Adoption of virtual education in Mexico

Adopción de la educación virtual en México

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ABSTRACT:

This paper discusses the adoption of virtual education in Mexico in comparison to other countries in Latin America. It explains the background of e-learning and Telesecundaria in Mexico and analyses diagnostic survey to determine the most appropriate actions that are necessary for the upgrade of distance education in Latin America. The study concluded that virtual education in Mexico has now moved from the use of television to the use of social media.
Keywords: E-learning, Mexico, telesecundaria, virtual education

RESUMEN:

Este artículo discute la adopción de la educación virtual en México en comparación con otros países de América Latina. Explica los antecedentes del aprendizaje electrónico y la telesecundaria en México y analiza una encuesta de diagnóstico para determinar las acciones más apropiadas que son necesarias para la actualización de la educación a distancia en América Latina. El estudio concluyó que la educación virtual en México ahora ha pasado del uso de la televisión al uso de las redes sociales.
Palabras clave: E-learning, México, telesecundaria, educación virtual

1. Introduction

The practicality of a virtual university has been considered by various educational theorists since the early 1990s (O'Donoghue, Singh, & Dorward, 2001; Rodriguez, 1998). This idea is now becoming a reality due to the ready availability of technology in most areas of the globe, as well as the rapid adoption of innovation in institutions of higher learning. The internet or the worldwide web (www) can offer institutions the ability to provide not only complete classes, but to complete entire programs of study or degrees online (Cronin, 2008). It is possible that virtual classrooms will replace face to face classroom communications in the future. The current mode of provision of lectures to large classrooms of students may be replaced by virtual classrooms that can utilise recorded lectures or real-time communications between students and students and professors from a variety of locations throughout the globe (Cronin, 2008; O'Donoghue et al., 2001). While students will continue to be required to provide written work, they will also be required to gather

information and perform their assignments conveniently through online portals rather than handing them directly to the instructor. There is a great deal of ingenuity in this technological progress that drives the conversion from face-to-face communications in classrooms into convenient and financially beneficial e-learning processes (Cronin, 2008; De Jong, Linn, & Zacharia, 2013).

A concise definition of e-learning is that it is the application of technology to improve education services in an on-line forum (Brown, 2008). According to Chapman and Mahlck (2004), e-learning comprises people, processes, and technology. E-learning addresses the fast-changing economic systems in international business by offering knowledge on all aspects that affect world trading blocs (Symonds, 2010). Business-oriented educational models thus show the relationship between e-learning and international business (Kaufmann, Schmalstieg, & Wagner, 2000). In fact, e-learning has been widely adopted in financial fields such as accountancy and business management.

Berner and Boulware (1996) pointed out that there are 'hidden' benefits in using a virtual delivery system for education. While their article specifically addressed the use of computer-based education in medical education delivery systems, the benefits are applicable to most fields of endeavour. Computers not only make the handling of information faster and more efficient, but in large class groupings can also increase interactivity of instructors and students (Berner & Boulware, 1996). On-line classes allow presentation of some materials that might be difficult to present otherwise; they allow the instructor to deliver detailed graphic matter individual to each student. And, while Berner and Boulware (1996) might not have realised it so far in the past, the level of graphics presentation and virtual reality capacity allows many exercises to take place that would have required field work in the past. Dissections of animals, the ability to see inside engines, and hundreds of thousands of other applications are now available for students and instructors. Berner and Boulware (1996) did point out that with the exponential growth of information, the sophisticated nature of computers, and the ubiquity of technology, online learning had the capacity to transmit more information in a faster and more efficient fashion than lecture delivered in a mortar and gown setting. Their theory, however, is that educational institutions should consider the use of computers in education as one of the primary reasons to use e-learning, rather than using the computer simply as a mode of delivery. By this, they meant that as technology progresses (and it certainly has since 1996), students will have an ever-increasing need to use technology in their careers.

As an example, accountancy professionals in the industry require competency in accountancy-related information technology (IT) skills (De Lucia, Francese, Passero, & Tortora, 2009). Universities that offer international business courses have simulated technology in accounting education to authenticate the learning scenario (De Lucia et al., 2009; Dickens & Harper, 1986). This has resulted in a higher level of positive learning in accountancy (Bae & Lee, 2012; Hew & Cheung, 2010; Warburton, 2009). Business School students at the University of Auckland have a wide e-learning mechanism known as Cecil (Mitchell & Forer, 2010). The students are allowed to access profiles of their papers, marks, and course communications (Arbaugh, Godfrey, Johnson, Pollack, Niendorf, & Wresch, 2009). According to Arbaugh et al. (2009) over 28,000 students attend the university and generate over 125,000 logins to Cecil per week during each semester.

This paper discusses the adoption of virtual education in Mexico in comparison to other countries in Latin America. It explains the background of e-learning and Telesecundaria in Mexico and analyses diagnostic survey to determine the most appropriate actions that are necessary for the upgrade of distance education in Latin America.

1.1. Background

Text Educational progress in Mexico has evolved through the 20th Century with the country widely adopting virtual education in both urban and rural areas. Chapman and Mahlck (2004) state that the Mexican government introduced the telesecundaria open learning program in 1968 to cater for the educational needs of elementary (service) graduates. These students lived in the rural areas and were unable to access secondary education due to

geographical barriers. However, Guerra Ortiz (1999) asserts that open education at first took flight in 1947 after the introduction of the Public Education Ministry's Federal Teacher Training Institute (PEMFTTI). This institution was established to train teachers in the midst of their work programmes.

The courses offered at PEMFTTI included communication and on-site learning courses (Guerra Ortiz, 1999). These courses were later improved and in 1975, the institution revamped and adopted the name General Officer of Teacher Training and Improvement (GOTTI). In its improved state, PEMFTTI granted open courses to students studying degrees for "preschool and primary education" (Guerra Ortiz, 1999, p. 59). It is through GOTTI that Universidad Nacional Pedagógica (UPN) was first established. It was the first fully integrated Open and Distance Education System (ODES) in Mexico. The principles guiding open learning are embedded in Article 3 of the Mexican Constitution, which establishes the right to education of all citizens in order to ensure the ability of the people of Mexico to remain on par with the rest of the world from the perspectives of education, democracy, and freedom. According to the Instituto Federal Electoral (1994) distance education is viewed as one of the core models of education considered by the General Education Law (GEL). This model is also upheld by the National Development Plan (NDP) period-1995-2000 (Guerra Ortiz, 1999). The plan was to set a foundation for further adoption of technology in open learning.

Poor planning and unsustainable needs assessment of the technology propagates the adoption of "technology-meditated education" that gives deceitful results (Ontiveros y Sánchez de la Barquera & Canay Pazos, 2013, p. 409). The telesecundarias are similar to the 7th, 8th and 9th education grades which are equivalent to junior high schools or middle schools in the United States of America (Ontiveros y Sánchez de la Barquera & Canay Pazos, 2013). In each hour of study using the telesecundaria, the students watch the televised studies for 15 minutes and then are allowed to complete their assignments in the next 45 minutes with guidance from their teachers (Guerra Ortiz, 1999). The textbooks used by the students are provided by the government.

In 2010, Mexican universities collaborated in the creation of the Mexican National System of Distance Education (SINED) that would fully integrate information and communication technology (ICT) (Ontiveros y Sánchez de la Barquera & Canay Pazos, 2013). The objective of SINED was to implement educational equity and advance the quality/coverage through the utilisation of social networks and post-secondary distance learning. In this case, SINED was an advanced step from Telesecundaria that offers educational support to lower secondary students through television (Guerra Ortiz, 1999). Mexico is among the many countries in Latin America that have a population of young people yearning for higher education. Technology aids to fill the gap (Ontiveros y Sánchez de la Barquera & Canay Pazos, 2013).

1.2. Challenges of distance education

With the advancement of SINED, most universities were located in the big cities. Student had unequal accessibility to digital education because of the lack of technology in more rural areas with fewer infrastructures (Aguado López, Rogel Salazar, Becerril García, & Baca Zapata, 2009). Classroom attendance allowed face-to-face interaction in university classes (Mitchell & Forer, 2010) but was inconvenient and expensive for students from far-flung areas. At the same time, the need for infrastructure to support e-learning or digital education was a problem in the rural areas. One solution to the problem was found by SINED and Telesecundaria. These services only required students to have television sets (Ontiveros y Sánchez de la Barquera & Canay Pazos, 2013), which were ubiquitous.

However, there was another issue. The use of SINED required student-centred analysis that would help to indicate the relationship among students, their learning environments and lecturers (Almenara, 2008). This analysis required resources that were not centrally-allocated by the government. Universities located in rural areas did not get equal share of financial resources that were allocated to urban-centred universities (Ontiveros y Sánchez de la Barquera & Canay Pazos, 2013). These universities (while disadvantaged) are required to cater for the educational demands at the same level larger universities would provide. These

institutions were thus forced to subsist on meagre resources at the expense of digital competency for both the students and members of staff (Almenara, 2008).

The Mexican government has also faced various challenges in establishing infrastructure on telecommunications due to the cost involved. The "digital divide" was quite pronounced (Ramírez Montoya, 2012, p. 567). The Mexican models of higher education coupled with the laws/regulations that guided infrastructure and telecommunications are prohibitive to advanced digital education. In addition, the pedagogical model of Mexico's education is seen as manifesting an ambiguous learning structure (Ontiveros y Sánchez de la Barquera & Canay Pazos, 2013). This education model presently works by enforcing collaboration and limiting class work to the establishment of workgroups (Guthrie & McCracken, 2010). This model is not easy to integrate in distance education and may need to be modified. The goals for open and distance learning (OPEL) in Mexico are similar to distance education that has been implemented by various countries throughout Latin America, so it is clear that these changes can be made.

1.3. The current status of e-learning

Mexico's educational progress has surged with the development programs such as blended learning programs (face-to-face and distance learning) and fully-distance learning (Ramírez Montoya, 2013). The universities now use technological support mechanisms to support the fully-distance learning projects. Open Education Resources (OERs) that help in the dissemination of digital materials in the universities are provided by international organisations such as the Organisation for Economic Co-operation and Development (OECD) and the United Nations Educational Scientific and Cultural Organisation (UNESCO). Inter-disciplinary research in information systems, psychology and sociology is mandatory according to Passerini and Walsh (2009). The specific management issue to be addressed in the future in the SINED project is ensuring maximum participation of individuals and groups in enhancing the success of the open-learning systems (Rovai & Wighting, 2005).

One of the widely used tools for e-learning is Twitter. According to Guzmán Duque and del Moral Pérez (2013), this tool is useful as a social media measurement due to its dependability in offering real time data and usefulness in the society. It is thus advantageous to both learning institutions (such as universities) for educational purposes and the communities in general as a news source. Further, Rinaldo, Tapp, & Laverie (2011) state that the use of Twitter encourages participants (followers and those followed) to communicate and increase their imagination through varied interests and discussion forums. It is easier to form discussion forums on Twitter due to the use of hash tags and participatory sharing of opinions (Petrakou, 2010).

In regard to education, Johnson (2011) states that Twitter is the best forum that academic institutions can use to not only communicate with their students but also keep up with their individual progress virtually. Technology is thus seen as a mandatory step in improving educational potential due to its promotion of technology (Armengol & Stojanovic, 2013). Universities have potential opportunities of disseminating or sharing information to their students through the use of social networks (Guzmán Duque, et al., 2012). These opportunities allow the universities to not only give academic work but also to follow up on their student's academic progress online (Haneefa & Sumitha, 2011).

In the case of Twitter, one university can hold various accounts as long as it keeps them active through tweets and/ or retweets (Grosseck & Holotescu, 2010). Spain has been recognised as a heavy user of Twitter alongside Brazil in this report. Their heavy online presence coincides with their numbers of students enrolled in institutions of higher learning. According to Atkinson (2010) "universities in Chile, Colombia and Venezuela" had the highest number of followers as compared to other Latin American countries (p. 266). This fact shows that Mexican universities can work harder to improve their online presence as a substitute and/ or component of Telesecundaria that is used in secondary schools.

1.4. E-learning and Mexico's economic future

a. Relationship between e-learning and International business

E-business has emerged from the educational interactions of e-learning. E-business is a competitive way of globalizing the market base by making the world a location for business through the world. E-learning has now been used in course development and course material preparation that suits people of all cultures (Alexander, 2001). Diversification of education through the internet has influenced the growth of learning management systems, asynchronous distance learning, and online classrooms, based on the established curriculum (Concannon, Flynn, & Campbell, 2005). This has led to blended learning, which is the combination of traditional face-to-face lectures or tutorials and web-based course content (Concannon et al., 2005, p. 502). This style has been adopted by many Irish universities which have heavily invested in architectures and platforms that support their teaching staff that use it (Kirkwood & Price, 2006).

b. E-learning's importance to international business

Changes in student demography have increased the number of part-time students who juggle between part-time jobs and university education by utilizing evening tutorials or weekend studies (Concannon et al., 2005). Adults are now being involved in the life-long learning process by having the opportunity to take supplementary courses in universities even though they are employed full time or have retired. Continuing professional education and recertification classes are now offered online, eliminating the need to attend highly structured university classes into an otherwise demanding schedule.

In Ireland the government has made a commitment to have 15% of adults enrolled in continuing higher education by 2006 (Concannon et al., 2005, p. 502). The figure currently stands at less than 5% (Schuetze & Slowey, 2000). The Information Commission of Society in Ireland said that the integration of IT to the teaching process is vital for future improvements (Warburton, 2009). According to a research done by Concannon et al., (2005) students in Irish universities were found to use the internet as a secondary resource together with textbooks to supplement lectures and tutorial notes (Chapman & Mahlck, 2004).

There is also a shift in the market for delivery of education (Chapman & Mahlck, 2004). According to the agency, private-for profit universities are offering various certificates and degree courses. The Irish Open University Initiative and its equivalent in the UK are offering diploma and degree courses through distance learning (Kirkwood & Price, 2006). The distance learning market has also been thronged by new entrants such as the Atlantic University Alliance, which is a collaboration between the National University of Ireland, Galway, University College Cork and the University of Limerick (Chapman & Mahlck, 2004). Another reason for the market shift in educational delivery is that new technologies have caused universities to rethink about their entire mission and not just concentrate on isolated features of the programs (Seely Brown & Duiguid, 2000). These new technologies are now being applied in production, distribution and consumption of academic material (Concannon et al., 2005).

E-learning is not supported in Serbia as it is considered a form of correspondence studies (Ramírez Montoya, 2012). Establishing the technology needed for e-learning can be expensive; many facilities lack the relevant software, accompanying equipment and adequately trained staff that are needed for administering and teaching the program. In Serbia, internet studies have lagged behind. In Serbia, beliefs change very slowly. Any type of novelty, especially in the educational field, is met with (Melton, Bland, & Chopak-Foss, 2009). Most people in the country cannot imagine a classroom without walls (Melton et al., 2009).

c. Advantages of e-learning from the business perspective

E-learning has established new ways in which students and instructors can communicate, interact, and utilise multimedia support (Wu, Tennyson, Hsia, & Liao, 2008). All of these skills are in wide demand in today's globalised business world of virtual work teams. Students who learn to function as member of virtual teams in university are already accustomed to this method when they enter the workforce. Researchers have concluded that

students who participate in blended learning environments show the same or better learning outcomes as compared to traditional teaching of face to face communication (Ellis, Ginns, & Piggott, 2009; Melton et al., 2009). E-learning also ensures students are more satisfied with their education upon completion of e-Learning courses (Chang & Fisher, 2003). There is also an increase in collaborative activities and interaction between students through tasks and activities in and out of class (Guthrie & McCracken, 2010). Finally, student-centred learning, teacher-student interaction and the interaction between students is enhanced and the groundwork for future virtual teamwork has been laid (Carmody & Berge, 2005; Davies & Graff, 2005).

Development of modern technology, particularly e-learning in international business, has changed management, communication and work organizations (Sparrow, 2009). In institutions of higher learning, it has resulted in changes in kinds of information, the extent of knowledge and how to acquire and process information and knowledge. It serves as a means of offering synchronous and asynchronous communication (Guzmán Duque, del Moral Pérez, & González Ladrón de Guevara, 2012). International business has thrived due to the fact that universities require web designers and hosting companies to ensure their websites run uninterrupted on the internet (Guzmán Duque et al., 2012).

As more students enrol for distance learning courses, it is expected that faculties will increase their profits (Concannon et al., 2005). This will also be to the satisfaction of the students as they will get education based on their necessity and requirements of their future employment positions (Carmody & Berge, 2005). Countries such as Serbia, where e-learning has been slow to catch on, are now requiring educators to embrace blended learning in order to help students develop the necessary skills in order to demonstrate higher levels of interaction (Carmody & Berge, 2005). E-learning appears to promise the best learning alternatives to the traditional university approach to learning (Graham, 2006).

Educators should obtain feedbacks from students about their feedback and perceptions on blended learning environments for the successful design and implementation of the educational process (Concannon et al., 2005). E-learning has been used in international business to provide feedback, interaction and access to course materials in line with international standards (Chapman & Mahlck, 2004). These standards are not only a benefit to business but an improvement in the quality of teaching and are of benefit to students, the university, and to local and international business communities (Carmody & Berge, 2005).

1.5. Studies of participation in e-learning initiatives

There have been a number of cross-cultural studies analysing community or social improvements through online participation (Ramírez Montoya, 2013). Virtual businesses require social networks such as Facebook, Twitter, or LinkedIn so as to promote comprehension of the customer culture (Wankel, 2010). Another advantage of using social participation in online cultures enables business owners to understand how clients or potential customers feel about their designs (Wu et al., 2008). Linked organizations post their designs on the internet. For example, the ASOS posts its latest designs and fashions on the internet as well as answering frequently asked questions about their products.

Online participation improves the interaction between mobile technology and human computer interface (Wu et al., 2008). The education manager at the university can study existing models of interaction and determine which models to use and apply in certain circumstances at the university. These models might be centred on business, e-learning, Management of Knowledge (MoK) and more specifically on social media models (Wankel, 2010). According to Passerini and Walsh (2009), social networking promotes collaboration in virtual environment, increases return on investment, improves quality service, and heightens overall effectiveness of work. Wu et al. (2008) stated that social media creates a platform where business owners can communicate, offer advice and even ask questions. The major disadvantage is that participation in social media can facilitate negative communication through exchange of pornographic material. Hacking and breaches in privacy as well as other security issues can result. Ideas can be stolen, and plagiarism can occur through internet utilisation (Beerli, Falk, & Diemers, 2003).

Ramírez Montoya's (2013) article analysed the SINED project by the Mexican government using a case entitled Regional Open Latin American Community for Social and Educational Research (CLARISE). This case was considered in five Latin American countries (Ramírez Montoya, 2013). The aim of adopting CLARISE/SINED was to establish the knowledge on effective teaching models within distance learning in the member countries. This research was centred on creating a training approach that was based on competency and integrated projects that can help tutors and distance learning experts. This project also worked to invent a collaborative space that could pool educational capacities in research and enable academic/scientific products to be placed in accessible formats on the internet (Guohong, Ning, Wenxian, & Wenlong, 2012).

Accessibility of the improved practices of distance education over the internet would be used to help academic institutions (especially universities) in and beyond to enhance their student capacities (Guohong et al. 2012). This research conducted a diagnostic survey on a sample of participants to determine the most appropriate actions that are necessary for the upgrade of distance education in Latin America. Through CLARISE, the research was to give educational aspects of the collaboration culture and open educational practices (OEPs) in Latin America (Ramírez Montoya, 2013).

The CLARISE-SINED study conducted the diagnostic survey on sampled participants from nine universities (Ramírez Montoya, 2013). Through a descriptive research design that involved exploratory research, the study outlined the knowledge of the participants in regard to the "open education movement" (Ramírez Montoya, 2013, p. 421). The survey considered a total of 40 respondents that were to show the production, distribution, and utilisation of open education resources (OERs). The study used both closed and open questionnaires that tackled the open education movement (OEM) and innovation competencies of distance education/ networks in line with the country's education policy (Kilic-Cakmak, Karatas, & Ocak, 2009).

2. Methodology

Web analytics in this research was done by using "TweetReach and TweetStats" as the analytics tools (Guzmán Duque & del Moral Pérez, 2013). TweetStats analytics were used to assemble the number of tweets in a university's official account as well as the hash tags (#) used in developing communication topics. A Likert scale was used to assign the reaches of tweet with one representing "very low reach" and five representing "very high reach". Descriptive analysis was conducted by the study on the utilisation of Twitter by each university. Multivariate analytical procedures including linear progression were used to classify the variable relationship while cluster analysis was used to indicate the use of Twitter by the individual followers.

The variables involving the universities were divided according to the name of the country, age of the participant (student or staff); number of students enrolled by the universities and the ownership of the university. The variables linked to the presence of the universities on Twitter included the number of followers, the individuals or groups followed by the institution; tweets/hash tags and the replies. The period of data collection was from January to March 2012. Of the 263 universities sampled, Mexico had a total of 19 universities studied while Argentina had 16, Brazil 55 and Spain the highest, with 77 (Guzmán Duque & del Moral Pérez, 2013). The following table shows each university, number of followers and some notes.

Of the 263 universities the proportion of sample was shared as follows:

Table 1
Proportion shared by sampled universities

Country	Sampled Share in Percent	Notes
Spain	29.3	

Brazil	19.8	
Mexico	7.2	Used as control
Argentina	6.1	
Columbia	6.1	
Chile	V5.3	
All others (Peru, Honduras, Puerto Rico, Uruguay, Venezuela)	26.2	Shared

Source: Adapted and modified from Guzmán Duque and del Moral Pérez (2013).

Spain has been used in this research as a control sample as it is not found in Latin America although it is more advanced in digital education (Ramírez Montoya, 2013). Universities in the sample that were in existence for more than 100 years old had an average (mean) age of 130 years (at standard deviation of 165) (Guzmán Duque & del Moral Pérez, 2013, p. 482). The study also sampled followers that were less than 20 years old (16.8%), between 21 years and 40 years (23.3%) and those with more than 40 years (59.9%) (Guzmán Duque & del Moral Pérez, 2013).

3. Results

The Twitter accounts for the University of Chile had the highest number of followers in the sampled data with 119,100 followers (as of March 2012). This number was followed by the National Autonomous University of Mexico (UNAM) at 111,377 (as of March 2012). According to TweetStat, the Pontifical Catholic University of Sao Paulo (PUC-SP) (Brazil) had the highest number of tweets at 26,032 followed by the Central University of Venezuela (UCV) at 12,087 (as of March 2012). The mean (average) number of tweets by the universities stood at 2,078 (Guzmán Duque & del Moral Pérez, 2013).

The University of Barcelona (Spain) had the greatest number of replies at 38 followed by the University of Sinos Valley (UNISONOS) in Brazil at 37 tying with the University of Panama and Corporación Universitaria Minuto de Dios (In Colombia). The number of hash tags was also measured with those of library services standing at 96.1%, typical calls at 94.4%, promotions/corporate image at 93.0% and news items at 91.4%. Regarding communicating educational topics, 100% of the hash tags were directed towards the students (to encourage topical discussions) while 69.3% were tweets used by lecturers to answer questions and offer clarifications (Guzmán Duque & del Moral Pérez, 2013).

Guzmán Duque and del Moral Pérez (2013) state that a direct relationship existed between the Webometrics ranking of the Universities and their utilisation of Twitter. Universities on a high rank had a corresponding high number of followers and followings on Twitter. The correlation coefficient used in the study was $p<0.05$ while the number of profiles had correlation of 0.204 and the followers stood at 0.169. No direct (proportional) relationship ($p>0.05$) existed between the universities' ages and their overall usage of Twitter. According to Guzmán Duque and del Moral Pérez (2013) there existed a significant relationship (p-value= 0.000 and F= 20.005) between the number of students (in the universities), profile accounts and number of followers of each university.

The Pearson's r correlation coefficient was significant at 0.165 in examining the relationship between the age of the followers (students) and the account numbers (Guzmán Duque & del Moral Pérez, 2013). The Pearson's r coefficient was marked as significant (0.412) in measuring the effect of the number of students (in each university) and the number of Twitter account followers. Thus, the higher the number of students in the university

coincided with an equally greater number of followers on Twitter. In addition, the greater the number of students/followers in the university matched with a significant coefficient of tweets at r=0.147 (Guzmán Duque & del Moral Pérez, 2013). All universities had an average of 2,078 tweets in the survey.

3.1. Recommendations for the future

Telescundaria business managers should interact with groups that specialize in creation of business-oriented relationships and not with social campaigns in the social networks. Partnerships should therefore be created (for example) with established clothing agencies that use social media and are successful in it. The manager should focus on using social media in maintaining active participation that spurns from the corporate to the audience and finally to the product on display. These types of real-life lessons should be taught using e-learning in an interactive partnership between business and education. In a similar manner, universities themselves need to have community-based managers just as businesses do (Atkinson, 2010). These community managers should be in charge of managing the social networks and increasing their overall visibility in the internet (Guzmán Duque & del Moral Pérez, 2013). Visibility can be increased by promoting research products and university publications over the social media networks and the internet in general.

Through the Mexican National System of Distance Education (SINED) universities should seek to motivate community members to participate in academic forums online in a professional manner (Atkinson, 2010). For example, the National Autonomous University of Mexico (UNAM) had 111,377 followers on Twitter (as at March 2012). This was lower than the University of Chile's 119,100 followers. In order to increase the number of followers (i.e. students) as Chile has done, UNAM should use the community manager to optimise the university profiles and increase internal/ external communication in the university and the community (Chapman & Mahlck, 2004). In order to expand the reach of the mode of virtual education, the university should take advantage of all the activities performed by the participants (followers). In terms of social media and its importance, the university should not discriminate between students and lecturers or researchers. Active participation of the members and feedback analysis will help in harnessing the synergies brought about by different participants and sharing constructive knowledge, which is the overall aim of virtual education (Ellison, 2007).

4. Conclusions

This paper found that a direct relationship exists between the Webometrics ranking of the Universities and their utilisation of Twitter and other social media sites. High ranked universities have a corresponding high number of followers and followings on Twitter. In addition, accessibility of the improved practices of distance education over the internet would be used to help academic institutions (especially universities) to enhance the capabilities of students, both during their educational careers and in their professional careers after graduation. This research suggested the most appropriate actions that are necessary for the upgrade of distance education in Latin America.

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