet Inc. 2009). Alexa is a company specializing in gathering site statistics for most sites on the web, while contributing its data to a non-profit archive serving Internet researchers. Here, country share of website traffic below 0.7% was usually not reported, and therefore was marked as zero in the dataset.

The second control variable is competition intensity (COMP). Tixier's (2005) study suggested that the intensity of industry competition and the possibility of competitor's entry may affect website localization strategy, implying that greater competition may be associated greater localization. Therefore, for this purpose, competition intensity was captured as the percentage of airlines serving a certain target country market out of total number of airlines used in this study (i.e. Albania served by two out of nine airlines, and therefore dyads including Albania receive the COMP value of 22%). Although competition may not be on specific direct routes, it still exists when considering indirect flight using alliance and code-share arrangements.

4.8. Methods

A logistic regression is used for assessing the impact of the various factors suggested above on the choice to launch a country-specific website (Model 1):

(a) $\text{Log (LOS)} = \beta_0 + \beta_1 \text{VISIT} + \beta_2 \text{COMP}$

(b) $\text{Log (LOS)} = \beta_0 + \beta_1 \text{VSIT} + \beta_2 \text{COMP} + \beta_3 \ln(\text{IIB}) + \beta_4 \text{TCD} + \beta_5 \text{PDI} + \beta_6 \text{IND} + \beta_7 \text{MAS} + \beta_8 \text{BF} + \beta_9 \text{SPR} + \beta_{10} \text{PPC} + \beta_{11} \ln(\text{PHD})$

Checking for the potential threats of multicollinearity a variance inflation factors (VIF) analyses were conducted (see Table 3), none of which exceeds 10, the value representing excessive multincollinearity (Field 2005, Hair et al. 2009). The maximum VIF value obtained was 4.763, suggesting that multicollinearity was not an issue. Moreover, the correlation table (see Table 2) shows that none of the correlation coefficients are above 0.9, thereby indicating that there is no problem of excessive multicollinearity (Field 2005).

5. Findings

Table 3 shows the results of a logistic regression analysis. The test result is significant (chi-square = 152.775, df =12, $p < 0.001$) thereby indicating adequate fit of the data to the model. The Negelkerke R^2 provides an analogy to R^2 in ordinary least square multiple regression; indicating that 42.3% of the variance is explained by the independent variables.

The Hosmer and Lemeshow Goodness-of-fit Test provides an overall test of the fit of the data to the model. It's considered more robust than general chi-square test. If it's greater than 0.05, we accept the null hypothesis that there is no difference between the data and the model. The value of 0.918, obtained in the analysis, represents a good fit in this respect.

The results indicate that both control variables have a significant impact on market-specific website launch decisions. First, the higher the volumes of visitors' traffic, originating from a particular target market, the more likely firms are to launch a market-specific website for that same market. However, while competition intensity is indeed significantly impacting the likelihood of local site launch, the direction of the impact remains a surprise. Findings here show that the more intense the competition in a certain foreign market the less likely a local site to be launched. This might be explained by a shift in focus in high competition environments from service quality to price attractiveness, where content localization loses its importance, and economic efficiencies via standardization become the main concern.

In terms of cultural distance's impact, hypothesis 2 has been confirmed. The analysis shows that the greater the cultural distance between home and target market, the more likely firms are to launch market-specific sites. Surprisingly, the remaining cultural dimensions seem to have no impact on the likelihood of launching local sites; hence rejecting hypotheses 3-6.

Table 2. Descriptive statistics and Pearson Correlations for Model 1

		Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11
	Local Site (LOS)	0.7205	0.44929											
1	Website Traffic (VISIT)	1.7497	3.52833	-										
2	Competition Intensity (COMP)	74.5720	23.32352	0.388***	-									
3	Internet Infrastructure (IIB)	7.9320	2.21252	0.254***	0.595***	-								
4	Cultural Distance (TCD)	1.7968	1.40292	-0.041	-0.106*	-0.023	-							
5	Power Distance (PDI)	56.7205	21.54767	-0.186***	-0.406***	-0.498***	-0.000	-						
6	Individualism (IND)	49.4045	22.56865	0.370***	0.610***	0.559***	-0.066	-0.640***	-					
7	Masculinity (MAS)	49.2455	20.01215	0.102*	0.073	-0.084*	-0.106*	0.168***	0.067	-				
8	Uncertainty Avoidance (UAI)	67.7205	20.96578	-0.126**	0.058	-0.048	-0.267***	0.333***	-0.320***	0.094*	-			
9	Business Freedom (BF)	74.8223	14.95922	0.195***	0.443***	0.672***	0.018	-0.527***	0.550***	-0.056	-0.268***	-		
10	Gov / Legal Infrastructure (SPR)	49.1659	20.44220	-0.243***	-0.603***	-0.757***	0.060	0.626***	-0.703***	-0.082*	0.216***	-0.763***	-	
11	Demand Conditions (PPC)	1.0052	1.53595	0.110*	0.240***	0.387***	0.035	-0.373***	0.336***	0.070	-0.363***	0.426***	-0.445***	-
12	Physical Distance (PHD)	7.8400	1.09796	-0.216***	-0.441***	-0.446***	0.023	0.219***	-0.404***	0.118**	-0.089*	-0.178***	-0.287***	-0.043

Notes: N = 440. * P<0.05; ** P<0.01; *** P<0.001.

Table 3. Parameter estimates and regression results for Model 1

	Base Model 1(a)				Model 1(b)			
	β	s.e.	Exp (β)	VIF	B	s.e.	Exp (β)	VIF
Intercept	-0.089	0.361	-	-	7.163**	2.625	-	-
Website Traffic (VISIT)	0.856***	0.167	2.354	1.177	0.841***	0.180	2.319	1.269
Competition Intensity (COMP)	0.006	0.005	1.444	1.177	-0.018*	0.008	0.982	2.291
Internet Infrastructure (IIB)					0.087	0.090	1.091	3.297
Cultural Distance (TCD)					0.384**	0.129	1.468	1.129
Power Distance (PDI)					-0.007	0.010	0.993	2.186
Individualism (IND)					0.010	0.010	1.010	3.194
Masculinity (MAS)					-0.003	0.009	0.997	1.276
Uncertainty Avoidance (UAI)					0.009	0.008	1.009	1.727
Business Freedom (BF)					0.000	0.013	0.999	2.758
Gov / Legal Infrastructure (SPR)					-0.009	0.013	0.991	4.763
Demand Conditions (PPC)					-0.256**	0.098	0.774	1.474
Physical Distance (PHD)					-0.808***	0.166	0.446	1.553
R^2	.160 (Hosmer & Lemeshow), .173 (Cox & Snell), .249 (Ngelkerke)				.293 (Hosmer & Lemeshow), .293 (Cox & Snell), .423 (Ngelkerke)			
Model χ^2	83.647				152.775			
-2 log likelihood	437.774				375.210			
N	440				440			
Hosmer-Lemeshow Test								
Chi-Square (df = 8)	29.727				3.242			
Significance	0.000				0.918			

Notes: † P<0.1, * P<0.05; ** P<0.01; *** P<0.001

Furthermore, and counter to expectations, the IT infrastructure, business freedom levels, and legal infrastructure also played no role in the decision to launch local sites; hence, rejecting hypotheses 1, 7, and 8. One may explain the absence of such relationships in a hidden managerial assumption that Internet is a technology which is here to stay, and will reach all markets sooner or later, regardless of their current level IT, commercial, or legal infrastructures. And, therefore, systems supporting multiple market service may be easily duplicated on a basic level to less promising markets, which in the long term are expected to be fully linked to the Internet and engaged in e-commerce. Furthermore, under such assumptions investments today may allow firms to harness a first-to-market advantage once these markets reach higher commercial and technological developmental levels.

In terms of demand conditions' impact, hypothesis 9 has been rejected. While passenger per capita figures are indeed significantly impacting the likelihood of local site launch, the direction of the impact was unexpected. Findings here show that the higher the demands in a certain foreign market the less likely a local site is to be launched. This might be explained by a more cosmopolitan orientation of frequent travellers from high demand countries.

Finally, and equally surprising, is the rejection of hypothesis 10, indicating that physical distance between home and target markets significantly impacts the launch of local sites, and the more distant a market is the lower the likelihood of a local site to be launched. One explanation may be found in the regional nature of airlines, which are operating more regional routes than long distance ones; hence, prioritizing immediate markets with more frequent flights. Furthermore, since all observations are taken from airlines with European hubs, creates a dualism between geography and commercial infrastructure, where closer markets are also relatively developed economies and distant ones are more frequently representing developing or emerging economies.

6. Discussion

Surprisingly enough, only five variables were found to impact the decision to launch a local site. First among these is the volume of website traffic originating from a particular foreign market. A finding supporting an earlier finding by Kotha et al. (2001), being the basis for using this variable as a control variable.

The second variable to impact the decision is the physical distance between the home and target market. While a role for physical distance in internationalization decisions was identified with respect to offline activities (Dow 2000, Clark and Pugh 2001), finding a

significant impact in website localization decisions remains surprising and somewhat counter intuitive. Here findings suggest that the more distant a target market is the less likely a local site to be launched for serving it. Explanations for this may be found in apparent overlaps between physical distance and economic development levels, as well as in the regional nature of airline service, and hence the prioritization of immediate and frequently connected locations over more distant ones.

The third influential variable is the demand condition in the target market. While this variable has a significant impact it does so in an opposite direction to that suggested earlier – showing a negative impact on local site launch. This may be explained by the cosmopolitan nature of frequent air travellers, who may be less concerned with content localization, and more inspired by global themes and approaches.

The fourth variable making an impact is competition intensity. Here, again, findings contradict Tixier's (2005) findings, showing that competition leads to lower levels of localization rather than to higher levels. Explanations here may revolve around a shift from service quality to price attractiveness in highly competitive environments, which underline operational cost reductions via standardization of service.

The last influential variable is cultural distance. Here, the higher the levels of cultural distance the more likely a local site to be launched. This finding also contradicts findings in an earlier study by Rothaermel et al. (2006), where cultural distance had a significant impact but, again, in an opposite direction. An explanation for this gap may be found in the strategic context in which website localization was viewed in the two studies. The earlier study viewed local site launch as market entry of Internet firms, while in the current study a local site does not constitute a mode for market entry but rather an extension of service channels in markets already entered offline.

The remaining variables were found to have no impact on the decision to launch local sites. Explanations for these somewhat surprising findings are therefore suggested. First, earlier claims about the role of infrastructures on e-commerce development (Guillén and Suárez 2005, Kshetri and Dholakia 2002, Oxley and Yeung 2001) did not translate to impact on localization decisions. The lack of influence of IT infrastructure and commercial infrastructure may be explained in an optimistic view of international firms. A view suggesting that Internet is a technology which is here to stay, and localized sites are either a must in developed countries or a way to guarantee a first-to-market position in developing countries, both of which constituting worthy motivations for investment, regardless of current levels of IT or commercial development in target markets. And, with respect to the lack of

influence of legal environment conditions, one may claim that the localization measurement used in this study didn't allow much room for legal issues to make an impact, and could have been revealed with a deeper analysis of website content elements such as legal disclaimers.

A further examination of particular cultural dimensions revealed that none of them carried influence on the likelihood of local site launch. These findings again contradict earlier findings by Rothaermel et al. (2006), who showed an impact of all four cultural dimensions on local site launch by US-based Internet companies, as part of their international expansion and market entry. Again, one may claim that cultural dimensions may play a role in market entry decisions, but not in online extensions of service for markets already entered offline.

Alternative explanations may be found in that power distance, masculinity and individualism do not exhibit influence on localization decisions since localization is an effort directed at an aggregated social group level rather than individuals. And, hence, such cultural dimensions may play a greater role in personalization of online content and service, which better reflect recognition of power, self-interest, and self-image than in localization efforts.

Furthermore, the lack of impact of uncertainty avoidance may suggest that concerns with website reliability are of global scope, and are better addressed via other means than localization, such as secure payment and customer management systems, as well as trusted site seals and certifications. Alternatively, one may find support for current findings in an earlier study by Lynch and Beck (2001), who observed no regional differences in consumers' tendencies to take risks among online buyers in 20 countries.

Finally, although controversial, one may also consider that cultures change through time, and that data collected by Hofstede 30 years ago may reflect different realities than those prevalent today. Support for such claims is evident in Shoham and Alon's (2010) recent study showing that cultural values have changed between the 1970s and 1990s, as evident in the emergence of new groupings of cultural clusters.

7. Conclusion

The current study shifts focus from what constitutes website localization to what impacts website localization decisions. To the best knowledge of the author, the current study is the first to specifically examine the role of culture, geography, and infrastructure in website localization decisions of international firms in general, and in airlines in particular. The airline industry was assumed to be of particular relevance since it has been dramatically impacted by the diffusion of Internet and e-commerce, it serves multiple international

markets simultaneously, and it offers B2C e-services, which are especially sensitive to local responsiveness needs.

The analysis shows that cultural distance between home and target markets, rather than specific cultural dimensions' manifestations in the target markets, is an important and influential element in airlines' website localization decisions, as part of their international business activities. Moreover, physical distance, website traffic volumes, demand conditions, and competition intensity were also found to influence the decision to launch local sites. Here, of particular interest is the suggestion that physical distance plays a role in decisions relating to commercial activities in a seemingly geographically neutral space, as well as the systematic contradiction of earlier studies conducted in different industry contexts. Overall, factors found to have no impact on local site launch include Hofstede's four original cultural dimensions, as well as the IT, commercial and legal infrastructures in target markets.

7.1. Limitations and suggestions for further research

Although presenting interesting and surprising findings, as well as being one of the first to address the impact of culture, geography, and infrastructure on website localization decisions, this study's shortcomings must be acknowledged.

First, the findings are framed within a particular context limiting the generalizability of the results. The analysis is restricted to a B2C (Business to Customer) business model context. And, therefore, B2B (Business to Business) aspects of online activities, within the same region and industry, may exhibit different patterns. Second, it's widely accepted that the airline industry has been significantly affected by the emergence of e-commerce, while other industries may be less affected by the technology and, therefore, exhibit different patterns. Third, the European home market context reflects relatively economically developed and Internet accessible home markets, and airlines from other regions, and especially less developed ones, may, again, exhibit different patterns. Fourth, the summer of 2009 restricts the analysis to a particular point in time, and especially in the context of a constantly evolving technology such as the Internet. Future longitudinal studies may be able to trace a change in the impact of various factors in website localization decisions. All these contextual limitations serve as a productive starting point for future research investigating the same questions in different settings and points in time.

Finally, this study shows that although cultural distance, geographical distance, demand levels, competitive conditions, and website traffic volumes all play an important role, accounting for 30%-40% of the variance, they do not represent the full picture, and future

research should also look into micro level internal factors and their impact on localization decisions, as well as on potential interactions between internal and external conditions.

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