COMPARISON OF WEB 2.0 ON-LINE USAGE BY ON-CAMPUS AND DISTANCE LEARNING STUDENTS

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Abstract
The proliferation of Web 2.0 applications in general and in higher education in particular was the impetus for this survey-based research into practices that online users (students) currently employ when using Web 2.0 sites. As part of the study, the popularity of Web 2.0 technologies and sites among online users at two universities was investigated to determine the extent of access and use as well as the potential threat to users of Web 2.0. The results of this study indicate that the use of Web 2.0 sites is very popular among both on-campus (full-time) and distance learning (part-time) students, but that modes of study and the site of access differ vastly between the groups. The respondents indicated that they regularly visit Web 2.0 sites, and that all of them (100%) post personal information on these sites. Both types of users are acutely aware of the risks associated with the technology and posting of information on these sites, and are alert regarding the possibility of internet theft and phishing attacks. Given the distinctive characteristics of the two groups of students, major differences were observed between the full-time and part-time users in terms of mode of study, influence on studies, and their ranking of potential risks, all of which pose unique academic challenges for both students and educators.

Introduction

Through technologies such as blogs, wikis, and social networking sites, users can easily share information, collaborate on both large and small scale projects, and review, critique and comment on each other's contributions (Miller & King, 2003; Garrison, 2009; Waycott & Sheard, 2011).
More specifically, Waycott and Sheard (2011) raise the following interesting, education-related challenges. How should educators, for instance, assess relevant informal or reflective writing that students create for an unknown audience on the web? And, how can educators successfully manage large scale collaborative activities, for example, when students in a class use a collaborative wiki to construct a new textbook? What academic standards are applicable, and how do educators assess academic standards in this new

technological environment?

We include the following additional challenges: Do full-time and part-time students use Facebook, Twitter, YouTube, social media platforms, etc., differently in social and academic contexts? Do these two groups spend the same time on different technologies? How positive is the impact of using these tools in their studies and social life? Do full-time and part-time users of Web 2.0 technologies perceive potential risks differently?

In this paper we investigate how Web 2.0 usage and learning patterns by on-campus (full-time) and distance learning (part-time) students impact on their studies, levels of risk awareness, and ranking of Web 2.0 risks. This paper draws on empirical data from on-campus (mainly residential) and off-campus (distance learning) students in the field of strategic management in South and southern Africa following largely similar syllabi. The on-campus students were from University of Stellenbosch (US), while the distance learning students were from the Graduate School of Business Leadership at the University of South Africa (UNISA).

Web 2.0 Technologies

Rudman & Steenkamp (2009) describe Web 2.0 applications as four broad modes listed in Table 1.

Table 1

Types of Web 2.0 Technologies

Technology	Examples of Technology
1. Publication: blogs and wikis that can be edited and contribute content by various users in real-time.	Weblogs (blogs), wikis, user-generated media
2. Syndication: This allows for the sharing, consolidation and sourcing of information from various sources.	Really simple syndication (RSS) or newsfeeds, social tagging or bookmarking, folksonomies
3. Collaboration: Users can create communities to collaborate or use tools to collaborate on projects.	Social networking, peer-to-peer networking, Web application program interfaces (APIs)
4. Recombination: Flash-based players, podcasts etc. are easy to create and can be used for various purposes.	Podcasts, mash-ups

Source: Rudman & Steenkamp, 2009.

The use of information technology is fast becoming an integrated and normalized part of higher education (Sloman, 2001; Guri-Rosenblit, 2009). From the 1970s up to the first decade of the 21st century, conditions in

teaching and learning have changed dramatically in a global context, with a struggle to adapt to the demands of both students and institutions of higher learning for greater flexibility (Lockwood & Gooley, 2001). This confirms that teaching in higher education is in a constant state of flux, a transformation process where online education is becoming more prevalent for an increasing number of academic disciplines (see Stephenson, 2001; Anderson, 2007; Oncu & Cakir, 2011). Since the higher education sector in South Africa has kept up with global technological developments, largely as a result of the impact of advances in and accessibility of information and communications technology globally, the necessary architectures and infrastructures are available at the two institutions included in this study. Likewise, the public and private sectors in South Africa generally have technologies that allow part-time students to access and use Web 2.0 technologies, as discussed below.

On-Campus Versus Distance Learning Education

Online education, distance education and, more recently, open distance learning (ODL), in these forms have generally been regarded as the second best alternative to traditional face-to-face university education (Forsyth, Pizzica, Laxton, & Mahony, 2010). This tension between distance and on-campus modes of teaching and learning has created a debate whether distance or online education is as effective as face-to-face campus education (Price, Richardson, & Jelfs, 2007). Face-to-face or traditional campus teaching is considered to be the 'best' option for both student and teacher, as rich cues and meanings necessary for effective communication are taken for granted and ever present.

The University of Stellenbosch is a fully residential or on-campus institution of higher education with about 24,000 full-time students. Teaching is mainly face-to-face, but all undergraduate and graduate management modules are blended, using compulsory online and Web 2.0 activities, business cases and additional reading. Most modules are fused with online assignments, simulations and management "games" like the globally popular Glo-bus.com business simulation and strategy games. (See Duffy, Gilbert, Kennedy, & Kwon, 2002, for a more detailed discussion.)

At UNISA, academic programmes are offered by way of distance learning based on ODL principles, and programme delivery involves the use of textbooks (including e-books and electronic compilation of e-books from different sources), online study manuals that students access directly from the Business School's intranet (EDS - Electronic Delivery System), and continuous two-way interaction between students and academic staff through the EDS. Learning experience requires students to submit assignments, case studies and project reports online as part of a process of formative assessment. Lastly, a compulsory 'block system' requires students to attend a one-week session for all modules in a specific study year, once every semester. This allows for limited lecturer-student face-to-face intervention.

Research Methodology

Questionnaire Design and Administration

A literature review was undertaken to identify existing research on users' behaviour with regard to Web 2.0 technologies. Two surveys were conducted among third-year strategic management students in the Faculty of Economic and Management Sciences at the University of Stellenbosch (US), and first-year graduate strategic management students at the Graduate School of Business Leadership at the University of South Africa (UNISA) to identify, assess and compare the practices they employ when using Web 2.0 applications. The questionnaire is based on current practices employed by users identified in research studies conducted internationally, and consists of three parts, each part containing questions to:

1. Identify users' current Web 2.0 usage patterns.

2. Determine how the respondents manage their Web 2.0 identity and the impact on their studies.

3. Evaluate the users' awareness of the risks relating to Web 2.0 and how they manage these risks.

The questionnaire was reviewed by lecturers in the fields of strategic management and of auditing and information systems, a statistician and ten volunteers from the target student populations. Reviewes considered the questionnaire in terms of logic and intelligibility. Minor amendments were made on the basis of their feedback. The questionnaire was web-based and students were requested to complete the questionnaire in their own time during November, 2011. Two follow-up e-mails were sent to encourage students to complete the questionnaire. To encourage completion of the questionnaire, it was kept as short as possible. The responses were cleaned and analysed, to eliminate instances where respondents clearly did not attempt to answer the questions. The answers to the open-ended questions were analysed and summarised in similar categories.

Data Collection

The findings presented in this paper are based on empirical data from the residential full-time students of the University of Stellenbosch and the distance learning or part-time students from the University of South Africa (UNISA). The aims, content and assessment demands were held constant in both cases. Respondents involved in two different modes of study were compared:

- US group: full-time final-year undergraduate students with on-campus access to WebCT, and

- UNISA group: part-time distance education study with limited contact sessions and study groups in various cities, regions and countries.

The US group is supported mostly face-to-face but also online, widely known as integrated or blended learning. The UNISA group is supported wholly online with limited face-to-face lecturer-student contact.

Target Population and Response Rates
South African university students are currently all connected Internet users because they all have access to computer facilities on campus and/or at home as well as at work in the case of part-time students (Rudman & Steenkamp, 2009). Table 2 gives an indication of the respective populations, their response rates and the overall average response rate for the study.

Table 2

Populations and Response Rates of On-campus (Full-Time) and Distance Learning (Part-Time) Students

	Population	Response	Response Rate	Ave Rate
US	275	91	33.1%	22.4%
UNISA	385	78	20.1%	

In total, 660 invitations to participate in the study were sent to US and UNISA Strategic Management students. Altogether 169 students completed the questionnaire online. The overall response rate of 22.4% is considered sufficient to obtain reliable conclusions (Rudman & Steenkamp, 2009).

Findings and Discussion

This part of the study describes the empirical differences between the profiles and perceptions of the on-campus (US) and distance learning (UNISA) users of Web 2.0 sites. The differences are compared in terms of the following aspects and domains: differences in sex, age and racial diversity (Figures 1, 2 and 3), online profiling (Figure 4), modes of study (Figure 5), location or site of Internet access (Figure 6), regularity of Web 2.0 access (Figure 7), time spent on accessing Web 2.0 sites (Figure 8), and influence of Web 2.0 activity on studies (Figure 9). Perceptions on risk and ranking of risks when accessing Web 2.0 sites are reflected in Table 3. The empirical data for both groups are graphically presented with a brief discussion of the information in each figure and/or table.

Differences in Sex
Figure 1 shows that females were the major respondents in the US group (58%), compared to the UNISA group (37%). The male respondents for the two groups were 42% and 63% respectively.
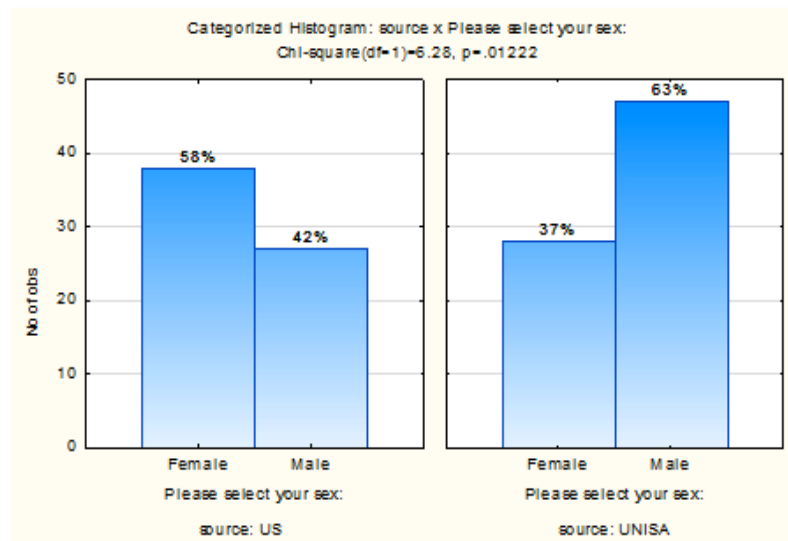
Figure 1. Sex F/M.

Racial Diversity

The racial diversity is clear from Figure 2, where 65% of the respondents in the US group were white, while only 9% in the UNISA group were white. Seventy percent of the UNISA group were black African students, and only 3% of the US students were black. Mixed race (Coloured) and Indian respondents were marginally represented in this study.
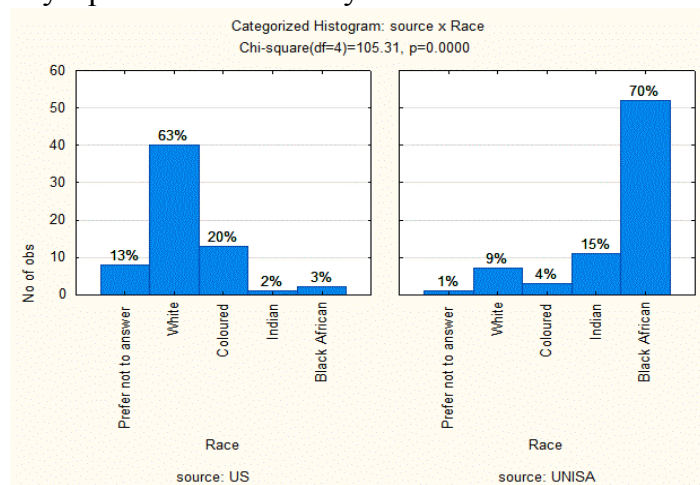

Figure 2. Racial diversity.

Differences in Age of Both Groups
The results from the study show that the US full-time on-campus students are on average significantly younger than the UNISA part-time distance-learning students. The average age in the on-campus group was 21 years, while the average age of the distance-learning students was 37 years. Only 11 students of the US group were older than 30 years, whereas only 7 students of the UNISA group were younger than 30 years. The difference in the average age of the two groups is largely due to the fact that the US group comprises full-time final-year undergraduate students normally entering university straight after school, whereas the UNISA group comprised part-time (mostly employed) first-year graduate (masters) students in strategic management.
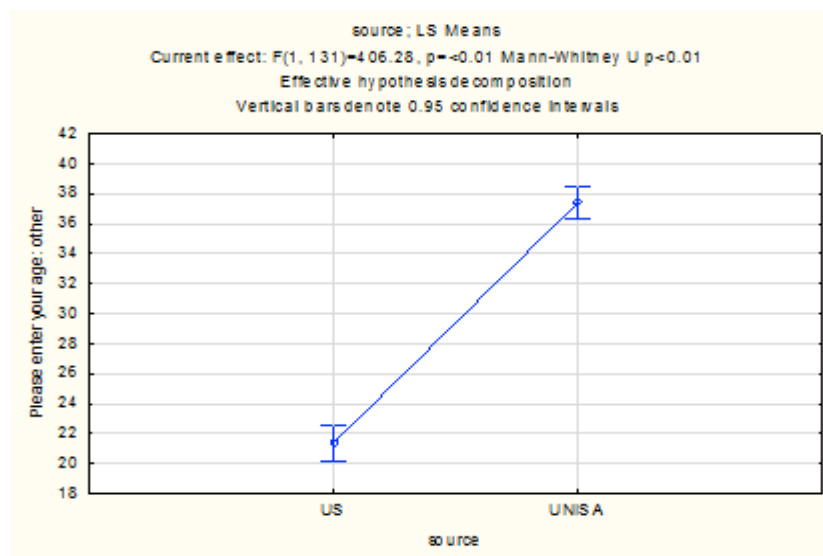

Figure 3. Age profiling.

Differences in Online Profiling
All respondents (100%) indicated that they created online profiles on Web 2.0 sites such as social networking and sharing sites. The respondents' personal information that they posted on their online profiles appears in Figure 4. **(**Figure 4 also indicates the differences between the frequency of the posted online information.)
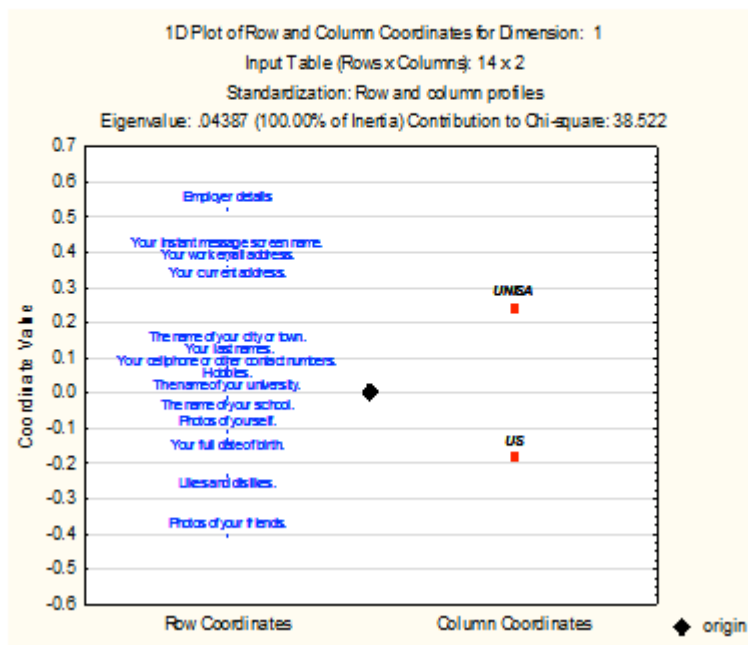
8

Figure 4. Differences in online profiles of US and UNISA users.

Responses relating to postings of employer and work details, name of instant message screen, and the current addresses of UNISA students were much more frequent than those of US students, while information on likes and dislikes and photos of friends were much more prevalent in the case of US users. The frequency of general information about their domicile, last names, mobile numbers, name of university, etc., was about the same for both groups. These findings are not surprising, given that 94% of US students studied full time (on-campus) and were obviously not employed, whereas 92% of UNISA students indicated that they were employed, as illustrated in Figure 5 below, which explain the relative emphasis of the two groups in terms of interest and type of information posted.

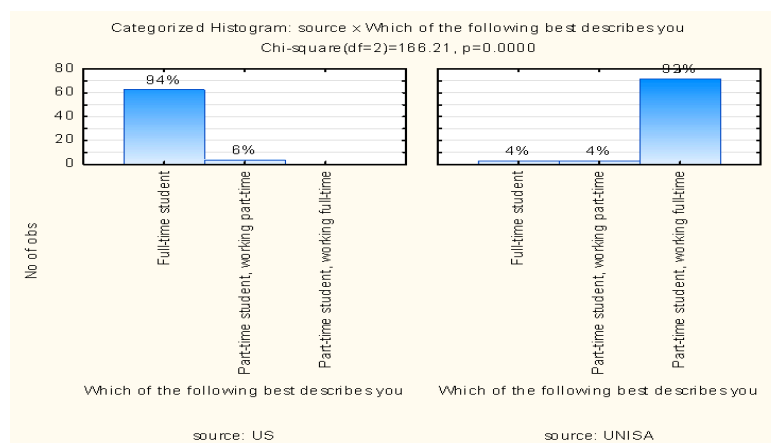## Modes and Sites of Internet Access

Figure 5. Comparison of modes of study.

As stated, due to the fact that the majority of full-time US students (94%) were not formally employed compared to the part-time UNISA students who were employed (92%), it can be concluded that the perceptions of and approach to factors like employer addresses and detail, time for Web 2.0 access, time for social activities, and using employer facilities instead of university facilities (as confirmed in Figure 6 below) would be appreciably different.
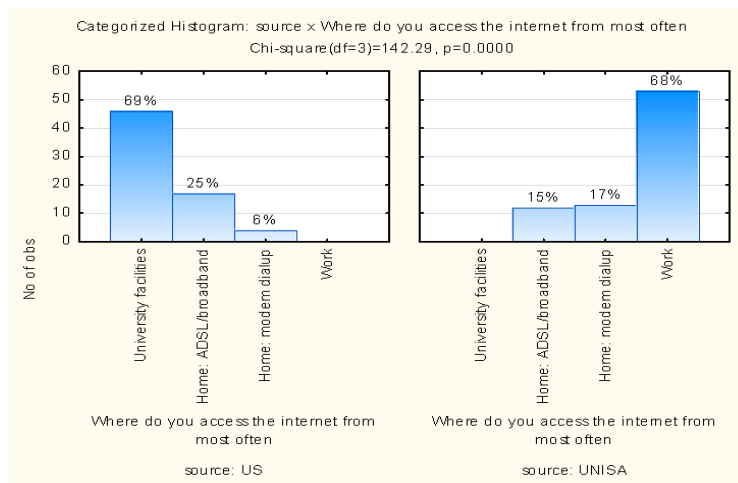

Figure 6. Sites of Internet access.

Sixty-nine percent of the full-time US on-campus users accessed the Web 2.0 sites from university facilities, while the same percentage of UNISA students accessed the same sites from work. As previously stated, this makes sense as 94% of the UNISA students are employed full time and spent most of their days in their working environment. It also makes sense that both groups would make use of more than one site to access Internet facilities, given their specific situations.

Regularity of Web 2.0 Access

Figure 7 shows that full-time US students access the Web 2.0 sites more than their part-time UNISA counterparts, but the difference is not significant. However, it shows that both groups are actively involved in the use of these technologies and that they both derive benefits from these access periods. Both Howe (2008) and Carr (2008) concur that availability, access and use of Web 2.0 technologies have changed behaviours that have the potential to spur significant changes in how people conduct themselves – socially, at work and in studying.
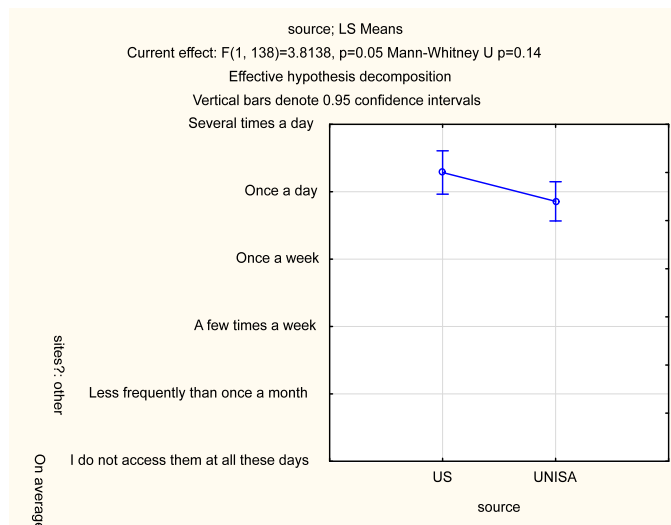
Figure 7. Regularity of Web 2.0 use.

Figure 8 indicates that both groups spent about 3-4 hours per week on these sites. Detail as to the proportion of social compared to academic use was not established.
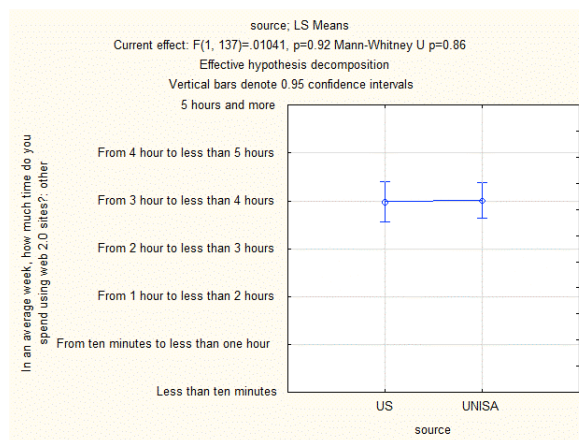

Figure 8. Time spent per week on accessing Web 2.0 sites.

Positive Influence of Web 2.0 on Studies
More than 80% of the part-time (UNISA) students (82%) experienced a positive influence (or investment) on their studies through the use of Web 2.0, while 54% of the US students agreed that they experienced a positive impact on their studies. While the reasons may vary, the following aspects might explain the differences in this regard (see Figure 9).

First, part-time students are believed to be more focused and committed to access these facilities with the object of adding value to their study efforts due to the relatively limited time they have for studies as a result of being employed, as well as not having the benefit of regular on-campus contact and interaction with lecturers. In fact, these students rely almost exclusively on electronic network communication as a substitute for direct student-lecturer interaction in the case of full-time students.

Second, full-time students, however, have the added benefit of face-to-face lectures, extensive and immediate on-campus contact and interaction with their lecturers as and when required, as well as access to the on-campus Web-CT, which in a way provides the opportunity for and facilitates on-campus communication with students.
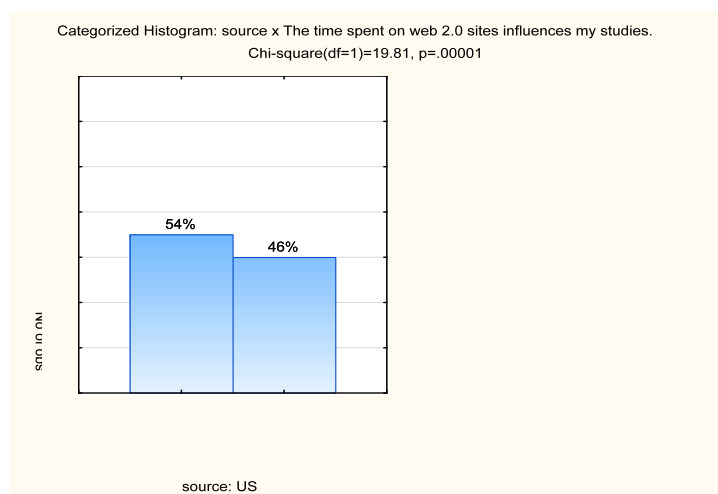

Categorized Histogram: source x The time spent on web 2.0 sites influences my studies.
Chi-square(df=1)=19.81, p=.00001

Figure 9. Influence of Web 2.0 on studies.

Institutional response to evolving technologies and user needs will largely determine the competitive advantage of universities in general and business schools in particular as they face ever demanding future educational challenges.

Level of Risk Awareness and Ranking of Risks
Both groups of students were aware of the risks pertaining to Web 2.0 access and the possibility that access may open themselves up to incidents of exposing information to global user groups or incidents of fraud, or that their passwords or access details including secure online personal and other activities might be visible to other users, with the potential of abuse. Potential consequences of these possibilities could be extremely serious and harmful. Table 3 contains

the average ratings for seven identified risks by both groups of students, where 1 was the most significant and 7 the least significant risk for a user.

Table 3

Average Ranking of Risks by US and UNISA Students

Risk	US - Average ranking	UNISA - Average ranking
Electronic intrusion	2.8	2.3
Phishing attacks	2.8	1.9
Breach of security controls	2.5	2.5
Information leakage	2.6	2.5
Unproductive time	4.2	3.1
Content errors on websites	4.0	3.3
Denial of service	4.0	3.5
A ranking of 1 represents the most significant risk and a ranking of 7 is the least significant.		

The most significant risk, according to the US users, was the possible breach of security controls on the different websites, while the UNISA students indicated phishing attacks as the major risk factor. Information leakage was also indicated as a direct risk factor for on-campus students, while embedded electronic intrusions like worms and zombie bots were rated second by UNISA students. Unproductive time, content errors on websites and the unavailability of services (i.e., denial of service problems) were rated relatively low by both groups of students.

Summary and Conclusion

The vast majority of the respondents indicated that they fully engaged with Web 2.0 sites through amending and submitting content, while two-thirds of all respondents indicated that they accessed Web 2.0 sites at least once a day and that social networking sites were accessed frequently. A major finding in the above regard is that differences in sex, age and racial diversity had little if any influence on accessing and using Web 2.0 technologies by the two groups of respondents despite, for example, significant age differences, which would imply that availability and access are much more important than selected demographic variables. This could mean that educators may need to rather focus on curriculum content and objectives of diversity- and culturally-sensitive disciplines than on the diversity and related attributes of potential users. As expected, the major differences between the two groups lay in the

unique needs of the two groups and the purpose of accessing the available technologies, given the unique circumstances involved.

Although limited to the response of students in strategic management at two different levels (final-year undergraduate and first-year graduate students) at two structurally different institutions, the research showed that although both groups of students had positive experiences regarding their academic studies through Web 2.0 involvement, the positive experience of part-time students was much greater than that of their full-time counterparts, basically for reasons such as proximity, lack of direct on-campus interaction with lecturers, and being employed. The compelling conclusion in this regard is that apart from the fact that all academics should as a rule be conversant with new technological developments, academics involved in distance education should be at the forefront concerning curricula that are amenable to network communication. The critical question for educators is: How can I overcome and even capitalise on the absence of face-to-face lecturing by the innovative use of available as well as evolving communications technologies?

As far as the potential risks of Web 2.0 technologies are concerned, the respondents in both groups were acutely aware of the risks posed by sharing too much information on Web2.0 sites. As previously stated, all the respondents (100%) created online profiles, communicating personal information. Most respondents indicated that they did take some measures to protect their online identity. Considerable differences were found between the perceptions of full-time and part-time students in terms of their ranking of potential risk through accessing Web 2.0 sites. Breach of security controls on the websites, phising attacks and embedded electronic intrusions were perceived to be the major current risk factors for both groups.

In summary, this exploratory research has revealed new and challenging insights with regard to online use of Web 2.0 technologies that institutional management, educators and students should be aware of. For institutional management, scenario planning and continuous cost-benefit analyses should be done to pre-emptively monitor academic and related viability of new emerging technologies to remain at the frontiers of academic development and effective programme delivery. This would apply to both on-campus and distance learning. For educators, the challenge of being able to adapt curricula and capitalise on the availability of new, evolving technologies will remain a continuous challenge, aspects that could enhance the competitive advantage as well as the image of an institution. For students, the optimal use of new technologies to enhance their studies, as well as selecting the institution that can deliver on these expectations will become increasingly important in future. In closing, institutions of higher education should be at the cutting edge of new developments in Web 2.0 and related technologies to ensure that curricula and learning experiences remain relevant and market-related, also in the interests of the broader society.

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