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# Assessing the usability of online grocery systems to improve customer satisfaction and uptake

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# Assessing the Usability of Online Grocery Systems to Improve Customer Satisfaction and Uptake

A thesis submitted in fulfilment of the

requirements for the award of the degree

**DOCTOR OF PHILOSOPHY**

from

THE UNIVERSITY OF WOLLONGONG

by

**MARK BRUCE FREEMAN**

BInfoTech (Honours Class I)

School of Information Technology and Computer Science

2006

# Acknowledgements

*"Ooh, they have the Internet on computers now" – Homer Simpson*

I would like to acknowledge those who have helped me to achieve my goals.

Firstly, I would like to thank Associate Professor Peter Hyland for all of his help, guidance and support throughout my thesis. From our initial meeting, Peter has challenged me to look at problems from a different perspective, which has ultimately led me to become a better researcher.

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Finally, to my extended family and my colleges who have offered support and words of encouragement and advice throughout my journey, including a special thanks to Associate Professor Lejla Vrazalic, Associate Professor Ken Russell (Statistical Consulting Service) and Matthew Bowden. Thank you.

# Abstract

This thesis assesses the usability of Online Grocery Systems (OGSs) in order to improve both customer satisfaction and uptake. This assessment was conducted in three phases using two different types of Usability Evaluation Methods (UEMs). **Phase 1** was conducted using an expert review of 14 OGSs through heuristic evaluations and checklist/framework evaluations. **Phase 2** was conducted using usability testing at one OGS that was deemed to be (based on the expert review in **Phase 1**) an OGS with good usability. The expert review was conducted by 54 participants with varying levels of online shopping experience.

The results from the expert review (**Phase 1**) showed that the usability of the major Australian OGSs was comparable with those from other countries. The results from the usability testing (**Phase 2**) revealed usability issues with the OGS identified as having good usability, shown through the errors made by participants.

The recording of errors in regards to the usability of systems has traditionally focused on safety-critical systems and business support systems. This study applies Zapf et al.'s 'Taxonomy of Errors' to a non-work related context: the OGS. The taxonomy was found to show that similar types of errors were made by all users of such systems. However, the number of errors that were recorded by different user groups varied. This finding was in contrast to previous studies, and supported the common perception that beginner users make a greater number of errors than more experienced users.

Based on the results of both the expert evaluations and the usability testing, this research has created a **Normative Task Model** (**Phase 3**) to map a user's interaction with an OGS.

# Certification

I, Mark Freeman, declare that this thesis, submitted in fulfillment of the requirements for the award of Doctor of Philosophy, in the School of Information Technology and Computer Science, University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. The document has not been submitted for qualifications at any other academic institution.

Mark Freeman

……..

10th November 2006.

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# List of Publications

*Note: The publications that are relevant to this thesis are marked with an asterisk (*)*

* **Freeman, M**, Norris, A, and Hyland, P. (2006) "Usability of online grocery systems: a focus on errors", *OZCHI 2006*, November, Sydney, Australia. (Forthcoming)

* **Freeman, M.** (2006) "Perceptions of the ordering process of online grocery stores", *Association of Internet Researchers (AOIR) Conference 7.0, Internet Convergences*, September 27-30, Brisbane, Australia. (Forthcoming)

Norris, A, **Freeman, M.** (2006) "Community websites and what makes them sustainable: Evidence from Australia", *10th Pacific Asia Conference on Information Systems (PACIS)*, July 6-9, Kuala Lumpur, Malaysia.

* **Freeman, M**. (2005) "How long does it take to shop online?" *The 2005 World Congress in Applied Computing: Human Computer Interaction*, June 20-23, Las Vegas, USA.

Norris, A, **Freeman, M.** (2005) "Improving library website usability: A user focus" *neXt 2005: ALIA National Library and Information Technicians Conference*, September 6-9, Sydney, Australia.

* **Freeman, M**. (2004) "Methods of online grocery shopping: Searching and Linking" *OZCHI2004 Supporting Community Interaction: Possibilities and Challenges*, November 22-24, Wollongong, Australia.

* **Freeman, M.** (2003) "The current state of online supermarket usability in Australia", *The 14th Australasian Conference on Information Systems (ACIS) 2003*, November 26-28, Perth, Australia.

* **Freeman, M,** Hyland, P, Soar, J. (2003) "Usability of supermarkets in Australia", *The 4th Annual Conference of the ACM Special Interest Group on Computer-Human Interaction New Zealand Chapter*, July 3-4, Otago, New Zealand.