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Julie Fisher

Monash University, [Julie.Fisher@infotech.monash.edu.au](mailto:Julie.Fisher@infotech.monash.edu.au)

Helana Scheepers

Monash University, [Helana.Scheepers@infotech.monash.edu.au](mailto:Helana.Scheepers@infotech.monash.edu.au)

Rens Scheepers

University of Melbourne, [r.scheepers@unimelb.edu.au](mailto:r.scheepers@unimelb.edu.au)

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# E-Commerce Research in Australia

## Inviting a Comparative Analysis

Julie Fisher

Faculty of Information Technology, Monash University, Australia  
Julie.Fisher@infotech.monash.edu.au

Helana Scheepers

Faculty of Information Technology, Monash University, Australia  
Helana.Scheepers@infotech.monash.edu.au

Rens Scheepers

Department of Information Systems, The University of Melbourne, Australia  
r.scheepers@unimelb.edu.au

**Abstract.** Published research in the area of electronic commerce has increased several fold in recent years. Australian researchers have participated actively in this research field. An emphasis on quality has prompted us to review the publications in the area of electronic commerce. This paper reports on research, that used a framework developed by Scornavacca et al. (2005), to examine papers published in the leading, relevant journals and conferences over the period 2000 to 2005. Analyses of papers in the electronic commerce area, published during this period, reflects a number of trends in terms of research outlets, approaches, and methods used. The analyses presented here invite a comparative analysis by Scandinavian researchers in e-commerce. The Scandinavian research community represents an appropriate environment against which to benchmark the Australian research outputs. It is

our hope that the analyses in this paper will lead to mutual learning and collaboration between researchers in both contexts.

*Keywords:* electronic commerce, trends, Australian publications.

## 1 Introduction

Since the introduction of the Internet and the use of the Internet for electronic commerce (EC) researchers have studied the implementation and use of this technology. Even though the dot.com crash in 2000 tempered the high expectations of EC, organisations are still utilising the technology to derive business value (Prananto et al. 2004).

Australian researchers have been very active in the field of EC due to unique characteristics. Australia has a vast landmass and relatively small dispersed population. This has meant in recent years, that the Internet has become an important medium for communication and business. Australian businesses have embraced the Internet as stated by an Australian Government report (NOIE 2003). NOIE reports that in 2003 more than 50% of Australian households had an Internet connection and At June 2002, in excess of 70% of businesses with employees were online, while Internet connectivity jumped to above 80% for businesses with 5 or more employees and above 90% for businesses with 20 or more employees. (NOIE 2003, p. 4). With such significant Internet activity amongst households and businesses it is therefore not surprising that EC has become an important research area in Australia. It is appropriate therefore to explore EC from the perspective of the research output of Australians.

An analysis of the EC research output of Australian researchers has been prompted by a change in the way in which universities and the Australian government evaluate research quality. In this paper we seek to examine what has been published by Australian researchers in the area of EC from the perspective of Information Systems research. The paper explores where Australians are publishing, the methodological approaches that have been taken in the area of EC and the research outcomes. We selected a number of journals and conferences where Australians are publishing work in this area. Specifically we sought to answer the following research questions:

1. Where are Australians focusing their EC research in terms of publication outlets?

2. What are the main areas Australian researchers are focusing on in their EC research?
3. What are the predominant research methods employed in Australian EC research?
4. What are the outcomes of Australian EC research, i.e. the contributions to the research literature?

Australian Information Systems academics have a limited range of options in terms of local publication outlets (journals and conferences). Australian academics therefore frequently find that they must travel significant distances to present their work at conferences and expand their academic network.

To place the Australian EC research output into perspective it is necessary to compare the research output with another comparative environment. We believe that Scandinavia is an appropriate comparative context due to a number of characteristics. Scandinavia and Australia whilst different in geographic size, are similar in population spread. In terms of research outlook many Australian Information Systems researchers take a more European rather than North American approach to their research. Furthermore, compared to most North American PhD programs, Australian and Scandinavian PhD programs are similar, both placing less of an emphasis on coursework.

The paper is structured as follows. First we discuss the research method and analysis framework used for this paper. 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 EC research by the Information Systems community. This is followed by a description of the EC research output for Australian researchers specifically focusing on where they are publishing, what the main areas of research are within EC, the research methods and the contribution of the research.

## 2 Defining Electronic Commerce

Electronic Commerce (EC) for the purpose of this paper has been defined relatively broadly. The definition of electronic commerce as used for this paper is captured in the definition given by Cordis (1997):

any activity which involves enterprises interacting and doing business with customers, with each other or with administrations (sic) by electronic means. It includes electronic and on-line ordering and payment for goods which are delivered by post or courier, as well as on-line delivery of goods and services such as publications and software. (Cordis 1997, p. 1)

The authors recognise that the field of EC 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 EC research took an Information Systems perspective. We believe the following three areas best reflect what is central to IS researchers involved in EC research:

- commercial contexts where the research involves the study of EC within a commercial setting,
- research that investigates EC processes or transactions, and
- research investigating an IT artefact such as a web site or EC system.

In an IS perspective, we did not include research papers which, for example, were purely technical or marketing focused. Each paper had to involve research into two of the areas above.

### **3 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. (Webster and Watson 2002). Consistent with this it was deemed important to examine a breadth of publications when undertaking a review such as this. Using the review of electronic commerce journal rankings of Bharati and Tarasewich (2002) as starting point, we identified a number of leading journals both from North America and Europe and considered carefully the conferences to be included. We confirmed the list of chosen publications by comparing it with the ranking of Information Systems journals provided by ISWorld (2006).

Bharati and Tarasewich (2002) reviewed perceptions of journal publications for electronic commerce by EC researchers. The perceptions were gained through an e-mail survey. Two different journal rankings were developed from the data, one based on appropriateness of a journal for publishing EC research and the other based on the quality of journals for EC publications. The rankings for appropriateness were also further subdivided into geographical areas (Europe, Australasia and North America). The following journals were selected based on the top ten journals on the rankings for appropriateness by Australasian researchers and the top ten journals on the EC journal quality ranking as identified by Bharati and Tarasewich (2002):

- The Australasian Journal of Information Systems (AJIS)
- Communications of the ACM (CACM)

- Electronic Commerce Research (ECR)
- Electronic Markets (EM)
- European Journal of Information Systems (EJIS)
- Information Systems Journal (ISJ)
- Information Systems Research (ISR)
- Information Technology and People (ITP)
- International Journal of Electronic Commerce (IJECE)
- Journal of the Association for Information Systems (JAIS)
- Journal of Electronic Commerce Research (JECR)
- Journal of Management Information Systems (JMIS)
- Journal of Organizational Computing and EC (JOCEC)
- MIS Quarterly (MISQ)

AJIS was included because it is the only local Information Systems Journal. Harvard Business Review was considered but excluded as its audience and contributors are primarily business, and not Information Systems researchers. International Journal of Electronic Business was also considered, but was excluded since it was only launched in 2003.

The conferences and the reasons for their selection examined for this study were:

- International Conference on Information Systems (ICIS), the premier conference outlet for Information systems research.
- European Conference on Information Systems (ECIS), the premier conference outlet for Information systems research in Europe.
- Australasian Conference on Information Systems (ACIS), the only local Information Systems conference.
- Pacific Asia Conference on Information Systems (PACIS), a regional conference to which many Australian academics contribute.
- Bled Electronic Commerce Conference (Bled), a key conference in the electronic and mobile business field.

## 4 Analysis of Publications

All available conference proceedings and journal editions during the time period 2000-2005 were examined. All papers 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' affiliation was Australian.

- Determination, based on the title of the paper, whether the paper was very broadly in the area of EC. If the paper was Australian based research and deemed relevant, the abstract was read and a decision made to include or exclude the paper. Published papers conducted by Australian researchers based on research conducted outside of the Australian context were not included.
- Compilation of the 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 authors evaluated all of the candidate papers. In approximately 95% of the cases the authors agreed on the inclusion of the candidate paper.

Once the list of papers was confirmed an analysis, described in Table 1, was undertaken. These categories were based on the investigation undertaken by Scornavacca et al. (2005) in their analysis of mobile commerce research. Consistent with Scornavacca et al. (2005), determination of method and outcome was made based on the description provided in the paper.

During the process of analysis modifications to the framework were made; those modifications and our definitions for the items appear in Table 1. In some cases we based our definition on the work of others. It should also be noted that particularly in the area of research methods, we recorded the description provided by the authors of the method used for the research.

| <i>Main research focus</i>  |  |
|---|--|
| Consumer  | Consumer behaviour, implications of EC technology for consumers.   |
| Business  | Organizational impact, implications of EC technology for business not related to a specific industry.  |
| SME   | Implications for Small Medium enterprises.   |
| Industry  | Industry is interpreted as research conducted on a specific industry, for example the wine industry.   |
| General   | General issues about EC, broad and non-specific focus.   |
| <i>Research methods</i><br><i>(more than one research method could be identified for a publication)</i> |  |
| Literature review   | Analysis of the literature in the field including conceptual work and opinion pieces drawn from the literature, again this is consistent with the approach taken by Scornavacca et al. (2005). |

Table 1: Analysis framework

|   |   |
|---|---|
| Case Study  | Even though a case study may have included interviews, if the author/s described the research method as a case study then it was recorded as such.  |
| Survey  | Survey included telephone interview surveys and in some cases face to face structured interviews. If this were the way author(s) themselves described their research method it was recorded as such.  |
| Experiment  | Experiments are research in which the environment is controlled (Neumann 2000, p. 222-223).   |
| Interviews  | Interviews for the purpose of this study refer to the use of one on one interviews, which were not classified as case studies by a paper's authors.   |
| Focus group   | A focus group is where a group of five to eight people are brought together in an interview (Neumann 2000, p. 274).   |
| Field study   | Field study is where research was conducted in the field and included, for example, where researchers analysed websites.  |
| Delphi  | Delphi is a research method that allows a group of participants to identify and rank a number of factors (Drinjak et al. 2001).   |
| Other   | Other methods included observation, actor network, grounded theory and document analysis.   |
| <i>Contribution of paper<br/>(more than one contribution could be identified for a publication)</i> |   |
| Insight   | Insight was determined to be where the author/s report and reflect on their findings rather than extend the findings for example to a model or framework. Insight included general recommendations and findings. We interpreted insight as interpretations, conceptual contributions excluding models and frameworks. |
| Framework   | Where the authors, based on the research, developed some theoretical framework or developed a taxonomy.   |
| Model   | Again where the outcome of the research was the development of a model this included testing of existing models or refinement of existing models.   |
| Future research   | Setting research agendas.   |
| Application   | Development of software.  |
| Algorithm   | Development of an algorithm to support a process or activity.   |
| Other   | Any contribution that does not fall in the above categories.  |

Table 1: Analysis framework

Modifications to the original analysis framework proposed by Scornavacca et al. (2005) were:



- The inclusion of the category SME, given the significant amount of research conducted in Australia in the SME area
- removal of simulation as a research method and removal of the categories constructed and policy, since no papers examined had these attributes.

| Journal                       | 2000  | 2001  | 2002  | 2003  | 2004  | 2005  | Total EC publications | Total Australian EC Publications |
|-------------------------------|-------|-------|-------|-------|-------|-------|-----------------------|----------------------------------|
| AJIS                          | 0     | 2     | 8     | 4     | 6     | 4     | 24                    | 12                               |
|                               | [25]  | [36]  | [40]  | [28]  | [29]  | [34]  |                       |                                  |
| CACM                          | 23    | 13    | 15    | 29    | 13    | 14    | 107                   | 1                                |
|                               | [233] | [325] | [310] | [302] | [238] | [222] |                       |                                  |
| ECR                           | N/A*  | 25    | 20    | 18    | 22    | 19    | 104                   | 1                                |
| EM                            | 35    | 32    | 30    | 26    | 32    | 34    | 189                   | 7                                |
| EJIS                          | 1     | 1     | 4     | 8     | 3     | 2     | 19                    | 4                                |
|                               | [31]  | [27]  | [21]  | [30]  | [27]  | [31]  |                       |                                  |
| ISJ                           | 1     | 0     | 1     | 1     | 4     | 1     | 8                     | 0                                |
|                               | [16]  | [16]  | [17]  | [17]  | [16]  | [19]  |                       |                                  |
| ISR                           | 0     | 1     | 4     | 0     | 0     | 4     | 9                     | 0                                |
|                               | [26]  | [26]  | [22]  | [22]  | [21]  | [25]  |                       |                                  |
| ITP                           | 3     | 0     | 0     | 5     | 3     | 2     | 13                    | 2                                |
|                               | [18]  | [30]  | [28]  | [29]  | [28]  | [25]  |                       |                                  |
| IJEC                          | 9     | 24    | 30    | 25    | 24    | 27    | 139                   | 2                                |
| JECR                          | N/A** | 24    | 19    | 16    | 21    | 17    | 97                    | 0                                |
| JMIS                          | 2     | 2     | 4     | 0     | 10    | 3     | 21                    | 0                                |
|                               | [34]  | [36]  | [36]  | [34]  | [36]  | [44]  |                       |                                  |
| JOCEC                         | 4     | 7     | 6     | 8     | 4     | 4     | 33                    | 0                                |
| JAIS                          | 5     | 1     | 2     | 1     | 2     | 2     | 13                    | 0                                |
|                               | [12]  | [8]   | [7]   | [16]  | [18]  | [14]  |                       |                                  |
| MISQ                          | 1     | 0     | 2     | 1     | 1     | 0     | 5                     | 0                                |
|                               | [24]  | [16]  | [17]  | [16]  | [19]  | [28]  |                       |                                  |
| Total Overall EC publications | 84    | 132   | 145   | 142   | 145   | 133   | 781                   | 29                               |

Table 2: EC papers published in target journals

\* Journal commenced in 2001

\*\* Publications for this year were not available

[ ] Figures in box brackets indicate total number of all research papers published

## 5 Results

The results section begins with the figures relating to the number of papers published followed by the type of research undertaken, the method and the research outcome.

| <i>Conference</i>                | 2000 | 2001  | 2002  | 2003  | 2004  | 2005 | <i>Total EC Publications</i> | <i>Total Australian EC Publications</i> |
|----------------------------------|------|-------|-------|-------|-------|------|------------------------------|---|
| ACIS                             | N/A* | 9     | 12    | 12    | 12    | 3    |                              | 48                                      |
|                                  | N/A* | [9]   | [16]  | [12]  | [15]  | [3]  | [55]                         |   |
| Bled                             | N/A* | 12    | 7     | 10    | 3     | 6    |                              | 38                                      |
|                                  | N/A* | [49]  | [46]  | [71]  | [53]  | [50] | [269]                        |   |
| ECIS                             | 2    | 3     | 4     | 5     | 8     | 3    |                              | 25                                      |
|                                  | [20] | [19]  | [20]  | [23]  | [24]  | [17] | [123]                        |   |
| ICIS                             | 0    | 0     | 0     | 0     | 0     | 0    |                              | 0                                       |
|                                  | [11] | [12]  | [14]  | [20]  | [15]  | [10] | [82]                         |   |
| PACIS                            | 6    | 3     | 2     | 8     | 2     | 3    |                              | 24                                      |
|                                  | [14] | [16]  | [14]  | [20]  | [13]  | [11] | [88]                         |   |
| Total Australian EC publications | 8    | 27    | 25    | 35    | 25    | 15   |                              | 135                                     |
| Total Overall EC publications    | [45] | [105] | [110] | [146] | [120] | [91] | [617]                        |   |

Table 3: EC papers published in target conferences

\* Publications for this year were not available.

[ ] Figures in box brackets indicate total number of EC papers

### 5.1 Journal Papers Published

Table 2 details the total number of EC papers published each year in each of the journals, and the number of papers by Australian researchers published in the journal. Figures in box brackets indicate the total number of all research papers (EC and others) for all researchers. It should be noted that some of the EC journals are mainly focussing on technical contributions, for example the *Journal of Electronic Commerce Research*. Apart from the *AJIS*, *Electronic Markets* was the most popular outlet for Australian researchers publishing in EC over the period. The results are presented in alphabetical order of journal.

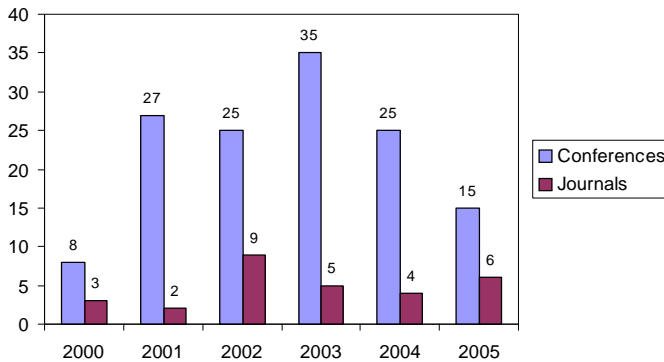


Figure 1. Journal and Conference publications by Australians during period

## 5.2 Conference Papers Published

Table 3 details the number of papers published by Australian researchers in EC each year at each of the conferences. Figures in box brackets indicate the total number of EC papers (all researchers). For the Australasian 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.

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 (14%). This stands in stark contrast to ICIS, where no Australian EC researchers published during the period.

## 5.3 Comparison: Conference vs. Journals Papers

A total of 135 papers were published by Australians at the target conferences and a total of 29 papers published in the target journals. Figure 1 depicts the comparison between journal and conference papers published by Australians during the period. The figure also shows that total Australian publication (conferences and journals) in electronic commerce peaked in 2003 with a total of 35 conference and 5 journal papers.

Note: Data for conferences in 2000 in the figure are understated because some conference proceedings were not available.

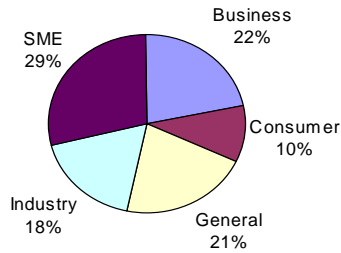


Figure 2. Main Research Focus (all Australian publications)

## 5.4 Type of Research Undertaken

Table 4 presents the summary figures of the main focus of the research published in the target conferences and journals by Australian researchers. The percentages as a total of all journals and conference papers respectively are also provided.

Figure 2 provides an overall view of the main research focus across all publications. As can be seen, SMEs represent the predominant research focus for Australian researchers. Indeed, the SME focus was especially dominant in the journal publications.

| <i>Category</i> | <i>Journals</i> | <i>% Journals</i> | <i>Conferencs</i> | <i>% Conferenes</i> | <i>Total</i> | <i>% Total</i> |
|-----------------|-----------------|-------------------|-------------------|---------------------|--------------|----------------|
| Business        | 6               | 20.7%             | 30                | 22.2%               | 36           | 22.0%          |
| Consumer        | 4               | 13.8%             | 13                | 9.6%                | 17           | 10.4%          |
| General         | 5               | 17.2%             | 29                | 21.5%               | 34           | 20.7%          |
| Industry        | 1               | 3.4%              | 28                | 20.7%               | 29           | 17.7%          |
| SME             | 13              | 44.8%             | 35                | 25.9%               | 48           | 29.3%          |
| TOTAL           | 29              | 100.0%            | 135               | 100.0%              | 164          | 100.0%         |

Table 4: Main focus of published Australian research

## 5.5 Research Methods Used

The research method adopted also provides an interesting insight into how Australian researchers have undertaken the research task. Figure 3 describes the breakdown of the different research methods used by researchers across all publications. Qualitative research methods (Case studies, focus groups, inter-

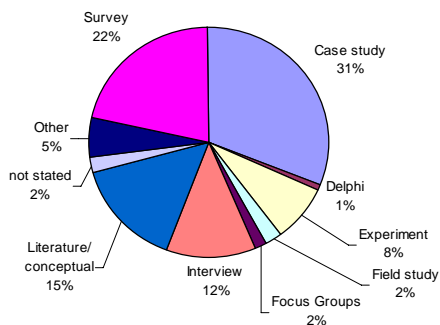


Figure 3. Research Methods used (all publications)

views) were predominantly used by Australian researchers in examining areas of electronic commerce.

Table 5 summarises the research methods used in all the publications over the period of the study. It has been argued that methods suitable for exploration and description (e.g., case studies) are often predominant in the early

| Research Method       | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | TOTAL |
|-----------------------|------|------|------|------|------|------|-------|
| Case study            | 5    | 10   | 11   | 12   | 10   | 9    | 57    |
| Delphi                | 0    | 2    | 0    | 0    | 0    | 0    | 2     |
| Experiment            | 0    | 1    | 2    | 4    | 5    | 2    | 14    |
| Field study           | 0    | 3    | 0    | 1    | 0    | 0    | 4     |
| Focus Groups          | 0    | 0    | 0    | 1    | 1    | 1    | 3     |
| Interview             | 1    | 3    | 5    | 6    | 2    | 5    | 22    |
| Literature/conceptual | 4    | 4    | 9    | 4    | 5    | 2    | 28    |
| Survey                | 5    | 4    | 7    | 12   | 8    | 4    | 40    |
| Not stated            | 0    | 1    | 0    | 2    | 1    | 0    | 4     |
| Other                 | 0    | 2    | 2    | 4    | 0    | 2    | 10    |

Table 5: Research method used

stages of an emerging research area, while explanatory methods (e.g., surveys) are used in the later stages (cf. Keen 1980; Baskerville & Myers 2002). However, as Figure 4 suggests, this pattern does not seem to be reflected in the trends in EC publications in Australia over the period. The number of case study and survey papers mirrors the overall trend in the number of publications (Figure 1). While the use of both methods rose until 2003, the number of case study papers in fact exceeds that of surveys in the later years.

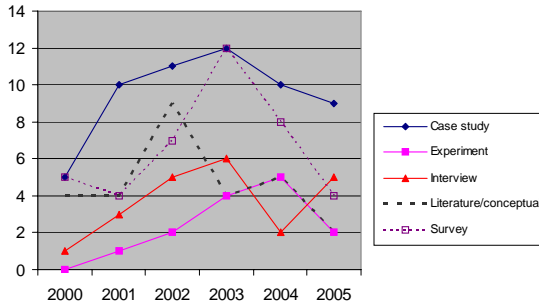


Figure 4. Trends in main research methods used (all publications)

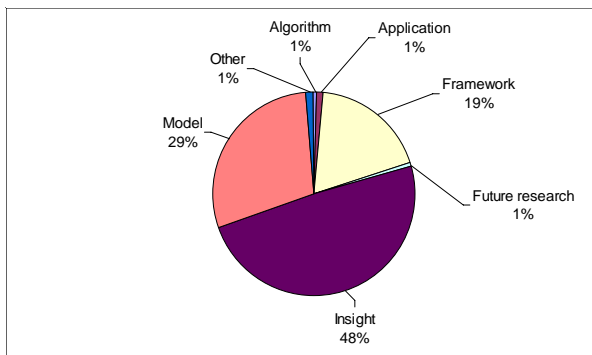


Figure 5. Research Outcomes (all publications)

## 5.6 Research Outcome

Research outcome is defined as the contribution that the research paper makes to the field. Figure 5 provides a breakdown of outcomes for all publications over the period. Insight represents the major research outcome for the majority of papers over the period.

Table 6 summarises the research outcomes for conference and journal publications separately. Frameworks, models and insight accounted for much of

the contribution in conference publications, while Insight was again the major contribution in most journal publications.

| <i>Research Outcome</i> | <i>Journals</i> | <i>Conferences</i> |
|-------------------------|-----------------|--------------------|
| Algorithm               | 0               | 1                  |
| Application             | 0               | 2                  |
| Framework               | 1               | 30                 |
| Future research         | 0               | 1                  |
| Insight                 | 21              | 60                 |
| Model                   | 7               | 42                 |
| Other                   | 1               | 1                  |

Table 6: Research Outcomes

## 5.7 Paper Authorship

An analysis of the authors on the publications indicates some interesting observations. Fifteen of approximately 210 Australian authors<sup>1</sup>, accounted for around 33% of all the papers published during the period. Furthermore 84% of all papers were co-authored by two or more authors.

## 6 Discussion

Table 2 and Table 3 indicate that the peak for EC publications overall occurred in the years 2002 to 2004 with 432 EC journal publications and 376 EC conference publications during that period. By 2005 we see a decline in the overall number of EC papers published (journal publications in 2005: 133; Conference EC publications in 2005: 91).

The analysis of conference and journal papers published by Australian researchers in EC has provided an interesting insight into where Australians are publishing, what they are publishing and how their research is conducted. The following describes our observations based on the results presented above.

Australian EC researchers have focused strongly on conferences as a major outlet for their research. Of the 617 conference EC publications, 135 were by Australians (22%) whereas just 4.7% of journal publications were by Australians. Given the changes in the way future research evaluations will be conducted, it is likely that research outlets will be more carefully scrutinized for international standing. In this respect, a number of concerns could be raised.

First, no major Australian EC publications were noted in journals such as MISQ, ISR, JMIS and CACM widely regarded as top research outlets. In addition, no Australians have published any EC papers at ICIS widely seen as a premier IS conference in the field. These top outlets do however feature prominently in EC quality rankings (Bharati & Tarasewich 2002), and indeed many EC papers have been published at these outlets during the period 2000-2005 (Table 2). For example only three papers by Australians have appeared in IJEC in the period under study (Blount et al. 2005; Driedonks et al. 2005; Johnston & Gregor 2000)<sup>2</sup>. The most popular journal outlet for Australian EC researchers has been AJIS with 12 EC publications. The most popular journal for Australian EC researchers on the quality rankings list of Bharati & Tarasewich (2002) is *Electronic Markets* with 7 publications. Australian researchers have published reasonably consistently in this journal over the period of the review, the peak year was 2005 with three Australian EC papers published (Fisher & Craig 2005; Robertson et al. 2005; Gengatharen et al. 2005). While a large number of Australian EC publications were published during this period, it could be argued that higher ranking outlets should be targeted in future EC research.

From Figure 1 it is clear that 2003 was a peak in terms of the total publications by Australian researchers, however conference papers dominated. The highest number of EC journal publications by Australians was in 2002 and 2005. Six of the nine journal publications in 2002 though were in AJIS (Goode 2002; Jones et al. 2002; Lawson et al. 2002; Marshall & McKay 2002; Poon 2002; Slade & Van Akkeren 2002). Given that the so-called dot.com crash occurred around April 2000 (Coltman et al. 2002), this lag could be attributed to publication lead times.

Given the relatively small population of Australia, Australian EC researchers are very well represented at conferences such as the Bled EC Conference, PACIS, and ECIS (Table 3). This was especially noticeable in 2003, when 22% of EC papers at ECIS were by Australian researchers.

The Australian economy has a very vibrant SME sector. It is therefore not surprising that a significant proportion of the EC research that has been undertaken by Australian researchers has focused on the SME sector. The strong SME focus was also reflected in the journal publications (Table 4). Some of the more important contributions by Australian researchers in the SME area were for example Poon and May's (2000) work in SMEs and the benefits of EC; Coltman et al.'s (2002) contribution challenging the concept that EC was just about reducing the costs of transactions; Prananto et al.'s (2004) work on SME maturity models; and the research conducted by Gengatharan et al. (2004) looking at e-business marketplaces for SMEs.



An analysis of the journal and conference publications shows that the predominant research methodologies adopted by researchers undertaking EC research has been qualitative in nature. We could speculate that, given that many European researchers also favour qualitative methods, European journals and conferences are amenable outlets for Australian EC research. *EJIS* for example has published case study work by researchers such as Ash and Burn (2003) and Gengatharan and Standing (2005a) and work based on a literature analysis by Johnston and Gregor (2000). The *International Journal of Electronic Commerce* has also published qualitative research by Australian researchers for example Driedonks et al.'s (2005). This work examined B2B electronic marketplaces using current theories and a case study.

Twenty nine papers were published by Australian researchers in journals from 2000 to 2005. Of these, Insight was the most common reported research outcome by Australian EC researchers. Insight we describe as research that did not produce a model or a framework but reflects more broadly on the outcomes of the research. One example of insight from Blount et al.'s (2005) work, is their study of human resource management strategies in two banks, where they identified the need for alignment of e-commerce strategies and human resource management strategies. Another Insight contribution comes from the work of Johnston and Gregor (2000) who conclude with a reflection on the use of a whole industry as a unit of analysis. In particular they question the assumption that EC adoption, when undertaken by many firms leads to industry-wide adoption. A number of the papers contribute to the field through the identification of, for example factors that influence e-business adoption such as the work of Ash and Burn (2003) who identified stages of sophistication in e-business.

From Table 3 it is clear that many Australian EC researchers travelled overseas to present their research. Further given the propensity for Australian researchers to collaborate on research papers there seems to be plenty of opportunities for international collaboration. Indeed, international collaborations have resulted in papers published in leading conferences for example Gharavi et al. (Gharavi et al. 2005) and journals (for example: Elliot & Loebbecke 2000; Driedonks et al. 2005; Coltman et al. 2002). Australia has a critical mass of EC scholars, of whom many have published extensively in the EC area. These include for example Ash and Burn (Ash & Burn 2003), Castleman and Swatman (Blount et al. 2004; Blount et al. 2005), Prananto, McKay and Marshall (Prananto et al. 2004); and Standing and Gengatharen (Gengatharen & Standing 2004; Gengatharen et al. 2005).

Our analyses suggest a number of implications for both Australian and other researchers in the EC field. EC continues to be a popular research theme across conferences and journals, even more so as a cumulative research tradi-

tion builds (cf. Keen 1980). We noticed a change in focus in recent years to such areas as portals (Fisher & Craig 2005; Gengatharen & Standing 2005b), electronic marketplaces (Gengatharen & Standing 2004; Driedonks et al. 2005), and B2B trading (Quaddus & Hofmeyer 2005; Ash & Burn 2004). Earlier research was more focused on models, success factors, barriers to electronic commerce and other issues relating to adoption. Many of these outcomes have however been mainly been published at conference outlets. In broad terms, Australian researchers have demonstrated their capacity to successfully complete and publish research in EC. This solid publication record now sets the stage for Australian EC researchers to be more ambitious and target prominent international outlets for their work.

## 7 Conclusion

Analyses of papers in the electronic commerce area, published by Australian researchers during the period 2000-2005, reflects a number of trends in terms of research outlets, approaches, and methods used.

The analyses presented here invite a comparative analysis from Scandinavian researchers in EC. The Scandinavian research community represents an appropriate environment to benchmark the Australian research outputs due to a number of characteristics. Scandinavia and Australia whilst different in geographic size, share many commonalities such as population spread and research outlook. It is our hope that the analyses in this paper will lead to mutual learning and collaboration between researchers in both contexts.

## Note

1. This number was adjusted for visiting scholars to/from Australia where the affiliation was listed as the visited institution.
2. A paper by Wilkens et al. (2002) also appeared in IJEC but was not included in the analysis as it was mainly about the use of e-commerce for government purposes and did not fall within our definition of EC.

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