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ELECTRONIC COMMERCE PUBLICATIONS AND THE IMPLICATIONS FOR RESEARCH QUALITY OUTPUT IN AUSTRALIA

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ABSTRACT

Australian universities and academics have recently had to consider the way research is reported and funded. It was expected that by 2008, the Research Quality Framework (RQF) would be implemented. As a result we saw increased activity within universities focusing on the proposed criteria. There was, as part of this, significant activity around the area of quality outputs. Whilst the proposed RQF will not happen in its current form, some changes are proposed by the new Government. The proposed RQF sought to have research assessed according to quality and impact. Part of both quality and impact relates to where research is published. For academics, although the previous RQF guidelines are not to be implemented, it continues to be increasingly important to target high quality journals if the research is to be rated as high quality. The question this raises for Information Systems academics is where do we publish for maximum impact? The Information Systems (IS) field is diverse with researchers working in many areas and a publication outlet for one area may not be relevant for another. One area where many Australian IS researchers have focused their research interest is the field of Electronic Commerce (e-Commerce). The research reported in this paper identified the publication outlets that would be regarded as amongst the highest quality for researchers wishing to publish e-Commerce research. The authors analysed e-Commerce research papers by Australian researchers published in the period 2000 to 2005. The results describe where Australian researchers are publishing in this field. The paper also provides

guidance to those working in the e-Commerce field on which journals and conferences to target to ensure their work rates highly.

INTRODUCTION

In 2005 the then Minister for Education, Science and Training announced the RQF saying "Once implemented, the RQF will provide the Australian Government with the basis for redistributing research funding to ensure that areas of the highest quality of research are rewarded" (Nelson 2005). This was further described as focusing on:

- "the quality of research including its intrinsic merit and academic impact - academic impact relates to the recognition of the originality of research by peers and its impact on the development of the same or related discipline areas; and
- "its broader impact or use, i.e. the extent to which research is successfully applied - broader impact or usefulness relates to the recognition by qualified end-users that quality research has been successfully applied" (Nelson, 2005).

The then new Minister for Education, Science and Training, The Honourable Julie Bishop, reinforced this message stating that the RQF "would measure quality through a combination of metrics and review by domestic and international peers" (Bishop, 2006). The suggested quality ranking scale of 1 to 5 suggested a ranking of 5 would be research in the top 20% of research in its field internationally. Based on this, Universities began the planning process for the 2008 implementation (see for example Butler, 2006; Tang, 2006). In doing this we were forced to consider questions such as 'How will quality be measured?' and 'How will the broader impact be measured?' in relation to all types of publications. Although the RQF, in its original form, will not be implemented, the incoming Government has indicated that there will be changes to the way research quality is determined and that the work that has been done on publication metrics will be utilised (Carr, 2007). The answer to these questions therefore continues to have a significant impact on the way Australian scholars target research outlets.

In this paper, we look at publications and publication outlets for e-Commerce research from the perspective of quality. For this research, we use journal rankings and citation indexes as measures of quality. This is consistent with Clarke's (2006) position who suggests that a citation analysis can be used for "evaluating the quality and/or impact of works and their authors by means of the references made to them in refereed journal articles" (Clarke, 2006). We examine the ranking process and identify conferences and journals regarded as high quality. In addition, the citation impact for the published papers is also provided. We also report on our analysis of these publications, which examined what has been published by Australian Information Systems (IS) researchers in the area of electronic business/commerce. The paper identifies appropriate outlets for e-Commerce research, presents statistics on where Australians are publishing, the choice of outlets and citations in the area of e-Commerce[1]. Specifically we sought to answer the following research questions:

[1] It should be noted that although the RQF is not proceeding, IS had been accepted as a distinct discipline for Panel 4.

1. Where are Australians focusing their e-Commerce research in terms of publication outlets?
2. What is the quality of the publication outlets that are mainly chosen by Australian researchers in e-Commerce research?
3. What is the citation rate of publications published by Australian e-Commerce researchers?

The paper is structured as follows. First we discuss the identification of quality publication outlets and the use of citation indexing. This is followed by a description of the research method used for the identification of the research output. The research method described here is adapted from a previous study by Scornavacca et al., (2005). In the results section we start with an overview of all e-Commerce research by the information systems community. This follows a description of the e-Commerce journal rankings and citations for the research output of Australian researchers in e-Commerce.

IDENTIFYING HIGH QUALITY PUBLICATION OUTLETS

Until now publications have been categorized by DEST in terms of the type of publication for example: book, book chapter, journal or conference. From a reporting perspective, little attention has been paid to the quality of the publication outlet. For example, all conference publications are treated as equal and attract the same funding 'reward' in terms of the DEST audit. In institutions overseas, more attention has been paid to the quality of the journal or conference particularly when tenure is considered. One measure of quality of a research output is the quality of the journal or conference publishing the work. This is generally determined by either ISI factor or a ranking of journals and conferences undertaken by respected academics in the field.

Ranking conferences and journals

The discipline of Information Systems has been considering journal quality for the last 2 years. In 2006 the Australian Council of Professors and Heads of IS (ACPHIS, 2007) began the process of developing a ranked list of journals. In 2007 a review of the first ranking occurred at the annual ACPHIS workshop. It is not an insignificant task to compile a ranking of conferences and journals; this problem is recognized by researchers in other fields (Uncles, 2004). Anyone attempting such a task must begin by asking themselves on what basis will the ranking be determined. The options include research method i.e. quantitative or qualitative, editorial board, publisher or rankings based on the judgment of those researching in the field. Another option is to look at other published rankings. In the IS field most of the previously published rankings adopt a North American perspective. Mort et al., (2004) reflected on similar difficulties in the field of marketing. They concluded that: "The marketing discipline in Australia and New Zealand has continued to develop and mature, reflecting a dynamic fusion of the disciplines American, European and Asia Pacific characteristics" (Mort et al., 2004). It could be argued that Australian Information Systems research has developed along similar lines. Using previously published rankings, which adopt a North American perspective, therefore may not be entirely appropriate.

Very recently, National ICT Australia (NICTA), on behalf of all ICT related disciplines, distributed for comment through the ISHODS list[2] a ranked conference list (Lloyd, 2006). Currently there is no

[2] ISHODS is an e-mail list established by the Australian Council for Professors and Heads of Information Systems and distributed to all Heads and professors of Information Systems.

IS representative in NICTA, however their list contains conferences NICTA regards as IS and these have been ranked (NICTA, 2006). For many IS researchers this list may not prove to be very helpful. For example, the European Conference on Information Systems (ECIS), Hawaii International Conference on System Sciences (HICSS) and International Resource Management Association International Conference (IRMA) are all ranked two by NICTA. This specific ranking from an IS perspective is highly debateable. It should be noted, however, that this is the first attempt to compile a comprehensive list for all those in the ICT field. It illustrates the importance for the Australian IS community to debate and compile our own rankings if such rankings are to accurately reflect what our community believes is quality. Identifying high quality publication outlets for specific research areas will provide guidance to researchers in the new research quality environment. That said however, the focus of this paper is not on the rankings per se, our focus is on reflecting over a period of time, where IS researchers working in the field of e-Commerce are publishing and what we can learn from this.

Our ranking of e-Commerce conferences and journals

In order to conduct an analysis of Australian e-Commerce publications it was necessary to identify high quality publication outlets in the field. To do this we used two rankings:

- The first ranking was by Bharati and Tarasewich (2002) who reviewed perceptions of journal publications for e-Commerce by e-Commerce researchers. The perceptions were obtained through an e-mail survey. Two different journal rankings were developed from the data, one based on appropriateness of a journal for publishing e-Commerce research and the other based on the quality of journal for e-Commerce publications. The ranking for appropriateness was also further subdivided into geographical areas (Europe, Australasia and North America).
- The second ranking was based on the ACPHIS (2007) broader ranking of Information Systems journals. This ranking was developed based on an analysis of several other published rankings, two North American rankings and two European rankings. These rankings were from the London School of Economics, Louisiana State University, ISWorld and Vienna University. The Australian IS Senior Scholars also reviewed and revised the final list resulting in the current ranking. This ranking was distributed for further comment among senior IS academics late 2007. ACPHIS identified 182 journals regarded as IS. The aim of the final list was to have 5% of journals ranked A+, 15% ranked A, 30% ranked B and the rest C. From this list, publication outlets relating to e-Commerce were identified.

A comparison of the Bharati and Tarasewich (2002) ranking and the ACPHIS ranking of journals predominantly publishing e-Commerce research were made to develop a final list. Other leading journals in the field that also published electronic commerce research were also identified.

The following journals were selected {ACPHIS ranking for the journal is indicated in {brackets after the Journal}:

- The Australian Journal of Information Systems (AJIS) {B}
- Communications of the ACM {A}
- Electronic Commerce Research {A}
- Electronic Markets (EM) {A}
- European Journal of Information Systems (EJIS) {A+}
- Information Systems Journal (ISJ) {A+}

- Information Systems Research (ISR) {A+}
- Information Technology and People {A}
- International Journal of Electronic Commerce {A}
- Journal of the Association for Information Systems {A+}
- Journal of Electronic Commerce Research (JECR) {C}
- Journal of Management Information Systems (JMIS) {A+ }
- Journal of Organizational Computing and Electronic Commerce {A}
- MIS Quarterly (MISQ) { A+}

All of the journals except for Australian Journal of Information Systems and Information Technology and People appear in both rankings. The Australian Journal of Information Systems was included because it is the only local journal of Information Systems. Journals such as Harvard Business Review was considered, but in the end excluded as its audience and contributors are primarily business not information systems professionals or researchers. The International Journal of Electronic Business was also in Bharati and Tarasewich (2002) top 10 however was only launched in 2003 so could not be included. One journal, JECR, ranked C has been included as it was included in the Bharati and Tarasewich (2002) list and is specific to e-Commerce.

There is very limited information on conference rankings. ACPHIS (2007) considered ranking some conferences and the following reflects those rankings

- International Conference on Information Systems (ICIS), the premier outlet for Information systems research. {A+}
- European Conference on Information Systems (ECIS), the premier outlet for Information systems research in Europe. {A}
- Australian Conference on Information Systems (ACIS), the only local Information Systems conference. {B}
- Pacific Asian Conference on Information Systems (PACIS), a regional conference to which many Australian academics contribute. {A}
- Bled Electronic Commerce Conference (Bled), a key conference in the electronic and mobile business field. {Not classified, however included because it is the longest running e-Commerce conference}

These were therefore the specific journals and conferences that were used for our analysis in the area of e-Commerce, the results of that analysis provide important information for researchers publishing in this area. The authors acknowledge that there are likely to be other journals and conferences publishing e-Commerce research however, we are focusing on those outlets considered specifically IS.

Citation indexing for publications

Bibliometrics is the statistical analysis of scientific publications (Glänzel, 2004) and has been studied since the early twentieth century. Two measures of bibliometrics can be utilized in evaluating quality: journal impact factor and citation impact (Tang, 2006). The journal impact factor is often used as a substitute for the prestige of a journal (Tang, 2006). Glänzel (2004), states that the number of citations to a publication is a measure of the impact of a publication in a field of study.

The recording of bibliometric information can be found in ISI (Thompson/Institute for Scientific Information) databases and non ISI databases (Tang, 2006). The ISI publish the: Australia University Indicators (AUI), Web of Science (WoS), Journal Citation Report (JCR), Journal Performance Indicators (JPR), National Citation Report (NCR) and Essential Science Indicators (ESI). It should be noted however that Thompson's ISI has serious limitations; few IS journals are indexed and the reliance on citations as an indicator of quality is problematic (Lamp et al., 2007). Non ISI databases are: Google Scholar, CiteSeer and Scopus.

Various studies have compared the databases with one another and identified problems. A comparison between WoS, Scopus and Google Scholar by Jacso (2005) found that substantial factual information is available about WoS and Scopus. It is therefore easy to ascertain what journals are indexed and how the citation indexing is performed. Similar information for Google is not available although frequently asked questions outline the features of the software. The process of citations collection is fraught with problems that each database approaches from different perspectives, each with its own advantages and disadvantages. Specifically, it is mentioned that there are records in the databases that are not accurate and that will influence the search for specific authors or publications. In the evaluation by Jacso (2005), Google Scholar was criticised for the limited and dysfunctional search options and lack of regular updating of the database.

The databases also cover different subject areas. WoS mainly covers social science, science, arts and humanities with publication records going back to 1945. Scopus does not include references to arts and humanities and has a modest record of publications in the social sciences. Scopus mainly focuses on health and life sciences and other scientific areas such as chemistry and physics. Scopus commenced recording of publications at a later date and states that publications are included from 1995. In contrast, Google Scholar does not identify any information about the subjects covered, and how far back the records in the database go.

The type of publication that is included in each of the databases also differs from one another. WoS started to include conference proceeding recently. The search facilities on the conference proceedings are not yet available for citation searches. Scopus does include conference proceedings as well as books. Google Scholar does not provide any information on what publications are included but appears not to cover books for example.

The subject area coverage of the databases is problematic for a field such as information systems (Clarke, 2006). In a comparison done by Jacso (2005), showed that in general, WoS has more citations for a subject followed by Scopus and Google Scholar has the least citations for a subject. This stands in contrast to the study undertaken by Clarke (2006) in which the citations to the publications of leading information systems researchers has been considered. In this study, the citations recorded in Thompson/ISI Google were determined and compared, and it was found that Google Scholar delivered double the citations compared to Thompson/ISI.

In an evaluation of the entries found in Google Scholar, Jacso (2005) highlights that the results included absurd entries. Clarke (2006) also criticises the results returned by Google Scholar such as broken links and information returned involves the fulfilment of specific requirements to validate the response. The results that are provided by WoS are not however without problems either. Clarke has identified a number of errors in the database of ISI that has an influence on the citation index.

Despite all of these criticisms, the citation databases are a very helpful tool to identify high quality publications as well as to show the impact that specific papers have had on an academic field of study. In the process of identifying quality publication outlets the reports published by Thompson/ISI, which compare journal citation rankings and reports on average citations for specific

fields are invaluable. In a study conducted by Clarke (2006) he concluded that Google Scholar is an appropriate tool for identifying citations for the IS field due to the broad nature of the field.

RESEARCH BACKGROUND

This section will examine the use of literature reviews in evaluating the research conducted over a period. This is followed by the definition of e-Commerce and a detailed description of how the literature was identified and classified in our study.

Research rationale

Undertaking an examination of the research literature to understand what is happening in a field is a well accepted method in many disciplines and this is also the case in the field of Information Systems (Scornavacca et al., 2005). Webster and Watson (2002) note the paucity of published review articles in Information Systems, and argue the importance to the field of such research. They go on to note "As a result the progress of our field is impeded" (p. xiii). Banker and Kauffman (Banker et al., 2004) examined 50 years of Information Systems research literature in 2004. They argued that the value to readers was in providing "…a retrospective view of the research contributions that form the foundational knowledge in the field of Information Systems" (Banker et al., 2004, 294).

More recently, Zhang and Li (2005) sought to answer a number of questions relating to the development of the HCI discipline. They concluded: "The study is informative in providing the state-of-the-art of research issues and concerns, research emphases on gaps, potential research directions and publication and employment opportunities." (p. 278). Amongst the questions they sought to answer were questions such as "What topics are often studied together?" and "What methods are used to study what topics?" (p. 229). To answer those questions they examined HCI articles from seven of the leading MIS journals over a period of 13 years. Through our examination of the research published by Australian researchers in the field of e-Commerce we can document the contributions made and the directions the research in this area has taken. This informs both the field of e-Commerce generally as well as specifically how Australian IS researchers approach the publishing task. The research questions Scornavacca et al., (2005) sought to answer included the focus of the research was, the methods used, how the data collection was carried out, and the main contribution of the research.

Defining electronic commerce

Electronic commerce for the purpose of this paper has been defined relatively broadly. The authors recognise that the field of e-Commerce has attracted researchers from a number of areas including marketing, law, computer science and the arts to name just a few. In order therefore, to identify which papers would be considered relevant for this study we first identified those areas where e-Commerce research took an Information Systems perspective. We believe the following three areas best reflect what is central to IS researchers involved in e-Commerce research:

- commercial environments where the research involves the study of ecommerce within a commercial setting
- research that investigates ecommerce processes or transactions
- research investigating an IT artefact such as a web site or e-Commerce system.

To avoid including papers that were for example particularly technical or marketing focused each paper had to involve research into two of the areas above. The area of e-Government was excluded from the study because it did not meet the criteria as described above.

Selected conferences and journals

Webster and Watson (2002) argue that, "A complete review covers relevant literature on the topic and is not confined to one research methodology, one set of journals, or one geographic region." (p. xv -xvi) Consistent with this it was deemed important to examine a breadth of publications when undertaking a review such as this. We identified a number of leading journals, both from North America and Europe and considered carefully the conferences to be included as well as a ranking of Bharati and Tarasewich (2002) which reviewed perceptions of journal publications for electronic commerce by e-Commerce researchers.

Analysis of publications

All available conference proceedings and Journal editions during the time period 2000-2005 were examined. All the journal and conference proceedings were examined by two of the authors to identify the candidate papers to be included in this research. The following describes the process undertaken.

- Identification that at least one of the authors' affiliations was Australian.
- Determination, based on the title of the paper whether the paper was very broadly in the area of e-Commerce. If the paper was Australian based research and deemed relevant the abstract was read and a decision made to include or excluded. Published papers conducted by Australian researchers based on research conducted outside of the Australian context were not included.
- Compilation of a list of papers and authors
- The third author resolved differences and determined the inclusion or otherwise of papers based on the criteria.
- *Endnote* was used to record all included papers. A database was developed to capture all classifications and to analyse the publication data.
- The number of citations for each paper was then determined through Google Scholar in July 2006, based on the authors and title of each. The number of citations that was reported by Google Scholar was recorded in the database. In the event that no record was found for the paper a further search on the title of the paper or the authors' names was performed.

The authors evaluated all of the candidate papers. In approximately 95% of the cases the authors agreed on the inclusion of the papers.

RESULTS

The results section begins with an overview of all e-Commerce research by the information systems community. This is followed by a description of the e-Commerce journal rankings and citations for the research output of Australian researchers in e-Commerce.

Journal Papers published

Table 1 details the total number of e-Commerce papers published each year in each of the journals, and the number of papers by Australian researchers published in the journal. It should be noted that

some of the e-Commerce journals are highly technical in nature for example the *Journal of Electronic Commerce Research*. Apart from the *AJIS*, *Electronic Markets* was the most popular outlet for Australian researchers publishing in e-Commerce over the period.

Journal	2000	2001	2002	2003	2004	2005	Total (2000-2005)	Total Australian
Australian Journal of Information Systems	0	1	6	3	2	0	12	12
Communications of the ACM	23	13	15	29	13	14	107	1
Electronic Commerce Research	N/A*	25	20	18	22	19	104	1
Electronic Markets	35	32	30	26	32	34	189	7
European Journal of Information Systems	1	1	4	8	3	2	19	4
Information Systems Journal	1	0	1	1	4	1	8	0
Information Systems Research	0	1	4	0	0	4	9	0
Information Technology & People	3	0	0	5	3	2	13	2
International Journal of Electronic Commerce	9	24	30	25	24	27	139	2
Journal of Electronic commerce Research	N/A**	24	19	16	21	17	97	0
Journal of Management Information Systems	2	2	4	0	10	3	21	0
Journal of Organizational Computing and Electronic Commerce	4	7	6	8	4	4	33	0
Journal of the Association for Information Systems	5	1	2	1	2	2	13	0
MIS Quarterly	1	0	2	1	1	0	5	0
TOTAL	84	131	143	141	141	129	769	29

Table 1: Electronic commerce papers published in target journals

* Journal commenced in 2001
**Publications for this year were not available.

Conference Papers published

Table 2 details the number of papers published by Australian researchers in e-Commerce each year at each of the conferences. Figures in box brackets indicate total number of e-Commerce papers (all researchers). For the Australian Conference on Information Systems only the number of papers relating to electronic commerce, by Australians, is provided as the majority of presenters are Australian. The results are presented in alphabetical order of conference.

As presented in Table 2, Australians have targeted mostly regional conferences (ACIS, PACIS, and ECIS) and Bled as publication outlets for their research work. Given its population and geographical location, Australian publications are very well represented at outlets such as ECIS (20%) and Bled (21%). This stands in stark contrast to ICIS, where no Australian e-Commerce researchers published during the period.

Comparison: conference vs. journal papers

A total of 135 papers were published by Australians in the target conferences and a total of 29 papers published in the target journals. Figure 1 presents graphically the comparison between journals and conferences published by Australians during the period. The figure also suggests that total Australian publications (conferences and journals) in electronic commerce peaked in 2003 with a total of 35 conference and five journal papers.

Conference	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**Total EC Publications**	**Total Australian EC Publications**
Australian Conference on Information Systems	N/A* N/A*	9 [9]	12 [16]	12 [12]	12 [15]	3 [3]	[55]	48
Bled Electronic Commerce Conference	N/A* N/A*	12 [49]	7 [46]	10 [71]	3 [53]	6 [50]	[269]	38
European Conference on Information Systems	2 [20]	3 [19]	4 [20]	5 [23]	8 [24]	3 [17]	[123]	25
International Conference on Information Systems	0 [11]	0 [12]	0 [14]	0 [20]	0 [15]	0 [10]	[82]	0
Pacific Asian Conference on Information Systems	6 [14]	3 [16]	2 [14]	8 [20]	2 [13]	3 [11]	[88]	24
Total Australian EC publications	8	27	25	35	25	15		135
Total Overall EC publications	[45]	[105]	[110]	[146]	[120]	[91]	[617]	

Table 2: Electronic commerce papers published in target conferences

* Publications for this year were not available.
Figures in box brackets indicate total number of e-Commerce papers

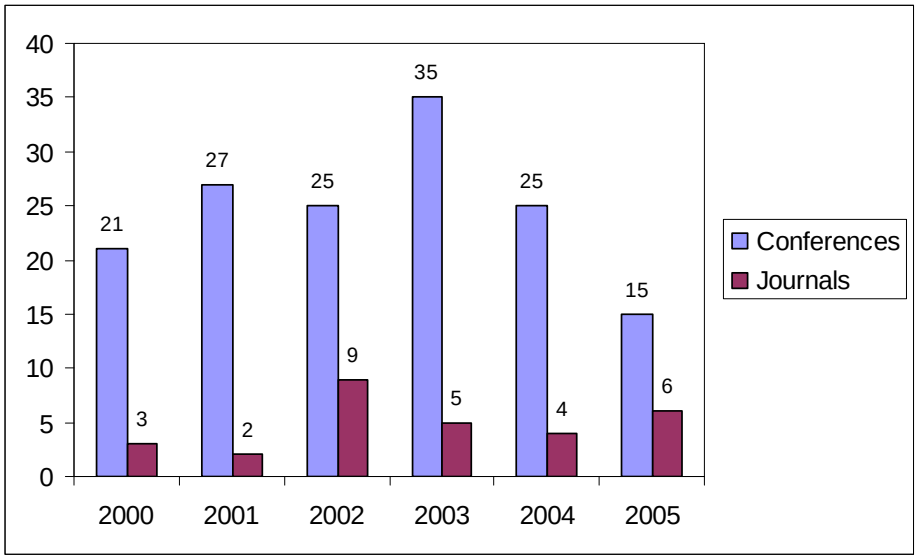

Figure 1: Journal and Conference publications by Australians during period

Journal and Conference publication ranking

Using the Journals and Conference ranking developed by ACPHIS as outlined in section 2.2, we have determined the number of publications in each of the categories. Table 3 details the number of e-Commerce journal publications for the period 2000 – 2005.

Journal Category	Journals in which publications were found	Number of Australian publications	Total per journal per category
A+	European Journal of Information Systems	4	4
A	Communications of the ACM	1	
	Electronic Commerce Research	1	
	Electronic Markets	7	
	Information Technology & People	2	
	International Journal of Electronic Commerce	2	13
B	Australian Journal of Information Systems	12	12

Table 3: Number of Journal publications per category

Table 3 highlights firstly the challenge of having any work published in A+ journals but specifically the limited number of e-Commerce papers that have been published in A+ journals. Over the 6 year period investigated a total of 75 papers were published in e-Commerce in the top journals. During this period, just over 700 papers were published in A+ journals. Of these, 11% were publications relating to e-Commerce. The majority of journal publications are in journals classified as A and B. Few papers have been published by Australians in A+ journals. Less than 0.5% of all e-Commerce publications in A+ journals were written by Australians. Table 4 details the number of e-Commerce papers published at conferences.

Conference Category	Number of Australian publications
A+	0
A	49
B	48
Not Classified	38

Table 4: Number of conference publications per category

The figures show that most of the publications are in the lower ranked conferences and no publications appeared at A+ conferences, despite the fact that over the period 2000 – 2005, 82 papers were presented at ICIS in the e-Commerce field.

Journal and Conference publication citations

The total number of citations for each of the papers was determined through Google Scholar. Table 5 presents the number of papers not indexed in Google Scholar, papers that were found in Google Scholar but did not have any citations and papers that had one or more citations in Google Scholar. Figure 2 shows the categories of paper citations found in Google Scholar as percentages.

Citations	Number
Not Indexed	66
One or more citations	63
Zero Citations	48

Table 5: Citations of publications (Google Scholar)

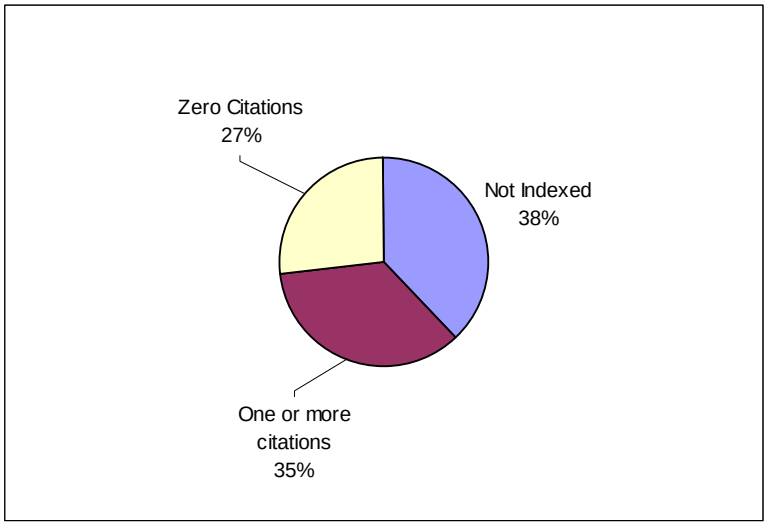

Figure 2: Citations in Google Scholar

The citations were totalled and an average citation was computed per outlet. The results of this calculation are presented in Table 6.

As was expected, the journals and conferences that were classified higher attracted more citations. An average over all paper citations of 4.67 was computed. To place this average into perspective, Thompson ISI published an average citation for computer science publications for the period 1994 – 2004 of 2.32 (Butler 2006). The average citations computed for the papers under study thus compare favourably. It should however be taken into consideration that Google Scholar is a 'brute force' citation index and provide far more citations compared to Thompson ISI (Clarke 2006). According to Clarke (2006) who compared the citation count for authors on Google Scholar and Thompson/ISI, Thompson/ISI have half the citation count compared to Google Scholar. Using this as a general guideline the number of computer science citations could thus be doubled to 4.64. The average citations computed for e-Commerce publications are then of a similar order.

Outlet	Number of cited papers	Total citations	Average
European Journal of Information Systems	3	92	30.7
Electronic Commerce Research	1	12	12.0
Information Technology and People	1	10	10.0
Communications of the ACM	1	9	9.0
Electronic Markets	3	13	4.3
PACIS	6	22	3.7
Bled eCommerce Conference	28	90	3.2
ECIS	5	12	2.4
ACIS	11	26	2.4
International Journal of Electronic Commerce	2	4	2.0
Australian Journal of Information systems	2	4	2.0

Table 6: Total and average citations for each outlet

DISCUSSION

The analysis of conference and journal papers published by Australian researchers in the field of e-Commerce has provided an interesting insight into where Australians are publishing and the quality as possibly judged by RQF-type criteria. It needs to be noted however that the use of any ranking can be problematic. The ACPHIS ranking which we used was based on a number of other published rankings. The ranking, however, indicated that the journals, which are highly regarded by e-Commerce researchers (Bharati et al., 2002), were ranked lower and were excluded in our study. On the other hand citation databases are criticised for a lack of completeness and unknown content. The study that was done by (Clarke 2006) identified that for the field of IS Google Scholar might be an appropriate database for finding citation figures.

Our discussion focuses on the implications of these results from the perspective of quality and the quality evaluation of research publications. The results depicted in this paper highlight that Australian IS researchers would need to consider carefully where they target their publications in the future. Currently, the data suggests we are not publishing regularly, and in some cases not at all, in the A+ journals and conferences. For Australian IS researchers working in the e-Commerce field, we would recommend that researchers be strategic in terms of which journals to target particularly in terms of quality. For example, journals such as EJIS and JMIS publish more e-Commerce research than the other journals in the A+ category. For A journals we should be considering Electronic Markets, Electronic Commerce Research and the International Journal of Electronic Commerce. These journals are well regarded, highly ranked, well cited and focus on e-Commerce.

Citation counts could become important under a quality evaluation of research publications. Our research highlights the importance of being strategic in the journals and conferences we target for our papers. We must also be mindful of the fact that the older the paper the more citations it will attract. The statistics therefore that are presented here understate the impact of the papers. It is likely that the citations will significantly increase with time.

Journals that are not ranked within a discipline will present researchers with a dilemma. Do we seek to publish in a journal that is highly reputable and could very well have a high citation count

yet is not ranked? It will be difficult under an evaluation such as the RQF for researchers to argue a journal is high-quality if it is not ranked.

Our research highlights the impact Australian researchers have in the field of e-Commerce internationally. Given the relatively small population of IS researchers in Australia the number of publications produced is high. However, it needs to be noted that a closer analysis suggests a few people account for many of the papers. There are a small number of papers produced by Australian researchers that are highly cited. Nevertheless the research does indicate that Australians are publishing good quality research in the field of e-Commerce. However, it also tells us that we are not strategically targeting where this research is published. For example, as illustrated in Table 2 and Table 6, the Bled Conference and ACIS are the two avenues where most work is published, yet both have a very low citation average, 3.2 and 2.4 respectively. Whilst ECIS is also low, authors can argue that this conference is ranked highly which is not the case for either Bled or ACIS (making it more difficult to argue for the quality of a paper published at the latter two conferences).

What this also tells us is that as IS researchers, working in the field of e-Commerce, we need to be targeting conferences, which give us visibility and citations and then build on these papers with a view to publishing in highly ranked journals. International collaborations will also become increasingly important.

The research also raises the question whether e-Commerce as a research field is still relevant. If we look at the trends over the six-year period it would seem that during 2002/3 e-Commerce, as measured by publications, peaked. However a closer look, particularly at the journal publications, suggests that there is still interest. The second-highest number of papers published by Australians in journals in the field was in 2005. A look at the trend of journal publications overall supports this with an increase in some journals in 2005.

CONCLUSION

The timeframe of this study is for the period 2000 – 2005. In all likelihood the evaluation of research publications will take place in 2009 (Carr 2007) and will include the publications in this timeframe. Whilst our findings cover "the past" they do provide guidance for the future. Irrespective of how the field of e-Commerce develops, this research is important in providing a picture of publishing activity by Australians. Many of the findings will be relevant to other IS research areas. An interesting extension of this project would be to examine all publications by Australian IS researchers for the same period.

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