

Evaluating the usability of an academic marketing department's website from a marketing student's perspective

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ABSTRACT

Usability testing plays an important role in improving the effectiveness of online information retrieval from a user's point of view. The International Standards Organisation defines usability as the effectiveness, efficiency and satisfaction with which a specified set of users can achieve a specified set of tasks in a particular environment. In a university context, students from different disciplines may have very different needs when it comes to the information they expect from the university's website. This paper investigates the effectiveness, efficiency and satisfaction – that is the usability – of the website of the Department of Marketing and Retail Management (DMRM) from a marketing student's perspective. The objective of the study is to determine best practice guidelines for the development of an improved marketing department website for the University of South Africa.

INTRODUCTION

The University of South Africa (Unisa) is one of the world's largest 'mega universities', and services a population of more than 350 000 students through means of distance education. The Department of Marketing and Retail Management (DMRM) is one of six academic departments within the School of Management Sciences, which in turn is one of three schools within the College of Economic and Management Sciences, the largest college within Unisa.

One of the challenges facing the DMRM is to adapt the existing departmental website to better address the needs of the department's two primary audiences, namely current and prospective marketing students, as identified by Gullikson et al, (1999). Research in Australia has found that university websites do not meet student

information needs as much 40–60% of the time, and generally scored low on usability (Alexander, 2003).

In the case of the DMRM's existing website, this has been developed without any serious planning or consideration of the needs of these two main audiences and without taking any usability criteria into account. Usability is defined by the International Standards Organisation as the "extent to which a product [in this case a website] can be used by specified users to achieve specified goals with efficiency, effectiveness and satisfaction in a specified context of use" (Anon, HREF1). There is general consensus within the DMRM (i.e. it is the view of the lecturing staff) that the website is not student directed as it does not provide students with the information that they need nor is it a very user-friendly site.

The purpose of this study is therefore to initiate the process of following a more structured and student-orientated approach to redeveloping the DMRM's website, incorporating usability principles. This approach will ultimately follow a *multistaged path* to determining the shortcomings of the existing website and to propose content and usability guidelines for the new website. This multistaged approach will incorporate the following:

1. A heuristic evaluation of the current website by the authors to determine content and usability deficiencies (stage one);
2. A questionnaire-based usability evaluation of the current website by a random sample of existing marketing students to gauge their views on the content and usability deficiencies of the current website (stage two);
3. Lab-based usability studies of students' and lecturers' interactions with the current website again to determine content and usability shortcomings (stage three);
4. A tool-based automated evaluation of the website to determine internal (or underlying) attributes of the website such as textual duplicates of links embedded in images, the number of HTML files, HTML page sizes, the sizes of images, download time, browser compatibility, the number of broken or bad links, and other technical deficiencies found within the editing language used to create the web pages. (stage four); and
5. Consultation with students' and lecturers' focus groups to determine what information and services they believe the website should contain and what the weaknesses are with the current website (stage five).

This report addresses only stage one.

LITERATURE SURVEY

Although usability studies are becoming more commonplace, the extent of formal

research into the usability of university websites is still somewhat limited. Here it should be pointed out that such research can be done from two different perspectives – an academic perspective and a promotional and informative perspective.

In the first instance, cognisance is taken of the fact that universities are increasingly using the web to support the delivery of academic learning to their students. This would include the actual delivery of content over the web, the support of this content with links to relevant information available on the web, the use of online assessment tools, interactive discussion forums, course administration available online, and more. Usually this type of academic use of the web is very subject specific and is supported by learning management systems such as Blackboard (www.blackboard.com) and Moodle (www.moodle.org) or bespoke systems. Unisa, for example, has its own proprietary system called myUnisa.

In the second instance, the focus is more promotional and is aimed at informing the student about the department (or school or college) and what qualifications and subjects they offer, and why they should study with the university in question (and more specifically, within that particular department).

It is this second perspective that is the focus of this study. This is not to say that the department is not concerned with the learning environment (i.e. myUnisa) and whether or not is being used effectively by lecturers and students alike. It is just that the current emphasis is on improving the DMRM's public presence and attracting a higher quality of student to the department, as well as helping them make an informed decision as to whether the department meets their needs. A study of the usability of the learning environment at a departmental level within Unisa is seen as a necessary but separate study.

Recent academic usability studies

Mustafa and Al-Zoua'bi undertook a 2008 study into the usability of academic websites in Jordan. This is one of the most recent studies in this field and it provides a useful departure point for this particular study. These two authors draw on the research done by Nielsen; Keevil; Chiew and Salim; Akoglu; Kirakowski; Harms and Schweibenz, Kantner and Rosenbaum; Polson et al.; <AQ: not in refs> Lewis et al.; and Perlman, <AQ: only Permian in refs> among others. It is especially the work of Chiew and Salim (2003) that is at the core of their study. <AQ:

Chiew and Salim (2003) developed an instrument for evaluating the usability of websites which they called WEBUSE (standing for WEBSITE USABILITY Evaluation). This instrument, in turn, draws on the work of others such as Mack and Nielsen; the Human Factors Research Group; the National Institute of Standards and Technology; Bobby (a web accessibility research tool); and Benbunan-Fich, who introduced protocol analysis, a "thinking aloud" method based on the direct observation of real interaction between user and system. Thus the study of Mustafa and Al-Zoua'bi (2008) is grounded on an extensive range of earlier work and thus serves as an excellent platform from which to undertake an evaluation of the DMRM website.

What is more, the Mustafa and Al-Zoua'bi (2008) study is specifically focused on evaluating the websites of nine different Jordanian universities. As part of their literature survey they also examined the work done on evaluating university websites by researchers such as Pierce; Nielsen and Molich; Smith et al., Gullikson et al., as well as Corry, Frick and Hansen. This focus on academic websites makes their methodology and evaluation instrument extremely relevant for this current study.

THE MEASUREMENT INSTRUMENT

Mustafa and Al-Zoua'bi (2008) developed a list of 23 usability evaluation criteria based on the earlier work of Chiew and Salim (2003). This list is outlined below:

1. **Display space** of the website should not be divided into many small sections, as this affects the comfortable reading experience of the users. This implies that the number of frames used should be limited.
2. Users should not have to **scroll left and right** to read the content of the website because this will cause reading difficulty.
3. The website should be **accessible** to users with different browser capabilities. Avoid using technologies that might cause users' systems to crash when visiting the website. Thorough system testing is required before the website is launched to the public.
4. The website should not contain elements that are **distracting or irritating** to users, such as scrolling text, marquees and constant running animations.
5. The website should contain no **orphan pages**. Every page should contain at least one link-up to the home page and some indication of current page location, such as a site map or menu.
6. The **placement and content of the site map or menu** should be consistent so that users can easily recognise them and identify the targeted link.
7. **Information can be easily searched**. For a large website, search features should be provided.
8. Users should be able to easily differentiate links that have been visited and those that have not. Standard **link colours** (red for visited links and blue for not-visited links) should be used.
9. There should be **up-to-date information** on the site. Outdated pages should be replaced.

10. **Download time** should not exceed 15 seconds as users do not want to wait too long to download a file or access a page.
11. Users should be allowed to use back button to bring them to the previous page. Pressing **back button** accounts for 30–37% of all navigational acts.
12. **Do not open too many new browser windows** as that will obstruct the users to trace their current location or status in the website.
13. The website should **respond according to users' expectations**. This includes the standard use of GUI widgets such as using radio buttons for selecting one among many options.
14. Reduce elements that look like **web advertising** as too many advertisements will irritate users.
15. Information should be presented in natural and logical order, which follows the standard **real-world convention**.
16. Use meaningful words to describe **hyperlink destinations**. This will save the users time by not going to unnecessary pages.
17. The website design, including page layout, use of colours and placement of page elements, should be consistent to give users a standard look and feel of the website (i.e. **consistent design**)
18. **Use of colours** should facilitate good contrast and page elements that will attract users' attention to the main information of the page rather than distracting them.
19. Enhance readability of a page by avoiding blocks of text. Instead, the **organisation of the information** in the form of the text should use headlines, sub-headlines, bulleted lists, highlighted keywords, short paragraphs, and so on. Headlines can be used to highlight the content of a section or a page to give users a brief idea about the section or page.
20. Provide sufficient **navigational aids** to help users move around in the website. This includes providing links at the bottom of a page to allow users to go to the top of the page if it is long.
21. Provide students with **registration information** in order to enable them to either register online or handle the process of registration.
22. Provide students with **faculty information** in order to enable them to choose their degrees and modules carefully.
23. Provide **instructor information** to enable students to learn more about the lecturers that will be teaching and mentoring them

The first 20 of these criteria come from the work of Chiew and Salim (2003), while the last three were added by Mustafa and Al-Zoua'bi (2008).

These 23 criteria were then classified into five categories by Mustafa and Al-Zoua'bi (2008) (Chiew and Salim had only four categories, with Mustafa and Al-Zoua'bi adding the last category). The five categories are:

1. Content, organisation and readability
2. Navigation and links
3. User interface design
4. Performance and effectiveness
5. Educational information

The criteria were then grouped into categories as outlined in Table 1. Chiew and Salim (2003) argued that any one criterion could fall into more than one category, suggesting that the categories are related to each other and cannot be evaluated independently of each other.

Table 1: Classification of usability evaluation criteria into usability categories

No.	Usability criteria	Usability categories				
		Content, organisations and readability	Navigation and links	User interface design	Performance and effectiveness	Educational information
1	Display space	X		X	X	
2	Scroll left and right				X	
3	Accessible				X	
4	Distracting or irritating elements			X		
5	Orphan page		X			
6	Placement and content of site map or menu		X			
7	Information search		X		X	
8	Link colours		X	X	X	
9	Up-to-date information	X				
10	Download time				X	
11	Back button				X	
12	Open new browser windows		X		X	
13	Respond according to users' expectations		X		X	
14	Web advertising	X		X	X	
15	Follow real-world conventions	X		X	X	
16	Hyperlink description	X	X		X	
17	Consistent design			X	X	
18	Use of colour			X		
19	Organisation of information	X			X	



20	Navigational aids		X		X	
21	Registration information					X
22	Faculties information					X
23	Instructors information					X

Sources: Chiew & Salim (2003); Mustafa & Al-Zoua'bi (2008)

The final step in the process was to formulate six questions per category based on the evaluation criteria. The questions thus formulated per evaluation criteria are highlighted below:

Category 1: Questions for evaluating content, organisation and readability

- This website contains most of my interest material and topics, and they are up to date.
- I can easily find what I want at this website.
- The content of this website is well organised.
- Reading content at this website is easy.
- I am comfortable and familiar with the language used.
- I need not scroll left and right when reading at this website.

Category 2: Questions for evaluating navigation and links

- I can easily know where I am at this website.
- This website provides useful cues and links for me to get the desired information.
- It is easy to move around at this website by using the links or back button of the browser.
- The links at this website are well maintained and updated.
- The website does not open too many new browser windows when I am moving around.
- Placement of links or menu is standard throughout the website and I can easily recognise them.

Category 3: Questions for evaluating user interface design

- This website's interface design is attractive.
- I am comfortable with the colours used at this website.
- This website contains no feature that irritates me such as scrolling or blinking text and looping animations.
- This website has a consistent feel and look.
- This website does not contain too many web advertisements.
- The design of the website makes sense, and it is easy to learn how to use it.

Category 4: Questions for evaluating performance and effectiveness

- I need not wait too long to download a file or open a page.
- I can easily distinguish between visited and not-visited links.
- I can access this website most of the time.
- This website responds to my actions as expected.
- It is efficient to use this website.
- This website always provides clear and useful messages when I don't know how to proceed.

Category 5: Questions for evaluating education information

- I can easily access the registration page, and I can easily register for semester.
- When I need to register, the website provides information about what courses are offered and who is teaching them.

- This website is regularly updated in terms of personnel and course information in order to keep their information up to date.
- I can easily contact my instructors because this website provides information about their office location, hours and e-mail addresses.
- This website suffers from problems during the registration process for students.
- I know whom I can contact for more information about anything in this website.

EVALUATION METRICS

Chiew and Salim (2003) then developed a quantitative metric for each category. This is determined as follows:

1. For each question, the respondent has five options to select from, which are outlined in Table 2.

Table 2: Options for the WEBUSE instrument and assigned weights

Option	Strongly agree	Agree	Fair	Disagree	Strongly disagree
Weighting	1.00	0.75	0.50	0.25	0.00

2. A usability score is then calculated for each category. This calculation is done as follows:

$$\text{Score for each category} = \frac{\sum (\text{Weighing for each question in category})}{\text{Number of questions in the categories}}$$

3. Finally, a result is obtained for the website as a whole and is calculated as follows:

$$\text{Overall website score} = \frac{\sum (\text{Overall score for each category})}{\text{Number of categories}}$$

Table 3 shows the usability scores per category and the corresponding usability levels, while table 4 would serve as a final summary of the five categories, highlighting

their respective weightings and usability levels. Clearly, table 4 will only be completed at the end of the survey.

Table 3: Usability scores and corresponding usability levels

Usability scores	Usability level
0 <= x <= 0.2	Bad
0.2 < x <= 0.4	Poor
0.4 < x <= 0.6	Moderate
0.6 < x <= 0.8	Good
0.8 < x <= 1.0	Excellent

Ultimately, the overall usability score provides one with a measure of the usability of the site as a whole, while the category scores provide an indication of the usability score per category. This last-mentioned score provides some indication as to where a problem may exist within a website.

The methodology proposed by Chiew and Salim (2003); and Mustafa and Al-Zoua’bi (2008) is fundamentally a software-driven survey methodology. The intention is to get a representative number of typical users (e.g. marketing students) to evaluate the website using this scoring

system outlined above. At the end of the survey, the results of the questionnaire will highlight the usability – or lack thereof – of the website in question.

The drawback of this survey method is that, unless students are invited to actually provide

feedback about errors and site problems, the result is ultimately only a guiding metric and does not provide insight into the practical shortcomings of the website.

Table 4: Summary of the usability categories together with their scores and corresponding usability levels

Category	Score	Usability level
Content, organisation, readability		
Navigation and links		
User interface and design		
Performance and effectiveness		
Educational information		
Overall usability score		

METHODOLOGY

This study uses a similar methodology as that used by Chiew and Salim (2003), and Mustafa and Al-Zoua'bi (2008), except that instead of implementing it as a survey instrument aimed at students, the method adopts a heuristic evaluation of the DMRM's website. A heuristic evaluation involves having specialists evaluate a website based on certain usability rules or heuristics (Nielsen, 1994). In this study the categories and questions identified by Mustafa and Al-Zoua'bi serve as the heuristics (i.e. the usability rules) for the evaluation, while the authors served as the expert evaluators.¹ Table 7 at the end of this article represents the heuristic checklist used by the experts for this study. The major difference between this list and the one used by the previous authors is that provision is made for the in-depth input regarding the usability shortcomings of the DMRM's website. The authors each evaluated the site independently and then collaborated to synthesise their findings into a single report. The authors recognise that objectivity can be a fundamental flaw in conducting a heuristic

investigation, therefore all attempts were made to maintain a level of objectivity in every stage of the study.

It is important to reiterate that this study is only one part of a multistage process. The second stage, as was mentioned earlier, will conduct a similar usability survey of the website as was used by Mustafa and Al-Zoua'bi (2008). The intention is then to compare the results of the survey method with the results of this heuristic evaluation, both being based on the same categories and questions proposed by Mustafa and Al-Zoua'bi (2008), with the expectation that the heuristic evaluation will provide similar scores but more meaningful insight into the usability problems and errors associated with the site.

FINDINGS

After the two evaluators had been through the process of evaluating the DMRM website, findings were compared and notes examined for the scores in each of the five categories. Scores are represented in table 5.

¹ The two authors of this study are both experienced marketing lecturers within the DMRM, as well as having extensive experience in web development and usability issues.

Table 5: Final usability scores for each category

Category	Evaluator 1	Evaluator 2
Category 1: Questions for evaluating content, organisation and readability	.375	.5
Category 2: Questions for evaluating navigation and links	.75	.66
Category 3: Questions for evaluating user interface design	.83	.79
Category 4: Questions for evaluating performance and effectiveness	.66	.63
Category 5: Questions for evaluating education information	.21	.21

Findings with regard to the process

In all except two instances the evaluators' scores for individual questions differed by no more than one increment on the scale (0.5 vs 0.25 or 1 vs 0.75, for example). This suggests that the evaluators were largely in agreement as to whether the DMRM website was good, bad or indifferent regarding a particular usability aspect thereof. During the post-evaluation discussion, however, the evaluators did reach consensus about what the scores should be.

With regard to the two instances where the scores differed significantly, the discussion between the evaluators found that the marked difference in scores was due to the interpretation of the question rather than opinion of the DMRM website. This suggests that the entire set of questions comprising the measurement instrument

should be revisited in order to create a more robust set of heuristics for academic departmental website evaluation. Certain of the questions are a legacy from the original instrument created by Chiew and Salim (2003), which addressed generic websites and not academic sites specifically (e.g. question 3.5 regarding web advertisements). These questions need to be revisited from an academic website point of view.

Some of the questions regarding the performance and effectiveness of the DMRM website could not be evaluated due to the fact that the evaluation took place on an intranet, thus making download time and bandwidth excellent.

Findings with regard to the website

The final score for the website by each evaluator is indicated in table 6.

Table 6: Final scores for usability of website for both evaluators

Evaluator	Score
Evaluator 1	.565
Evaluator 2	.558
Average	.561

This places the website firmly in the 'moderate' category according to table 3. A factor that must be taken into account when considering these scores is that the DMRM website is nested within the Unisa website, making it impossible to evaluate the DMRM website entirely in isolation. In some instances the overall Unisa website

influenced the evaluation of the DMRM's website positively while in other cases it detracted from the site. This highlights an important issue that must be taken into account when performing further studies. Academic websites that are completely separate from the overall university website can be evaluated in isolation and would

reflect a much more objective and accurate score, while nested sites such as the DMRM must always be evaluated in the light of the overall site and seen as part thereof.

The overall look and feel of the DMRM website is consistent with the rest of the Unisa site and as such is acceptable. It conveys the same branding message that the Unisa corporate website is communicating. The navigation of the DMRM website is poor and this is also a reflection on the corporate website. Navigating to the DMRM site from the corporate website was a task in itself that was confused by the terminology used on the corporate website, and had a marked influence on the evaluation of the DMRM website. The DMRM content is decidedly

poor, being out of date and shallow (there is, for example, no information provided concerning the modules beyond the module name and code).

CONCLUSION AND RECOMMENDATIONS

The next step would be to compare the findings of this heuristic evaluation with those of students regarding the evaluation of the DMRM website. It is recommended that the instrument be revisited regarding the questions used. Possibly a card sort method should be employed to re-evaluate the questions and category allocation.

Further studies must consider whether or not the academic departmental website is a unique site and is thus separate from the

corporate university website. If this is indeed the case then the website can be independently evaluated. If, however, the website is nested within the corporate university site, then evaluation must always consider the larger university site and its influences on the autonomy of the departmental website. The DMRM, for example, is limited in its ability to use a different look and feel from the corporate Unisa website.

Table 7: Heuristics used for study

Category and questions	Score
Category 1: Questions for evaluating content, organisation and readability	
1.1 This website contains most of my interest material and topics and they are up to date.	
Comments:	
1.2 I can easily find what I want at this website.	
Comments:	
1.3 The content of this website is well organised.	
Comments:	
1.4 Reading content at this website is easy.	
Comments:	
1.5 I am comfortable and familiar with the language used.	
Comments:	

1.6 I need not scroll left and right when reading at this website.	
Comments:	
Category 2: Questions for evaluating navigation and links	
2.1 I can easily know where I am at this website.	
Comments:	
2.2 This website provides useful cues and links for me to get the desired information.	
Comments:	
2.3 It is easy to move around at this website by using the links or back button of the browser.	
Comments:	
2.4 The links at this website are well maintained and updated.	
Comments:	
2.5 The website does not open too many new browser windows when I am moving around.	
Comments:	
2.6 Placement of links or menu is standard throughout the website and I can easily recognise them.	
Comments:	
Category 3: Questions for evaluating user interface design	
3.1 This website's interface design is attractive.	
Comments:	
3.2 I am comfortable with the colours used at this website.	
Comments:	
3.3 This website contains no feature that irritates me such as scrolling or blinking text and looping animations.	
Comments:	

3.4 This website has a consistent feel and look.	
Comments:	
3.5 This website does not contain too many web advertisements.	
Comments:	
3.6 The design of the website makes sense and it is easy to learn how to use it.	
Comments:	
Category 4: Questions for evaluating performance and effectiveness	
4.1 I need not wait too long to download a file or open a page.	
Comments:	
4.2 I can easily distinguish between visited and not-visited links.	
Comments:	
4.3 I can access this website most of the time.	
Comments:	
4.4 This website responds to my actions as expected.	
Comments:	
4.5 It is efficient to use this website.	
Comments:	
4.6 This website always provides clear and useful messages when I don't know how to proceed.	
Comments:	
Category 5: Questions for evaluating education information	
5.1 I can easily access the registration page, and I can easily register for semester.	
Comments:	

5.2 When I need to register, the website provides information about what the courses are offered and who is teaching them.	
Comments:	
5.3 This website is regularly updated in terms of personnel and course information in order to keep their information up to date.	
Comments:	
5.4 I can easily contact my instructors because this website provides information about their office location, hours and e-mail addresses.	
Comments:	
5.5 This website suffers from problems during the registration process for students.	
Comments:	
5.6 I know whom I can contact for more information about anything in this website.	
Comments:	

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