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A Cross-Cultural Study of Online Marketing in International Higher Education – a Keyword Analysis

Abstract

Higher education is a dynamic global industry with a highly competitive and developed market. Universities communicate their international programs to attract prospective students interested in studying abroad. This study addresses a question whether there is a difference between communicated characteristics of international programs among universities from various cultures. Websites of seventy universities coming from different cultural clusters are analysed using data-mining methods. The results suggests that marketing communications in international higher education do not stand on cultural grounds as there are only minor differences between international program communications across the world. The only difference in the group of prime international higher education providers was found between the Anglo-Saxon universities and the rest of the world.

Keywords: *higher education; cross-cultural marketing; GLOBE; text-mining*

Introduction

Higher education has become a very dynamic global industry (Enders, 2004). Globalization of higher education has been manifested in several ways; among others the number of exchange students has doubled in just two decades (Naidoo, 2006). Universities and colleges benefit from becoming international. International students may contribute greatly to all stakeholder groups (Chapdelaine & Alexitch, 2004) in economic as well as non-economic terms (Kotler & Fox, 1995). Colleges

as well as policy makers quickly realize the contribution international students and international education make. The tertiary education market has become highly competitive and developed (Hemsley-Brown & Oplatka, 2006). Besides other factors, intensive marketing strategies have also become an integral part of the successful adaption to this competitive environment (Rovai & Downey, 2010). Concurrently, national regulatory standards for higher education institutions have lost their edge vis-à-vis widely accepted international accreditation standards (Dill, 2003).

International mobility may be promoted among students, academic and non-academic staff, entire programs might be internationally mobile or institutions establish international campuses (Altbach & Knight, 2007). The largest number of international students is traditionally reported from countries like the United States, the United Kingdom and Australia (Binsardi & Ekwulugo, 2003). Host universities put ever increasing emphasis on detailed marketing strategies underpinning internationalization (Ivy, 2001). Universities strive to create positive images, gain recognition and reputation, communicate the attributes which their programs are built upon (Hemsley-Brown & Oplatka, 2006).

Higher education marketing has emerged as a branch of service marketing (Venkatesh, 2001). However, college marketing deals with a different kind of service. On the one hand, classroom instruction is provided in local environments reflecting local culture and characteristics (Cambridge & Thompson, 2004). On the other hand, international education is geared towards students from many different countries and graduates are expected to compete for jobs in the global arena (Crossley & Watson, 2003). Hence, international education might be a global product satisfying the needs of students worldwide, attaining consistent positioning and referring to similar values at all markets (Cambridge, 2002). Although international students come from different cultural background, they share more characteristics than one would expect (Bartram & Bailey, 2009). Diverse foreign students impact on the entire educational process, despite creating coherent communities which do not heavily interact with local students outside the classroom (Knight, 2011). The following study aims to contribute to the discussion about the nature of international education through investigation of statements promoted by global educational providers.

Although international students are mostly heading for the universities in English-speaking countries, the source countries are completely different. More than 700 000 tertiary-level students are currently enrolled in higher education, where one in five international students is from China. Other source countries are South Korea, India, Canada, Saudi Arabia, Japan, Taiwan, Vietnam or Mexico

(Choudaha, 2012). In such a multicultural and multilingual environment, English has emerged as an international or default language (Brumfit, 2004; Llurda, 2004). However, lack of language proficiency is one of the key adjustment issues for non-native English speakers/international students. Thus, universities must have supportive mechanisms and communicate in a way which is suitable to their international student body (Andrade, 2006).

Institutions at the higher education market communicate their brands through values offered to prospective students (Bennett & Ali-Choudhury, 2009). Their marketing message can vary and can emphasize a plethora of attributes such as reputation, learning environment, quality of facilities or graduate employment (Ali-Choudhury, Bennett, & Savani, 2009). At present, the attributes and characteristics are mediated to prospective students primarily through the internet (Gomes & Murphy, 2003) using various methods of online marketing (McCoy, 2011). Referring to the globally unified offer of international education programs (Cambridge & Thompson, 2004) a research question arises:

Q1: Do international universities from different cultural backgrounds use the same attributes and values in their marketing communications?

Discovering whether international universities are referring to similar values using suchlike marketing message to their prospective (international) students might be useful in different ways. At the theoretical level, it could contribute to the development of theory about the nature of international education. On the practical field, it could be helpful for marketing practitioners working at universities and colleges.

Research Design and Methodology

Theory of cultural differences has been an integral part of marketing since the second half of the 20th century (Maheswaran & Shavitt, 2000). Most prominent studies include Hall (1959), Hofstede (1984) or Trompenaars and Hampden-Turner (1995). Although such studies have become classics of intercultural marketing, more and more voices call for more recent findings and newer studies (De Mooij, 2010). More recent research endeavours reflect on social, political, technological and other changes in international environment [e.g. House (2004) or Schwartz (1994)]. The applicability of a particular cultural theory needs to be considered in relationship to the nature of each research study (De Mooij, 2010). Several studies surveying cultural differences used the GLOBE study to determine where there is a difference between educational values (Mitsis & Foley, 2009) or learning styles

(Joy & Kolb, 2009) among cultures. The GLOBE study (House, 2004) classifies cultures along nine dimensions into ten clusters: Anglo – Latin Europe, Nordic Europe, Germanic Europe, Eastern Europe, Latin America, Sub-Saharan Africa, Middle East, Southern Asia and Confucian Asia.

The GLOBE classification provides a backdrop for this study, which aims to investigate whether university marketing message is based on its cultural roots. Schools were included in the study based on the 2010 Academic Ranking of World Universities (ARWU) available at http://www.arwu.org/. Rankings of HEIs and programs are a recent global phenomenon. They are also related to and further stimulate competition among institutions across national borders (Marginson & Van der Wende, 2007). The ranking is one of the common approaches to assessing institutional quality (Liu & Cheng, 2005). There are several other university rankings (BusinessWeek Business Schools Rankings – http://www.businessweek.com/business-schools/ or Financial Times Business Schools Ranking – http://rankings.ft.com/businessschoolrankings/rankings). Limiting the sample to business schools would increase its integrity and coherence, however most available rankings include schools from a few cultures only with a strong preference for western countries. Therefore, analysing culturally biased rankings would be inconclusive to the research question. There are several other university rankings widely used and available (i.e., Times Higher Education's list of the world's top universities at http://www.timeshighereducation.co.uk/world-university-rankings/), and there could be an important methodology question whether or not the ranking selection influences the results of this study. However, those different rankings are based on similar characteristics and include almost identical lists of universities.

The highest ranking universities from ARWU rank belong almost exclusively to the GLOBE Anglo cluster. All the TOP 500 institutions in the list were classified according to their corresponding GLOBE cluster. Out of each cluster, ten universities were randomly selected (to avoid comparing institutions higher in the ranking against schools which score lower). Three out of ten GLOBE clusters had to be omitted from the study as they contained fewer than ten schools, namely Southern Asia, Middle East and Sub-Saharan Africa, which is not represented in the TOP500 at all. All the universities included in the study offer an international program in the English language. Pages in English were extracted out of each website containing information for international students, about international programs, and about university mission, vision and values. The targeted audience of selected websites were prospective undergraduate students. Only university websites have been analysed, since faculty websites could be different from each other within the university. All the texts were surprisingly similar in terms of their size – an extracted

text averaged 2.4 kB (with standard deviation 0.9). The selected sample, however, could suffer from a sampling bias – the results could be significantly influenced by the type or the nature of selected universities. To avoid such a bias, we repeated the selection of the websites and performed the subsequent analysis several times. The results were homogenous throughout all the performed experiments and there was no significant difference between the experiments on altered samples. The list of schools included in the study is presented in Table 1. Subsequently, school websites were carefully analysed.

Table 1. List of Surveyed Schools by GLOBE Clusters (university ARWU ranking in brackets). Source: (ShanghaiRankingConsultancy, 2010)

Anglo	Confucian	Eastern European	Germanic	Latin American	Latin European	Nordic
University of Iowa [101–150]	Seoul National University [101–150]	Eotvos Lorand University [301–400]	Medical University of Innsbruck [201–300]	Federal University of Rio de Janeiro [301–400]	University of Siena [401–500]	Stockholm School of Economics [301–400]
Flinders University [301–400]	Hiroshima University [301–400]	National and Kapodestrian University of Athens [201–300]	University of Basel [86]	University of Buenos Aires [151–200]	Ghent University [90]	University of Copenhagen [40]
McMaster University [88]	Shanghai Jiao Tong University [201–300]	Charles University in Prague [201–300]	University of Halle-Wittenberg [201–300]	University of Chile [401–500]	University of Milan [101–150]	Swedish University of Agricultural Sciences [201–300]
University of Chicago [9]	The Hong Kong University of Science and Technology [201–300]	Saint Petersburg State University [301–400]	Radboud University Nijmegen [151–200]	Federal University of Rio Grande do Sul [401–500]	Joseph Fourier University (Grenoble 1) [151–200]	University of Gothenburg [201–300]
Massachusetts Institute of Technology (MIT) [4]	University of Tsukuba [151–200]	Aristotle University of Thessaloniki [301–400]	Technical University Munich [56]	University of Sao Paulo [101–150]	University of Paris Sud [45]	University of Turku [301–400]

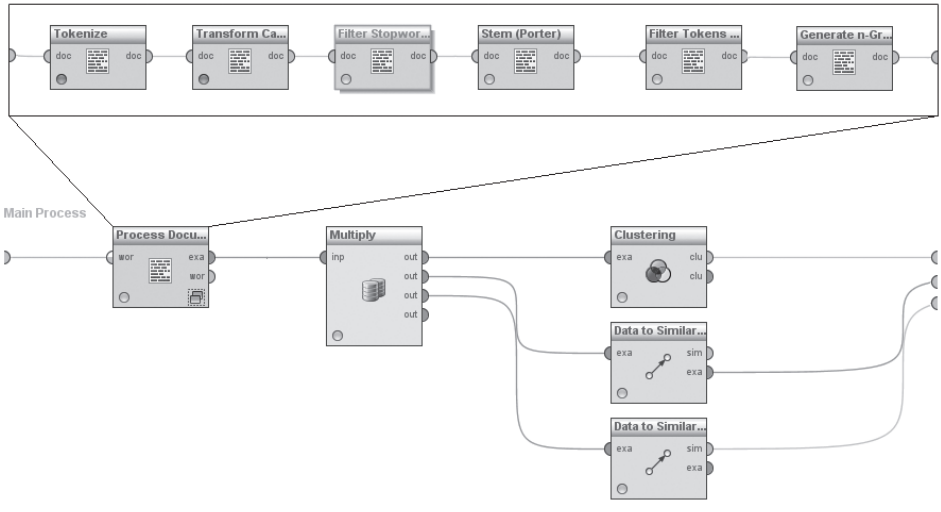
Anglo	Confucian	Eastern European	Germanic	Latin American	Latin European	Nordic
University of St Andrews [201–300]	Zhejiang University [201–300]	University of Warsaw [301–400]	University of Freiburg [101–150]	Catholic University of Chile [401–500]	University of Porto [401–500]	Karolinska Institute [42]
Ohio University [401–500]	The Hong Kong Polytechnic University [201–300]	Jagiellonian University [301–400]	University of Stuttgart [201–300]	Federal University of Minas Gerais [301–400]	University of Barcelona [201–300]	Norwegian University of Science and Technology [201–300]
Oregon State University [101–150]	Keio University [201–300]	Moscow State University [74]	University of Maastricht [301–400]	Sao Paulo State University [301–400]	Ben-Gurion University of the Negev [301–400]	University of Helsinki [72]
The University of Auckland [201–300]	Xian Jiao Tong University [401–500]	University of Ljubljana [401–500]	University of Twente [301–400]	National Autonomous University of Mexico [151–200]	University of Pavia [401–500]	Aarhus University [98]
University of California, Davis [46]	Osaka Prefecture University [401–500]	University of Szeged [301–400]	University of Bonn [93]	State University of Campinas [201–300]	University of Provence [301–400]	Linkoping University [401–500]

Website analysis can be undertaken in several ways. It has been shown that culture impacts on web design as well as website content (Blake, Shamatta, Neuendorf, & Hamilton, 2009; Kim, Coyle, & Gould, 2009; Tian & Lan, 2009). This study is limited to website content, i.e. to the keywords. Keyword selection is an important part of online marketing (Enge, Spencer, Stricchiola, & Fishkin, 2012). Web site users do not read the content online in the same way as a common context (i.e. in a book or a newspaper). Only 16 % of users read the web site closely word-by-word. Most of the users rather scan the website, searching for keywords (emphasized words, headlines or links). The more keywords (reflecting their interest) the users find, the surer they are that they have arrived at the right web site (Nielsen, 1997). Using the right keywords when preparing the webs site content is also crucial for another part of online marketing – Search Engine Optimization (Grappone & Couzin, 2008). Web sites are indexed by the search engine crawler which analyses the content of the web site. Even though there are hundreds of characteristics taken into account when the search engine decides about the results returned on a user's query, the words used on the website (keywords) are one of the most important factors (Google, 2010). Thus, the content used to attract and convince the prospec-

tive students about the qualities of the university might also be important for the searchability and the visibility of the university online.

Data was analysed through RapidMiner, which is an open-source tool for data-mining featuring a special text-mining module for advanced text analysis. The tool has been widely used for text analysis (Mierswa, Wurst, Klinkenberg, Scholz, & Euler, 2006). Text was pre-processed through tokenization separating words from tokens. All symbols were transferred to lower-case to avoid problems with case sensitivity. Stop words were filtered through the RapidMiner English dictionary. The next step included token stemming through Porter's algorithm (Porter, 1980), which transformed words into a canonical form enabling words in various language forms to represent the same token. For cluster analysis, n-grams were created from tokens (Cavnar and Trenkle, 1994). Transformation and n-gram formation achieve greater accuracy in text comparisons (Kondrak, 2005). Comparison of 3-grams which performs the best (Mansur, Uzaman, & Khan, 2005) was selected for the study. The following figure shows the procedure of data pre-process.

Figure 1. Data pre-process procedure in RapidMiner software



Three experiments were conducted on the transformed data. First, we performed sequential analysis of terms and compared them between clusters. The aim was to determine to what degrees websites originating from various cultures use similar words. Second, cluster analysis on n-gram data output was employed utilizing

a k-means non-hierarchical algorithm (MacQueen (1967). The algorithm classifies data into clusters based on their characteristics. The algorithm attributes each cluster to the point, which is near the centre of cluster. Cluster centres can change with iteration – every run recalculates all cluster points by arithmetic mean. The algorithm is finished when differences within clusters are minimized. The k-means algorithm obtains robust results and is broadly used (Steinbach, Karypis, & Kumar, 2000). Third, we employed the cosine similarity to confirm previous results. The cosine similarity is another widely used approach to measure document similarity (Steinbach et al., 2000).

Results

The results of the frequency analysis of terms by GLOBE clusters are summarized in Table 2. Terms are based on stemming. Although the terms appear incomplete, it is evident what original words they represent: univers – university, intern – international, scienc – science, educ – education. Terms allow for associating various forms of one word with a single representation. 10 most frequently used terms are very similar across all clusters – words such as university, student, research, international, education or science occurred a number of times throughout the analysis. The stem "univers" tops the frequency table in all clusters except for the Anglo cluster. The Anglo cluster schools use the stem "student" more frequently. Such a finding is striking especially when we consider that all the TOP 100 schools in the ARWU ranking are from the Anglo cluster. Stems such as "world", "manag", "cultur" and "engin" are also different for the Anglo cluster as they do not appear in any of the remaining clusters. The prominent position of Anglo-Saxon schools in various rankings may enable them to focus on different (or differentiating) characteristics in their communications. Thus, Table 2 brings the overview of the keywords used on university websites targeted at the prospective student. Such keywords do not only influence the overall user experience with the website, but also the visibility of the website in search engines on given keywords. To avoid misinterpretation we repeated the random selection of university websites a number of times again, the position of the most widely used stem and the list of top 10 stems in the cluster remained unchanged.

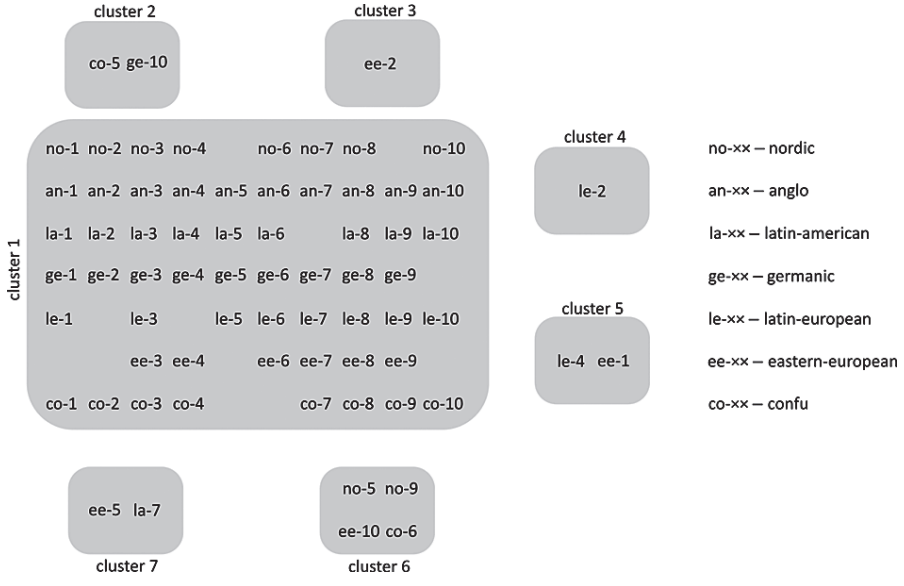
The second experiment grouped texts according to their characteristics into clusters, which is one of the explorative data mining techniques. No prior information, meta-information or selection criteria were used in the algorithm. We transformed the data to 3-grams and then performed the analysis. Merging terms

Table 2. Frequency Analysis of Terms by GLOBE Clusters

Anglo		Confu		Eastern-euro-pean		Germanic		Latin-american		Latin-european		Nordic	
student	41	univers	68	univers	134	univers	77	univers	62	univers	84	univers	78
univers	36	student	47	student	67	research	37	institute	37	research	62	research	51
world	28	scienc	32	educ	27	intern	24	school	31	student	53	student	48
intern	26	nation	29	studi	26	student	22	research	30	intern	27	educ	38
research	25	research	28	research	25	degre	19	educ	29	degree	25	intern	26
program	22	studi	25	scienc	24	program	15	student	25	program	24	program	26
engin	19	intern	23	school	23	teach	15	scienc	23	develop	20	offer	24
manag	19	program	19	institut	21	scienc	14	faculty	20	cours	19	degre	20
cultur	16	school	17	academ	20	educ	13	state	20	academ	17	studi	20
educ	15	academ	17	econom	20	studi	13	nation	17	studi	17	year	17

into n-grams achieves a much greater accuracy in text comparisons (Kondrak, 2005). The k-means algorithm was used in the way which would categorize available data into seven clusters corresponding to seven GLOBE clusters. The k-means algorithm is often used for text-mining tasks (Hotho, Nürnberger, & Paaß, 2005). The outcome is presented in Figure 2.

Figure 2. K-means Clustering of Selected Universities



3-grams from 70 text documents (belonging to seven different cultural groups according to the GLOBE study) were classified into seven groups (the number of groups was set up before the analysis). However, those groups do not correspond with the GLOBE clusters. Cluster 1 is the largest containing 58 texts originating from diverse countries and cultures. The texts are very similar to each other and the k-means algorithm depicts no significant differences. Clusters 2 to 7 are very small, yet different from cluster 1. Cluster 2 includes one school (University of Tsukuba) from the Confucian GLOBE cluster and one from the Germanic group (University of Bonn). Cluster 3 includes just the National and Kapodestrian University of Athens belonging to the Eastern-European GLOBE cluster. Ghent University is the only institution in cluster 4 (Latin-European GLOBE cluster). Cluster 5 was formed by Joseph Fourier University (Latin-European cluster) and Eotvos Lorand University (Eastern-European cluster). Cluster 6 includes four

schools: two from the Nordic group (University of Turku and Aarhus University), one Confucian institution (Zhejiang University) and one Eastern-European university (University of Szeged). Finally, cluster 7 contains the Aristotle University of Thessaloniki (Eastern-European GLOBE cluster) and the Federal University of Minas Gerais (Latin-American cluster). Only schools from the Anglo GLOBE cluster remained all intact in cluster 1. All other schools categorized by the GLOBE clusters included always at least one school which was not part of the main cluster 1. More detailed analysis of clusters 2 to 7 brings additional insights. Documents in cluster 2 excessively list various schools and programs offered at the university. Clusters 3 to 7 again excessively highlight the name of the institution or its location instead of the general attributes of educational programs. The universities from those clusters have chosen a different approach to their marketing communication online. Emphasizing local specifics at the expense of global communication values commonly connected with higher education may lead to better targeting of niche markets (students seeking for added value consisting of ,e.g., specific local environment or unique conditions).

The aim of the last experiment was to confirm or to refute suggested conclusions. Documents were pre-processed in the same way as for the previous analyses. As a method to compare documents, the cosine similarity between each pair of the documents was computed. Cosine similarity is a widely used tool in text-mining. An angle between vectors computed from terms in documents is computed. The cosine between vector angles determines the difference between documents. The exact match means the cosine similarity is 1; however, the value could be influenced by the document pre-processing. The results are presented in the following figure.

Average cosine similarity is 0.46 with standard deviation 0.01. Considering that the similarity has been computed on 3-grams, which are able to keep much more information about context in the document, the similarity between documents is high (Rahmoun & Elberrichi, 2007). Accordingly, to confirm previous results the analysis was repeated without generating ngrams in the pre-processing phase. This is a more usual approach, even though unigrams (1-grams) do not keep so much context of the document and the analysis compares just simple terms and not phrases. Thus, higher values of similarity could be expected.

Average cosine similarity is 0.65 with standard deviation 0.01. In most cases, the similarity between documents is 0.65–0.75. Again, considering the data characteristics, the results support the conclusion that the documents are similar.

Figure 3. Histogram of cosine similarity values computed between documents (n-grams)

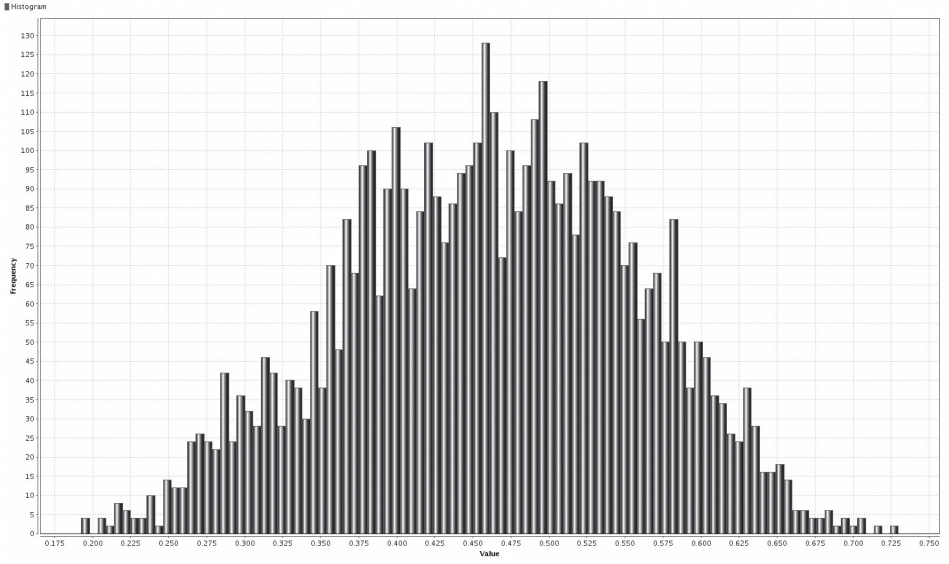
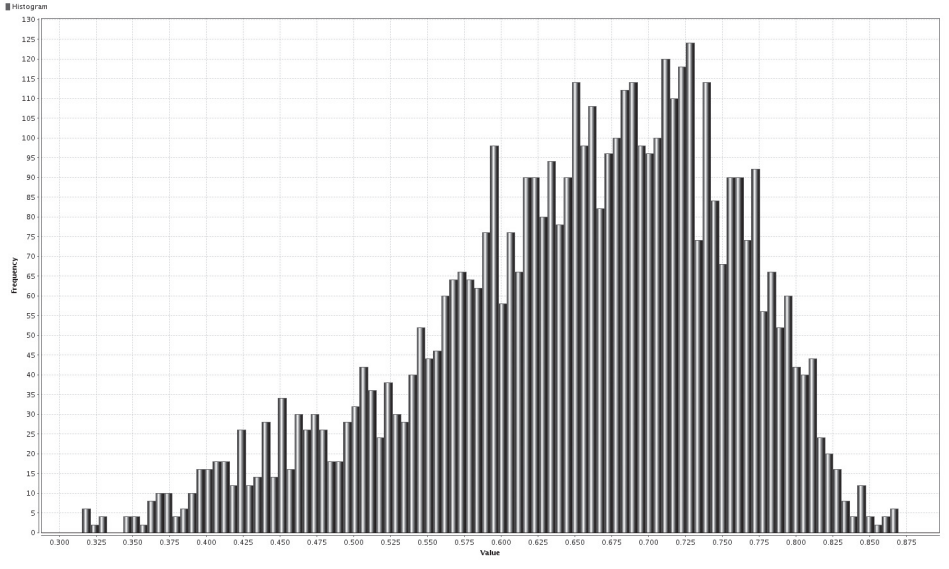


Figure 4. Histogram of cosine similarity values computed between documents (terms)



Conclusion and Research Limitations

In spite of the fact that international education reflects the cultural environment in which the school operates (Cambridge & Thompson, 2004) the analysis suggests that marketing communications to international students do not stand on cultural grounds. The results are summarized in Table 3.

Table 3. Summarized results

experiment	comparison results
stem frequency ranking	SIMILAR Almost the same stem frequency ranking. Minor difference in term ranking – term "student" ranked over others in Anglo-Saxon group
document clustering	SIMILAR Clusters computed on documents do not correspond with GLOBE clusters. 58/70 documents classified in one cluster. Remaining clusters explained (e.g. highlighting excessively the name of the institution)
cosine similarity	SIMILAR cosine similarity computed on 3-grams averaged at 0.45, computed on terms averaged at 0.65. Considering the data characteristics, the documents are similar

Most universities originating from various cultures use similar words in their marketing communication to international prospective students. The only minor difference in the group of prime international higher education providers was found between the GLOBE Anglo universities (according to GLOBE study, House, 2004) and the rest of the world, where the term "student" was preferred over others (e.g. university, research or science). The explanation may lie in the fact that Anglo-Saxon schools occupy a forefront position in the university quality rankings, so they do not need to re-emphasize their achievements in research and science. Most documents were also classified into the same group with a clustering approach and computing the cosine similarity also showed only minor differences. In conclusion, international education seems to be a global product aimed at a global customer – it is very often globally standardized (there are several accreditation labels accepted worldwide); it has uniform features and characteristics in most countries and is also marketed in a similar way. There are many examples of global products (Apple products, Coca-Cola beverages or luxury cars); however, there are only a few in services. Even though the international study programs in higher education are provided in local environments and with the interaction with locals (the students or the university staff – academic or administrative), it might represent the universal

value which spans across countries and cultures. On the other hand, the study also indicates that there is a great opportunity for university marketers to adjust the message to prospective students and to emphasize local specifics and accentuate unique propositions of the university.

Anyway, the results of this study should be considered with respect to research limitations. Not all the university websites from the ARWU ranking were included in the study, so the sample might be biased. However, the selection of websites was made randomly (according to ARWU ranking and GLOBE clusters) and the study was repeated several times (every time with a random selection of websites) with similar or almost identical results. The study did not include all cultural regions (according to GLOBE study) as three clusters were underrepresented in the ARWU ranking. Research on Middle-East universities, for instance, could uncover further contingencies. Further limitations could be based on selected methods which (at this moment) do not reflect contextual or design parameters of websites. Website design was previously reported to be culturally conditioned (Blake et al., 2009) and expanding the analysis to design features seems to be one of the most promising areas for enhancing our initial findings. Even taking the limitations into account, we believe this study contributes to the field of international education marketing and brings a deeper insight into the competition of international universities and perception of education as a value across cultures.

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