

**Usage and Impact Factor Correlations in  
Electronic Journals**

**by**

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## **ABSTRACT**

This research explores the level of correlation between electronic journal usage and ISI Impact Factors that may justify Impact Factors to be used as a collection management tool. The study utilised ISI's *Journal Use Report* and *Journal Citation Reports* to gather data in the areas of History, Linguistics, Political Science, Environmental Science, Mathematics, Physics (Applied), Economics, Information Science & Library Science, Management and Law.

A slight positive correlation was found for several disciplines with two disciplines displaying a small negative correlation. The study concluded that the levels of correlation were not significant enough to enable ISI Impact Factors to be used in isolation as an effective collection management decision-making tool.

Several issues were identified as possible factors in the level of correlation found: articles downloaded and not used, the limited number of titles subscribed to by VUW, the lack of New Zealand and Australasian titles, the interdisciplinary nature or limited focus of some titles and the research and teaching focus of VUW.

The study concludes that Impact Factors may be of use as an evaluation tool for academic libraries, but that they should be used in combination with a number of other factors discussed. A number of areas for further research are also identified.

### **Keywords:**

Collection Management; Electronic Journals; Usage Statistics; Impact Factors; Academic Libraries; New Zealand.

# **1 THE PROBLEM**

## **1.1 Introduction**

The problem of effectively evaluating electronic journals is something that has faced academic libraries since electronic journals have reached the academic market. As each new print or electronic journal evaluation tool has been developed, academic researchers have investigated their merits and disadvantages. Citation-based evaluation tools have been developed not only as a measure of journal merit for researchers, but also as a tool for librarians in ascertaining the value of title acquisition. While a variety of citation-based evaluation tools have been used in an attempt to meet collection management decision-making needs, few studies have used metrics to analyse the level of correlation these evaluation tools have with electronic journal usage statistics in a New Zealand environment.

## **1.2 Problem Statement**

As the popularity of and demand for electronic journals rise, academic librarians may find it helpful to discover an effective evaluation tool for collection management decision-making. Local usage studies can be time consuming and labour intensive, unsuitable as a regular evaluation tool. Although there are a number of evaluation tools employed by libraries, citation-based journal-ranking tools offer an additional element to the academic librarian's arsenal. A variety of journal-ranking systems have been developed and are now readily available for use as journal evaluation tools. These include, ISI Impact Factors (Web of Knowledge, 2008), Eigenfactor (Bergstrom, 2007), SCImago Journal and Country Rank (SCImago, 2007) and Red Jasper's Centre for Journal Ranking (Red Jasper's Centre for Journal Ranking, 2006).

Librarians are now faced with a variety of journal ranking systems that because of their range are of varying degrees of usefulness in collection management decision-making. What is needed is further research into the correlation between current subscription usage and journal ranking systems to discover to what extent journal ranking systems are viable collection management decision-making tools.

This project aims to discover the level of correlation between electronic journal usage statistics at Victoria University of Wellington (VUW) and one evaluation tool widely available to academic libraries – ISI Impact Factors. If a significant positive relationship is found, then ISI Impact Factors may be able to be used as a collection management decision-making tool. If a strong relationship is not found, the extent to which ISI Impact Factors may be used in tandem with other evaluation tools will be discussed.

### **1.3 Research Question**

This research seeks to answer the following question:

*“What level of correlation is there between usage statistics for electronic journals at Victoria University of Wellington Library (VUW) and the journal rankings produced by ISI that may enable ISI Impact Factors to be used as an effective collection management decision-making tool?”*

The sub questions are as follows:

1. Is there a statistically significant relationship between the VUW usage statistics and the ISI Impact Factor of a journal title?
2. Is there a statistically more significant correlation in a particular discipline than in another?

## 1.4 Limitations of this Study

The following limitations have been identified:

1. In terms of electronic journal articles, 'use' is defined as 'download'.

As discussed in the literature review, this definition of calculating electronic journal use compares favourably with the 'sweep' survey method commonly used in localised print journal frequency of use studies (Tsay, 1998, 32-33). The 'sweep' survey method counts print journals, as they are re-shelved after being picked up from tables and carts where they were left by users. This method is an effective measure of use in academic libraries where print journals are not available to be withdrawn.

The 'sweep' method of calculating print journal use compares favourably with electronic journal article downloads or 'use.' One limitation of the 'sweep' survey method is that it does not count volumes that are immediately re-shelved by patrons, as the use is negligible. The immediate re-shelving of a journal indicates that the patron made little if any use of the item. Similarly, this study will only count full article downloads as a 'use.' Like the immediate re-shelving of a print journal, the viewing of electronic abstract or other bibliographical information without downloading the full electronic article indicates that the patron made little if any use of the item. The extent to which this assumption holds true in practice is outside the scope of this project, but would make an interesting topic of research.



2. Actual use of an article once it has been successfully downloaded cannot be ascertained.

Once an article has been successfully downloaded it may be cited in research, read to increase knowledge, or not used at all. Due to the ease with which journal articles can be downloaded, it is possible that users may download articles for a cursory glance, much as one would browse a journal abstract. As discussed further in the methodology, this project will utilise ISI's *Journal Use Report* as a means of gathering usage statistics for the electronic journals VUW subscribes to. In spite of the limitation mentioned above, the *Journal Use Report* remains the timeliest and most cost effective method of gathering usage statistics within the scope of this project.

3. Victoria University of Wellington Library does not subscribe to all journals included in the *Journal Citation Report*.

As this study is based on electronic journal usage at Victoria University of Wellington, any titles not subscribed to by VUW Library will be excluded from this study.

4. Not all journals subscribed to by Victoria University of Wellington are included in the *Journal Citation Report*.

Impact Factors cannot be gathered for journals not included in the *Journal Citation Report*, so these titles will be excluded from this study. This limitation is apparent with the other citation-based evaluation tools mentioned above. The

*Journal Citation Report* contains the largest, most current list of journal titles available to the author. However, the fact that many New Zealand journal titles are not included in this study may affect the validity of the results. The implications of this will be discussed further in the results.

## **2 LITERATURE REVIEW AND THEORETICAL FRAMEWORK**

The use of journal citation and impact as evaluation tools has been continually addressed by scholars since the annual publication of *ISI Journal Citation Reports* commenced in 1976. The proposed research study aims to address a previously neglected area of investigation from a New Zealand perspective – the level of correlation found between electronic journal usage statistics and ISI Impact Factors. The intention of this study is to establish the validity of impact factors as a collection management tool in academic libraries. The parameters of the literature review were established from initial working hypotheses that there was little scholarship on the validity of impact factors as a collection management tool in academic libraries for electronic journals from a New Zealand or Australasian perspective, and that there were very few recent studies in this area. Both of these working hypotheses appeared to be supported by an initial review of the literature.

### **ISI Impact Factor**

The earliest use of citation data in collection management decisions was in 1927, where faculty members at Pomona College ranked chemistry journals according to the number of times they were cited in the 1926 volume of *Journal of the American Chemical Society* (Nisonger, 2004, 59). As Nisonger (2004, 59) notes, early attempts

at citation based journal ranking were labour intensive and methodically flawed due to varying back runs.

The Institute for Scientific Information (ISI) attempted to solve this problem through the development of Impact Factors – a measurement of a journal’s impact on a field of study – in the early 1960s. The Impact Factor of a journal title represents the number of cites to recent articles divided by the number of recent articles from the same journal title contained in the ISI database:

$$\text{Impact Factor (year 3)} = \frac{\text{Number of citations received (year 3) to citable items published (year 1 + 2)}}{\text{Number of citable items published (year 1 + 2)}}$$

For example, from the *ISI Science Citation Index Journal Citation Reports*, the Impact Factor for *Harvard Law Review* in 2006 is 7.863:

$$\text{Impact factor 2006} = \frac{(432 + 315)}{(50 + 45)} = \frac{747}{95} = 7.863$$

Where journal articles published in 2006 cited articles published by *Harvard Law Review* in 2004 and 2005, 747 times. Of this, 432 citations were made to 50 articles published by *Harvard Law Review* in 2004, and 315 citations were made to 45 articles published in 2005.

Although the two-year Impact Factor is the most commonly used tool from the *Journal Citation Reports*, it is only one of several quantitative and qualitative measures available (Garfield, 1990). Another measure relevant to this project is the Five-Year Impact Factor. This journal-ranking tool is available as part of the *Journal Citation Reports*. It measures citations over five years, instead of the traditional two years. This formula gives a better indication of the long-term value of a journal

(Rousseau, 2002). This is also the citation period utilised by Red Jasper's Centre for Journal Ranking (2006).

In the 2007 edition of the ISI *Journal Citation Reports*, the Science Citation Index indexed 6,426 journal titles (ISI Web of Knowledge, 2008). The Social Science Citation Index consisted of 1,800 journal titles. ISI follows a selective procedure for evaluating journal titles for the inclusion in the *Journal Citation Reports*, and as Rousseau (2002) notes, citations, and hence Impact Factor, will always be calculated from a limited pool of journal titles. The implications for this project are that New Zealand, and to a lesser extent Australasian, titles are not well represented.

The characteristics of a quality journal were illustrated by Zwemer (1970). The key elements include:

- High standards of acceptance for manuscripts – specifically articles based on new scientific information, reliable methods, adequate controls and treatment of statistical data;
- A broad editorial board with appropriate representation of all disciplines and sub-disciplines covered by the journal;
- A critical refereeing system is used;
- Ability to meet the declared publishing schedule and frequency;
- Inclusion of journal title in key abstract and indexing services;
- Confidence in the contents is high among the scientific community; and
- Achieves a high citation rate in other journals.

The elements of citation data, journal standards and expert judgement were also used by Garfield (1990) to illustrate the selection process of journals for the inclusion in the products offered by ISI. Garfield also notes that fully descriptive article titles and abstracts, complete bibliographic information, the reputation of a publisher, and English language abstracts are also key factors (1990, 192).

### **Research Focused Studies of Citation-based Journal Ranking Tools**

Nisonger (2004) provided an overview of the studies that have been carried out in relation to the *Journal Citation Report* Impact Factor. In discussing the benefits and criticisms of using Impact Factors as a collection management tool, Nisonger concludes that Impact Factor should be viewed as a valid and reliable collection management tool, as long as it is used with the following guidelines (2004, 71-72):

- The Impact factor should be considered in combination with other journal evaluation criteria (library collection priorities, subjective judgement of the journal's quality, cost, indexing, use and alternative forms of availability);
- Journals from different disciplines should not be compared;
- More than one years data should be used;
- Impact Factors from adjacent years should not be averaged (it would be more correct to adjust the formula for the number of years you wish to analyse);
- Title changes can alter a journal's Impact Factor (citations to the old title are not transferred to the new title);
- A low Impact Factor does not necessarily indicate a 'bad' journal title;

Nisonger (2004, 72) also notes that correction for journal self-citation and other statistical manipulations discussed in the literature would not merit the effort required.

Nisonger's guidelines raise several implications for the proposed study. The correlation between use and Impact Factor may differ between disciplines. This study proposes to look at the level of correlation between Impact Factor and VUW usage statistics within disciplines, not compare individual journal rankings between journals of different disciplines. This study also proposes to not include data from any journal that has changed its title within the last two years. As citations from the old title do not relate to the new title, this would result in incomplete data if used. Another point to note in the discussion of results is that a low Impact Factor may not indicate a 'bad' journal. It should be noted that a title may be valuable for other purposes than contributing to research, such as a teaching tool in academic libraries, or of use to practitioners in private practices.

In assessing the reliability of ISI Impact Factors being used to evaluate research, Seglen (1997, 499) notes that the use of journal impact factors conceals differences in article citation rates. In a study of nine biochemical journals, Seglen shows that 50% of citations come from 15% of a journal's articles and that 90% of citations come from 50% of a journal's articles. By assigning a journal Impact Factor to a journal title rather than an article, Seglen argues that uncited articles (roughly 50% of a journal's articles) are sharing the glory of a few cited articles, making the Impact Factor non-representative of the whole. This problem does not negate the use of Impact Factors as a collection management tool. It is inevitable that part of a resource may be more heavily used than another part. This holds true for any resource, regardless of format.

Seglen also discusses the 'shortcomings of a technical and more fundamental nature' that the Impact Factors are encumbered with (1997, 500). Many of Seglen's

perceived problems associated with Impact Factors are shared with a number of other authors (Altmann and Gorman, 1999; Duy and Vaughan, 2006). The main points are that Impact Factors may be determined by a formula that does not signify the scientific quality of articles, and that Impact Factors may vary according to research field – journals covering large areas of research with rapidly expanding but short-lived literature will result in a higher impact factor than an area of research with a longer literature life (Seglen, 1997, 499).

Garfield (1990) also notes that the number of citations an article received may vary between disciplines. He goes on to mention that smaller fields may not generate as many articles or citations as larger disciplines, and that while it may take 10 or more years for an article to attract a meaningful number of citations in one field, in another field the number of citations could peak within a few years. This issue only becomes pertinent when one compares the rankings of individual journal titles in separate disciplines. This research study will be looking at the level of correlation within each discipline, rendering this point moot.

Levitt and Thelwall (2008) used citation analysis to determine whether research published in interdisciplinary journals were more highly cited than articles in specific fields of study. Their finding was that the citation rates of articles published in journals in specific fields of study were significantly higher than articles published in interdisciplinary journals. While this study will not be looking at the interdisciplinary nature of titles, this may be a discussion point when looking at the levels of correlation between subject areas. For example, Environmental Science may be of a more interdisciplinary nature than Applied Physics.

Rather than following Seglen's citation approach (1997), Saha (2003) tests the validity of impact factor as a measure of quality by testing its correlation with the quality ranking given by clinical practitioners and researchers. The study found strong correlations between Impact Factor and both clinical practitioners and researchers rankings. Saha concludes that Impact Factor may be a reasonable indicator of quality for general medical journals, despite its limitations (2003, 46).

### **Collection Management Focused Studies of Citation-based Journal Ranking Tools**

Tsay (1998) explored the use, citation and Impact Factor data for highly used, highly cited or high Impact Factor journals through the Spearman rank correlation coefficient and Pearson product-moment correlation coefficient tests. Tsay's results indicated that the more frequently a journal is published, the more citations it is likely to receive (1998, 35). These results support Seglen's suggestion that journals, including rapidly increasing but short-lived literature, will result in a higher Impact Factor (1997, 499). Nisonger's guidelines (2004, 71-71) are also relevant here – that a low Impact Factor does not necessarily indicate a 'bad' journal, particularly in a slowly evolving field, and that Impact Factors from different disciplines should not be compared.

The 'sweep' survey method was utilised by Tsay to evaluate print journal use. Print journals are counted as they are re-shelved after being picked up from tables and carts where they were left by users. Although there are limitations associated with this method, it remains one of the most useful tools for estimating print journal usage. One of the limitations of this method is that it does not count volumes that are immediately re-shelved by patrons. However, if an item is immediately re-shelved, its use by patrons would be negligible (Tsay, 1998, 32-33). With the increase of



electronic journals in academic libraries, print journal subscriptions should be re-evaluated. While for some disciplines, such as Library Science & Information Science, electronic access is preferred, for others the preference is for print.

Disciplines such as Art History, Classics and Mathematics often prefer print due to the lack of clarity in images and formulae in electronic journals.

Tsay discusses further limitations of the study resulting from the selection of data. Library use data was collected for 1995, and *Journal Citation Report* data was collected for 1993. While Tsay notes that new titles would be disadvantaged by this limitation, he also noted that ranking based on citations would change little in two years for established titles: 'impact factors no doubt shift from year to year, but the relative rankings are probably more stable' (Tsay, 1998, 33). While this may be accurate for the disciplines analysed in this study, another study by Altmann and Gorman (1998, 151) noted that the median year-to-year variation in impact factors was 21.97% in ecology journals.

Tsay's study confirmed a statistically significant relationship existed between the frequency of use and the frequency of citations, and between the frequency of use and the Impact Factor for journals in the medical sciences. Although further research is needed to confirm these results across other disciplines, Tsay indicates that Impact Factor is 'a significant measure of importance that could be used for journal selection' (1998, 39).

Nixon and Wulff (2004) looked at the patterns of use of print and electronic journals and correlations with ISI Impact Factors in the biomedical field. The relationship between print and electronic journal usage is something not covered by earlier

literature. Nixon and Wulff found that while people preferred to use the electronic version of a journal title over the print, journals that were highly used in print format were also highly used in electronic format (2004, 321). The study also found that the level of correlation between Impact Factor and the electronic usage data produced by information providers differed considerably between providers (2004, 319). An analysis of the variances in Impact Factor and usage correlations by information provider is outside the scope of this project; however it would make an interesting topic for further research.

Duy and Vaughan (2006, 512) also examined the relationship between print and electronic measures of journal usage and citation data. With print usage studies being expensive and time-consuming (like the 'sweep' method employed by Tsay), the ability to track electronic journal usage through *Journal Use Reports* is a useful tool for librarians. COUNTER compliant electronic journal usage (qualified as the total number of HTML and PDF full-text articles requested) was gathered online directly from the publisher (Duy and Vaughan, 2006, 514). COUNTER (Counting Online Usage of NeTworked Electronic Resources) was established in March 2002 as an international initiative to provide librarians and other information specialists by 'setting standards and facilitate the recording and reporting of online usage statistics in a consistent, credible and compatible way' (COUNTER, 2006).

Using the Spearman's rank correlation coefficient and the Pearson product-moment correlation coefficient, the results of the Duy and Vaughan's study indicate that electronic usage data correlates significantly with print usage data in the areas of chemistry and biochemistry (2006, 516). The results also indicate that though is no relationship between electronic usage data and Impact Factor, there was a correlation

with local citation data (2006, 515). Although no correlation was found, this study was confined to a limited number of journal titles. Further research is required to see whether similar results may occur across other disciplines.

A recent study by Chung (2007, 395) compared international citation data (Impact Factor) with local citation data. Local citation data was gathered from within the institution by counting the number of citations a journal received from the researchers within the institution. Using the Pearson product-moment correlation coefficient test, it was found that there was no significant relationship between the impact Factor and local citation score. Accordingly, Chung notes that the Impact Factor could not be substituted for a local use study (2007, 401).

The key benefits and criticisms associated with the use of ISI Impact Factors discussed above are summarised in Figure 1 below:

**Figure 1: Summary of Key Benefits and Criticisms Associated with ISI Journal Impact Factor Use**

Benefits:

- ISI Impact Factor is a well-known evaluation tool
- The formula is straightforward and easily comprehended
- Data is easily obtained from *Journal Citation Reports*
- It allows for comparison between different journals by normalising for their age and size
- Additional citation information is available from the *Journal Citation Reports* – including a journal's total citations received, immediacy index and cited half life
- Journals within an ISI subject category can be compared

Criticisms:

- The size and dynamic of a research field can influence the Impact Factor
- Research fields with rapidly increasing but short-lived literature are favoured
- The normalised variables (i.e. age and size of a journal) may be legitimate evaluation criteria
- Impact Factor may not correspond to journal use at an individual library
- Self citations are not corrected for
- Coverage of the *Journal Citation Reports* is not complete
- Database has an English language bias
- Database has an American publisher bias

## **Alternative Citation-based Journal Ranking Systems**

The use of ISI journal performance metrics as a systematic and objective evaluation tool has been the subject of wide debate (Seglen, 1997; Chung, 2007). In the view of the debate surrounding the validity of ISI's Impact Factor, other journal ranking options such as Eigenfactor, SCImago Journal and Country Rank and Red Jasper's Centre for Journal Ranking are providing alternative formulae for measuring a journal's impact.

Eigenfactor was designed to complement, rather than replace, traditional evaluation tools. A discussion of the advanced statistical formula used on the website is beyond the scope of this study. However, it does aim to solve many of the perceived deficiencies associated with the ISI Impact Factor for which the designers; Ted and Carl Bergstrom; were named SPARC Innovators by the Scholarly Publishing and Academic Resources Coalition (SPARC, 2007).

With data provided by Thomson Reuters (Scientific) Inc., the Eigenfactor algorithm works in a similar way to the Google pagerank algorithm by using the entire network of citations to evaluate the importance of each journal. It also uses five-year citation data and adjusts scores for citation differences across disciplines. The 115,000 items used in the database include scholarly journals, newsprint, PhD theses and popular magazines (Bergstrom, 2009).

The SCImago Journal and Country Rank (SJR) was developed by the SCImago Research Group, utilising information contained within the Elsevier database, *Scopus*. *Scopus* is one of the largest abstract and citation databases on the market; with over 16,000 peer-reviewed journals, including open-access journals, conference

proceedings, trade publications, book series, and over 431 million web sources; covering such disciplines as Life Sciences, Health Sciences, Physical Sciences, and Social Sciences (Scopus, 2008).

Based on the Google PageRank algorithm, the SJR is based on the ‘transfer of prestige’, through the use of citations, from one journal to another (SCImago, 2007).

Although a discussion of the formula used to calculate the SJR is beyond the scope of this study, the calculation involves three stages:

1. Initial assignation of the SJR, where a default prestige is assigned to a journal;
2. Iteration process, where the computation from step 1 is iterated to calculate the prestige of the journal;
3. Calculation of the prestige per article.

The Centre for Journal Ranking by Red Jasper Limited (CJR) is an interactive journal ranking service that allows users to configure their ranking interests (Red Jasper’s Centre for Journal Ranking, 2006). Although CJR covers all disciplines, the database currently holds approximately 7,000 journals, making CJR the smallest ranking service discussed in this literature review. The CJR aims to provide an alternative journal ranking formula that resolves two commonly held problems with ranking systems using the Science Citation Index (SCI) as a base (Red Jasper’s Centre for Journal Ranking, 2006):

- SCI assigns all citations with the same weighting. The CJR maintains that indirect contributions must be taken into account when evaluating a journal;

- The discipline experts used by SCI may have preconceived biases in ranking journals due to their own experiences with a journal, or lack of them.

Like the SCImago Journal and Country Rank, the CJR uses Google's PageRank algorithm as a basis for their formula. Although further discussion of the CJR formula is outside the scope of this study, the formula proposes two new indicators by considering both journal influence index and the paper influence index. The formula allows users to validate various scenarios and parameters to rank journals.

Despite the merits of some of the alternative methods of calculating Impact Factor above, the decision was made to utilise the ISI *Journal Citation Reports* for this study for a number of reasons. Victoria University of Wellington Library has a current subscription to the ISI Web of Knowledge *Journal Citation Reports* package. Additionally, the *Journal Citation Reports* contained the most comprehensive and current data available to the author.

Due to the short history of the Eigenfactor, SCImago Journal and Country Rank and the Centre for Journal Ranking, there have been few studies on the merits of these tools to date. However, several of the limitations of ISI Impact Factors indicated in Figure 1 could be applied to these alternative systems. For example, each of these tools has an English language bias and an American publisher bias. Further investigation on the benefits and criticisms of these journal-ranking tools in comparison with ISI's *Journal Citation Reports* may be appropriate area for future scholarly study. It is noted that Eigenfactor will become part of the ISI Web of Knowledge *Journal Citation Report* package from 2009 (ISI Web of Knowledge, 2009).

### 3 RESEARCH METHODOLOGY AND DATA ANALYSIS

The usage statistics for VUW were calculated using the ISI *Journal Use Report* for 2007. This report is COUNTER compliant and calculates the number of successful downloads of articles from a journal title for a specific time period. This method of calculation was chosen as the software is freely available to the author and involves limited resources.

The discipline categories used were those listed in the *Journal Citation Reports*. VUW discipline categories were unable to be used as the *Journal Use Report*, the medium through which the VUW usage statistics were supplied; had no facility to sort the results by discipline. A *Journal Citation Report* was run for each discipline listed in Figure 2. The titles in each discipline's *Journal Citation Report* were then matched up with the appropriate titles in the *Journal Use Report*.

**Figure 2: Disciplines Selected for Study**

<i>Faculty</i>	<i>Discipline</i>
Faculty of Humanities & Social Science	History Linguistics Political Science
Faculty of Science	Environmental Science Mathematics Physics (Applied)
Faculty of Commerce & Administration	Economics Information Science & Library Science Management
Faculty of Law	Law

These disciplines were chosen for two reasons:

- a. to give a diverse range of subject matter to better allow trends in disciplines to emerge, and
- b. these are disciplines that are either studied by students or researched by staff at VUW.

Out of the seven faculties at Victoria University of Wellington, only four were selected for inclusion in this research study:

- The Faculty of Architecture and Design was excluded as no disciplines relating to this faculty were listed in the *Journal Citation Reports*.
- The Faculty of Engineering and Computer Science was excluded as the disciplines available in the *Journal Citation Reports* did not fit well within this faculty.
- The Faculty of Education is a recent addition to Victoria University of Wellington and has undergone several structural and programme changes. Although results were available for disciplines within this faculty, the decision was made not to include these as they would not reflect the new strategic directions of the faculty. This faculty could be an area for future study once the environment has stabilised.

Data for electronic journal use Usage statistics was gathered for up to 100 titles on each discipline's *Journal Citation Report*. As the *Journal Citation Reports* were not yet available with 2008 figures, the decision was made to use the *Journal Usage Report* for 2007. This ensured that both analysis tools are compared on an equal footing with data collected from the same time period.

The *Journal Citation Reports* for each discipline were be sorted by Impact Factor. Of the 10 disciplines selected, only three disciplines had *Journal Citation Reports* consisting of more than 100 titles. The limit of 100 titles was chosen due to the time restraints of this project. As the Impact Factor ratings were minimal after the first 100 titles of a *Journal Citation Report* and the number of subscriptions VUW had to journal titles with lower ratings decreased significantly, it was thought that this limit



would still allow a range of high, medium and low Impact Factor titles to be analysed within the parameters of this study.

The titles in each discipline must be journal titles that Victoria University of Wellington Library subscribes to, and appear in the *Journal Use Report*. Those titles that were not subscribed to and did not appear in the *Journal Use Report* were excluded from the study. Data from any title that had had a name change within the last two years were also excluded from this study. As citation data from an old title does not relate to the new one, data for the new title name would be incomplete. If a title was excluded from the study by the above criteria and additional titles are available (i.e. the *Journal Citation Report* contained more than 100 titles), replacement titles were not selected.

The results for each discipline were placed in a table noting the Journal Title, ISSN, VUW Usage 2007 and ISI Impact Factor 2007. After tabulating the results for each discipline, the Pearson product-moment correlation coefficient was used to see whether the level of correlation between VUW usage statistics and ISI Impact Factor data in each discipline is significant, thereby answering sub question one:

*Is there a statistically significant relationship between the VUW usage statistics and the ISI Impact Factor of a journal title?*

The Pearson product-moment correlation coefficient ( $r$ ) is a parametric test that indicates the strength of relationship between two variables (Hafner, 1998, 215):

$$r = \frac{n \sum XY - \sum X \sum Y}{\sqrt{[\sum X^2 - (\sum X)^2] [\sum Y^2 - (\sum Y)^2]}}$$

The Pearson product-moment correlation coefficient test describes the degree of linear correlation between two variables (Hernon, 1994, 159). As such, this is an appropriate test for analysing the correlation between ranked data. In the instance of a positive relationship, there may be a correlation between VUW usage statistics and ISI Impact Factor to enable it to be employed as a decision-making tool in collection management. Whether this should be the only decision-making tool used in collection management will be discussed further in the results.

To provide a more visual tool in analysing the level of correlation between VUW usage statistics and ISI Impact Factors, the tabulated results were plotted into a scatter graph identify any extreme results or points for discussion.

The steps above were repeated for each discipline and the results compared in order to answer sub question two:

*Is there a statistically more significant correlation in a particular discipline than in another?*

## 4 RESULTS

VUW electronic journal usage data and ISI Impact Factors were collected for the journal titles included in the 10 disciplines listed in Figure 2. It was thought that the higher the number of platforms a title was available on may have had an impact upon the level of journal use. This did not appear to be a major factor in the level of use, although it could be an interesting topic of further research to analyse the levels of usage via different information provider's platforms.

It was interesting to note that although the information providers *Oxford Journals* and *Oxford Journals Online* were noted separately in the *Journal Use Reports*, the results were duplicated. For example, Figure 3 displays the usage data for the journal title *Applied Linguistics*:

**Figure 3: VUW Usage Statistics by Information Provider for *Applied Linguistics***

<i>Journal Title</i>	<i>ISSN</i>	<i>Information Provider</i>	<i>VUW Usage 2007</i>
Applied Linguistics	0142-6001	EBSCO	0
		Oxford Journals	1082
		Oxford Journals Online	1082
		ProQuest	215

This issue was found for all journal titles provided through *Oxford Journals* and *Oxford Journals Online* platforms. Where duplicate results were found, they were not included. Therefore, for this project the VUW usage for *Applied Linguistics* is 1297 rather than 2379.

The data collection was limited by the providers included in the *ISI Journal Citation Reports*, as per Figure 4.

**Figure 4: Information Providers included in ISI's *Journal Use Report***

• ACS Digital Library	• Oxford Journals Online
• Annual Reviews	• Palgrave
• Blackwells Synergy	• Project Muse
• Cambridge Journals Online	• ProQuest
• EBSCO	• Royal Society of Chemistry
• Emerald	• Sage
• HW Wilson	• Science
• IEEE	• Science Present Classic
• Index to Theses	• Science STKE
• JSTOR	• ScienceDirect
• Kluwer Journals Online	• ThomsonGale
• Nature	• Wiley InterScience
• Oxford Journals	

This limitation affected the results with regard to New Zealand, and to a lesser extent, Australasian titles. The only identifiable New Zealand title was *Political Science*, included in the *Journal Citation Reports* for the Political Science discipline. *Political Science* was excluded from this study as it was not included in the *Journal Use Report*. The availability of New Zealand material in electronic format is a particular problem for New Zealand academic libraries. Many New Zealand publishers are too small to provide electronic access to their material themselves, and many larger information providers are unwilling to enter into time-consuming negotiations with smaller publishers for single or limited number of titles.

In spite of these issues, a number of information providers are starting to recognise the value of New Zealand scholarship and an increasing effort is being made to provide access to New Zealand material. The RMIT University (Melbourne, Australia) based *Informit* platform now includes a number of New Zealand journals in their Humanities & Social Sciences Collection, for example *New Zealand Journal of Environmental Law*, *New Zealand Research in Early Childhood Education* and *New Zealand Studies in Applied Linguistics*.

While the results of this project are skewed towards American and international titles due to the tools used and the lack of New Zealand material available electronically, it would be an interesting exercise to revisit this issue in a few years time and compare the levels of New Zealand electronic material available.

An interesting finding was that a number of titles appeared in two lists, particularly titles from the disciplines of Information Science & Library Science, Economics, Management and Law. Although the usage data and the ISI Impact Factor was the same in each list, the number at which the title sat on each list differed considerably in some cases – see Figure 5. Although this issue is not part of this study, it could be an area for further research.

**Figure 5: Titles Appearing on Multiple Discipline Lists**

<i>Journal Title &amp; Disciplines</i>	<i>ISSN</i>	<i>VUW Usage Statistics 2007</i>	<i>ISI Impact Factor 2007</i>	<i>Number on Discipline List</i>
Information Systems Research Information Science & Library Science Management	1047-7047	354	2.682	3 <sup>rd</sup> 8 <sup>th</sup>
Journal of Management Information Systems Information Science & Library Science Management	0742-1222	400	1.867	5 <sup>th</sup> 17 <sup>th</sup>
Information & Management Information Science & Library Science Management	0378-7206	712	1.631	8 <sup>th</sup> 22 <sup>nd</sup>
Journal of Law & Economics Economics Law	0022-2186	116	1.620	19 <sup>th</sup> 22 <sup>nd</sup>
Journal of Information Technology Information Science & Library Science Management	0268-3962	206	1.605	9 <sup>th</sup> 24 <sup>th</sup>
Ecological Economics Economics Environmental Science	0921-8009	1091	1.549	23 <sup>rd</sup> 55 <sup>th</sup>
Journal of Law Economics & Organization Economics Law	8756-6222	90	1.488	27 <sup>th</sup> 26 <sup>th</sup>
International Journal of Forecasting Economics Management	0169-2070	29	1.409	34 <sup>th</sup> 30 <sup>th</sup>
Industrial & Corporate Change Economics Management	0960-6491	117	1.325	38 <sup>th</sup> 33 <sup>rd</sup>
Journal of Economics & Management Strategy Economics Management	1058-6407	41	0.875	68 <sup>th</sup> 47 <sup>th</sup>
Post-Soviet Affairs Economics Political Science	1060-586X	0	0.833	73 <sup>rd</sup> 27 <sup>th</sup>
Law Library Journal Information Science & Library Science Law	0023-9283	81	0.789	24 <sup>th</sup> 57 <sup>th</sup>
New Political Economy Economics Political Science	1356-3467	74	0.702	90 <sup>th</sup> 36 <sup>th</sup>
Journal of Common Market Studies Economics Political Science	0021-9886	152	0.653	97 <sup>th</sup> 39 <sup>th</sup>
Chinese Law & Government Law Political Science	0009-4609	0	0.091	100 <sup>th</sup> 86 <sup>th</sup>

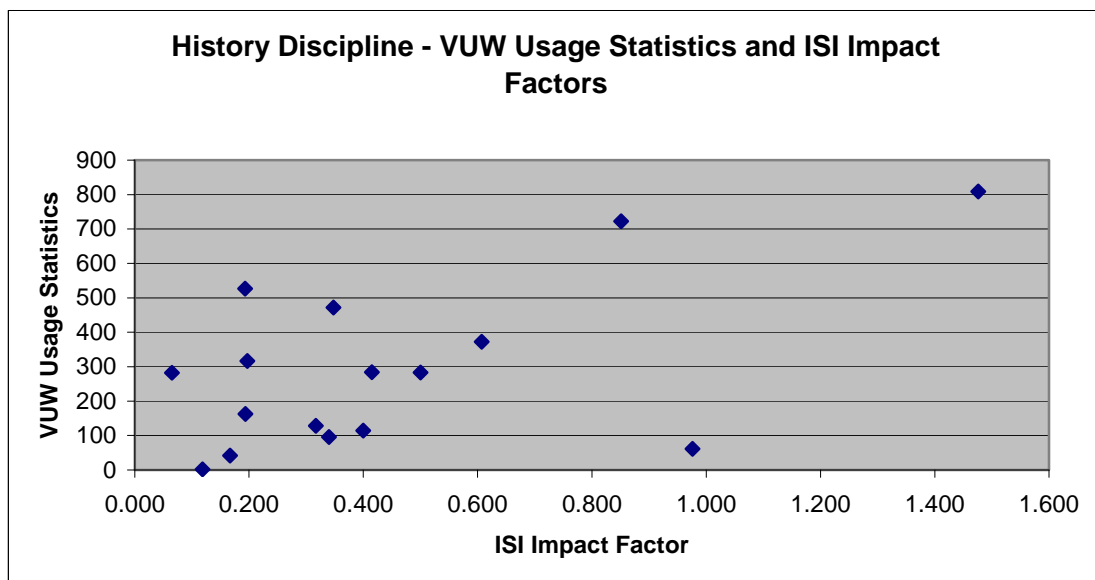
## 4.1 Faculty of Humanities and Social Science

### History Discipline

The *ISI Journal Citation Report* for History contained 17 titles, 16 of which were selected for data analysis – see Appendix 6.1. One title was excluded on the grounds that it did not appear in the *ISI Journal Use Report* following the project limitations listed in the methodology section above.

The level of correlation for the History titles was reasonable, with  $r = 0.569$ . This was an interesting result as the number of titles available for analysis was the lowest of all disciplines studied. It is likely that this correlation result does not truly reflect the History discipline due to the limited number of titles included in the study. It was thought that History related titles may have been classified into other History related subject headings, such as American History, although this proved not to be the case.

**Figure 6: History Discipline – VUW Usage Statistics and ISI Impact Factors**



There is no identifiable reason for the outlying result for *American Historical Review*, which had an Impact Factor and usage of 809. The number of platforms the title was

available on does not appear to be a factor, *American Historical Review* being available from three information providers, which is less than other titles further down the list, for example *Journal of African History*, with an Impact Factor of 0.500 and a usage of 283, was available on six platforms.

## **Linguistics Discipline**

Of the 55 titles listed on the Linguistics *Journal Citation Report*, 47 titles were included in the data analysis – see Appendix 6.2. As per the project limitations, eight titles were excluded on the grounds that they did not appear in the *Journal Use Report*.

The results for the Linguistics titles showed a very small negative correlation with  $r = -0.049$ . In Figure 7, three titles, *Brain & Language*, *Journal of Memory & Language* and *Computational Linguistics* had Impact Factors greater than 2.300. While the first two titles showed similar usage of 350 and 286 respectively, *Computational Linguistics* showed zero usage despite VUW subscribing to 1980-current via ACM Digital Library, a provider included in the *Journal Use Reports*.



**Figure 7: Linguistics Discipline - VUW Usage Statistics and ISI Impact Factors**

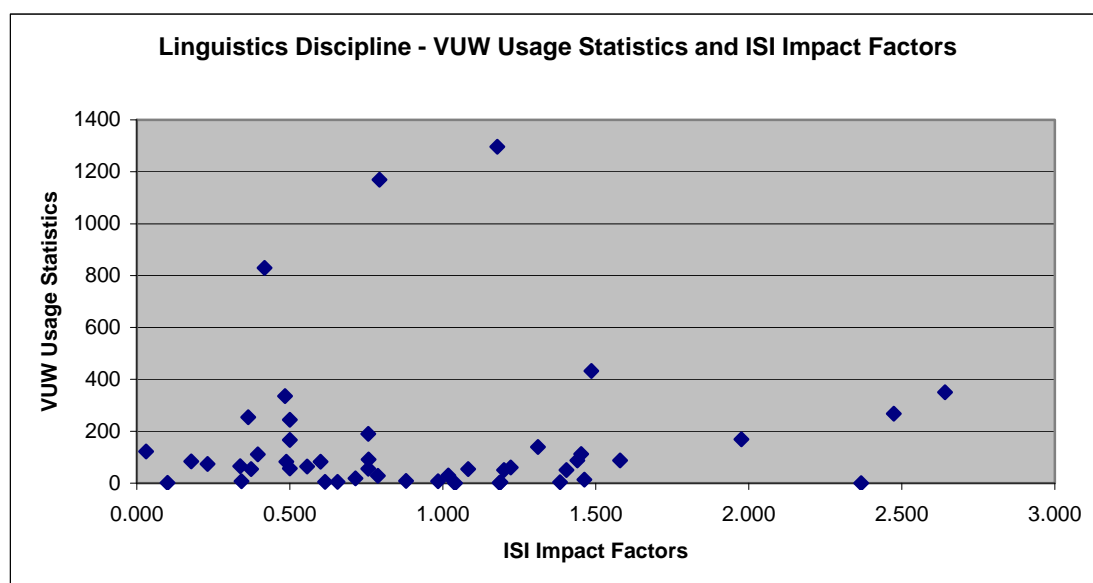


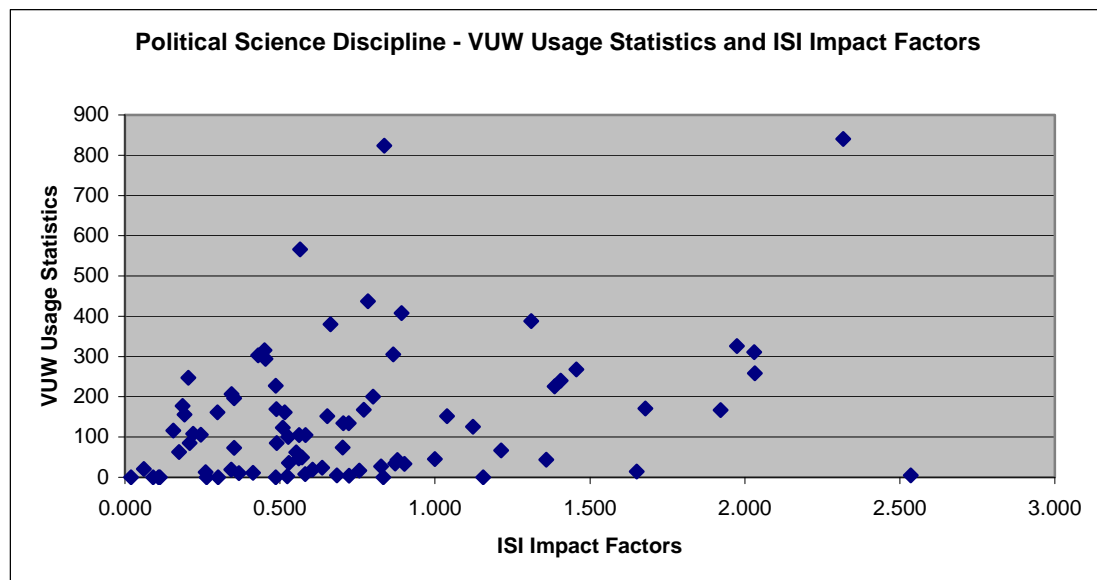
Figure 7 shows two titles with Impact Factors below 1.500, but with significantly higher usage than those titles mentioned above. *Applied Linguistics* and *Modern Language Journal* both had similar usage statistics of 1,297 and 1,170 respectively, but the Impact Factor was significantly different, 1.178 and 0.793 respectively. The similarity of usage may be attributable to each title being available via three information providers, but this does not hold true across the board. It is interesting that a number of titles show very low usage, regardless of the Impact Factor rating or the number of information providers providing access. For example, *Modern Language Journal* has an Impact Factor of 0.793 but a usage of 1,170, whereas a similar title *Journal of Linguistics* has an Impact Factor of 0.788, but only 28 uses across three information providers.

### **Political Science Discipline**

The Political Science *Journal Citation Report* listed 93 titles, 81 of which were included in this project – see Appendix 6.3. Twelve titles were excluded on the grounds that they did not appear in the *ISI Journal Use Report*.

There was a low level of correlation for Political Science titles, with  $r = 0.331$ . A factor in this could be the interdisciplinary nature of the discipline, with a mixture of international titles. Figure 8 illustrates the broad spread of data for Political Science. There does not seem to be an apparent reason for this spread. *American Political Science* has an Impact Factor of 2.317 and usage of 840, however *Annals of the American Academy of Political Science & Social Science* has similar usage of 824, but an Impact Factor of 0.836. Similarly, *Political Analysis* shows usage of 5, but an Impact Factor of 2.535, higher than that of *American Political Science*.

**Figure 8: Political Science Discipline - VUW Usage Statistics and ISI Impact Factors**



It is interesting to note that several journal titles with a very low Impact Factor also have a very low or zero usage, for example *Russian Politics* and *Chinese Law & Government*. For these two titles, this could be attributed to the limited focus of the journal or differing research and teaching focuses at VUW.

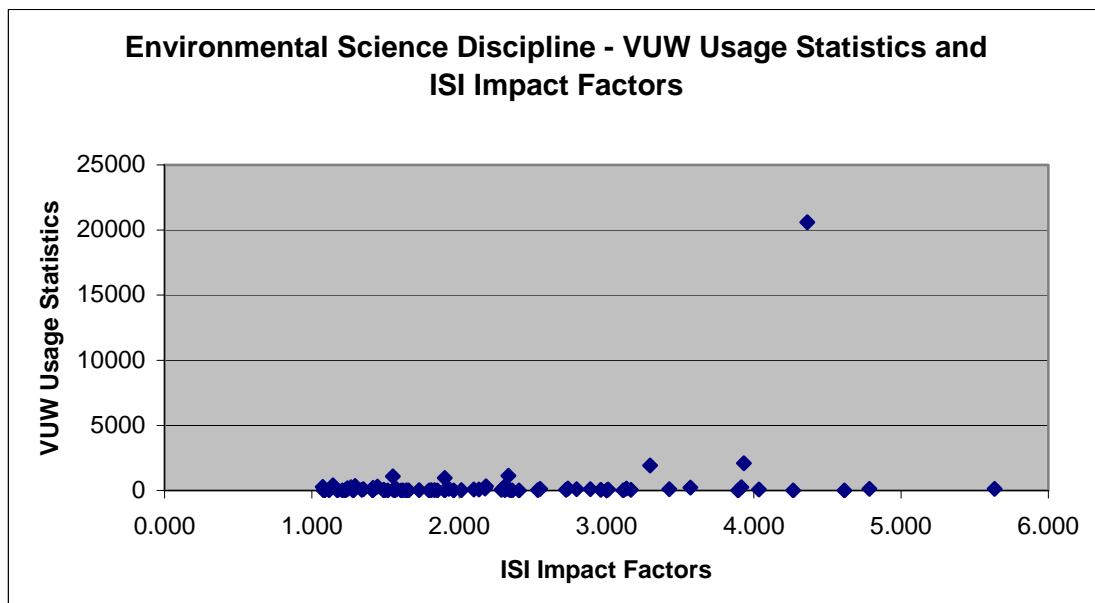
## 4.2 Faculty of Science

### Environmental Science Discipline

The *Journal Citation Report* for Environmental Science contained 160 titles, the first 100 of which were used for data collection – see Appendix 6.4. Of the 100 titles, 19 titles were excluded as they did not appear on the *Journal Use Report*, leaving 81 titles for data analysis.

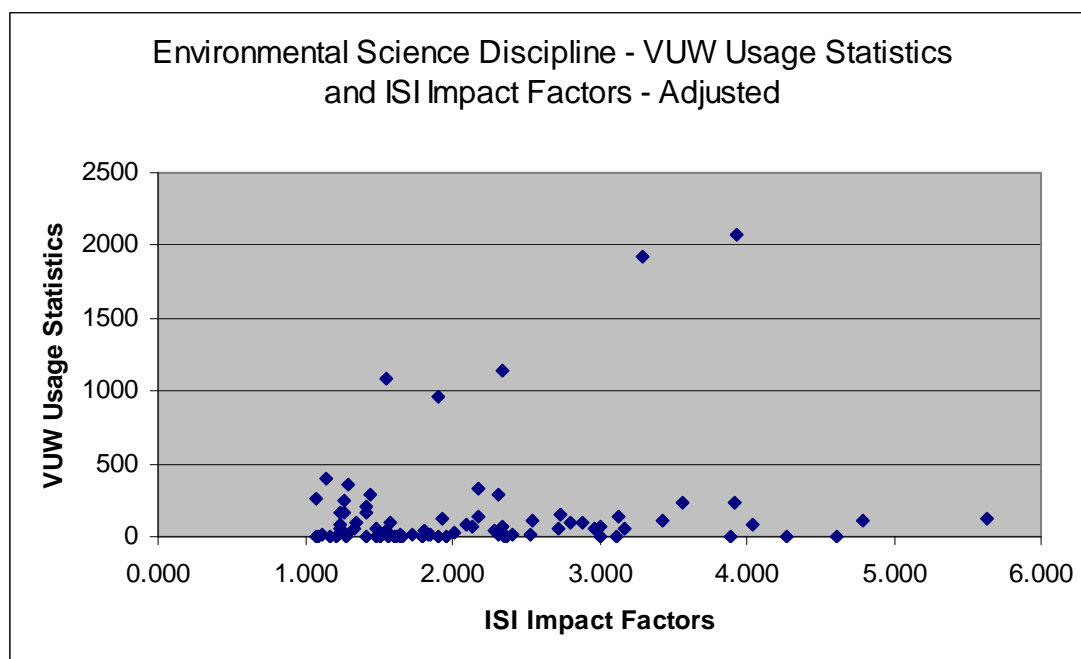
The level of correlation for Environmental Science titles was low, with  $r = 0.262$ . A significant factor in the level of correlation may have been the extreme result of *Environmental Science & Technology* with an Impact Factor of 4.363 and usage of 20,601.

**Figure 9a: Environmental Science Discipline - VUW Usage Statistics and ISI Impact Factors**



As the extreme result of *Environmental Science & Technology* has skewed the results illustrated in Figure 9a, this value has been removed from Figure 9b to better enable analysis of the data for the other titles.

**Figure 9b: Environmental Science Discipline - VUW Usage Statistics and ISI Impact Factors – Adjusted**



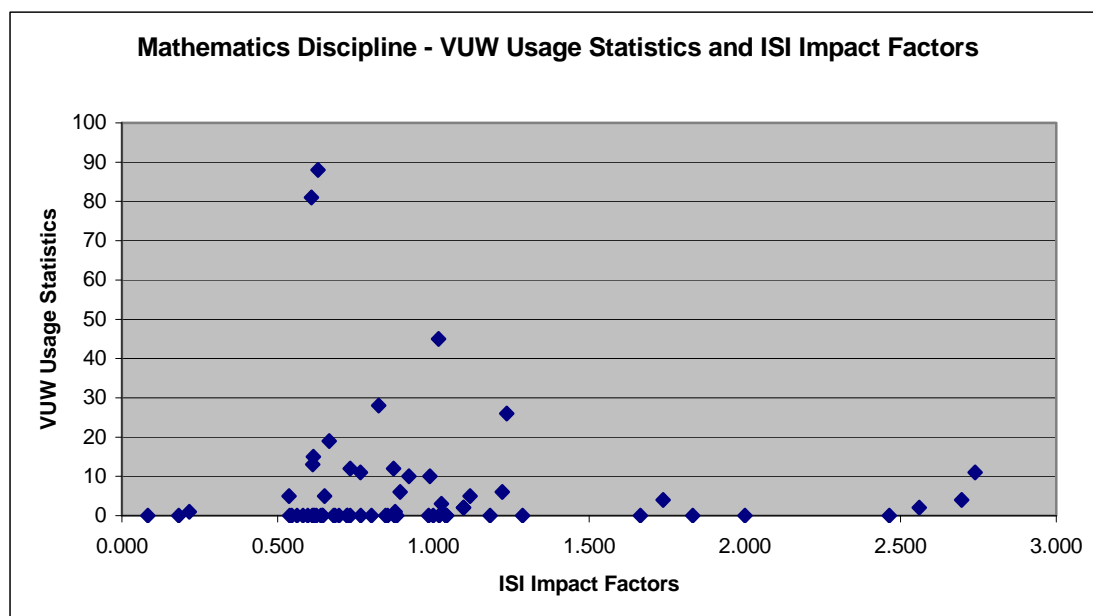
The journals included in the Environmental Science *Journal Citation Report* showed very good usage regardless of the Impact Factor rating. There were four journal titles that had usage results of more than 1,000 downloads: *Conservation Biology* with an Impact Factor of 3.934, *Biological Conservation* with an Impact Factor of 3.296, *Marine Pollution Bulletin* with an Impact Factor of 2.334 and *Ecological Economics* with an Impact Factor of 1.549. Most titles were only available from one information provider and this did not seem to affect the Impact Factor or usage statistics for the titles.

## Mathematics Discipline

Of the 207 titles listed in the *Journal Citation Report* for Mathematics, the first 100 were used in data collection as per the project limitations listed in the methodology section above – see Appendix 6.5. Of these 100 titles, 65 titles were included in data analysis, 35 titles being excluded on the grounds that they did not appear in the *Journal Use Report*. This is the largest number of titles in a single discipline that were excluded from this project.

Mathematics had a very low negative correlation, with  $r = -0.072$ . Only two titles had usage results over 80, *Journal of Algebra* and *Journal of Symbolic Logic*, with Impact Factors of 0.630 and 0.609 respectively.

**Figure 10: Mathematics Discipline - VUW Usage Statistics and ISI Impact Factors**



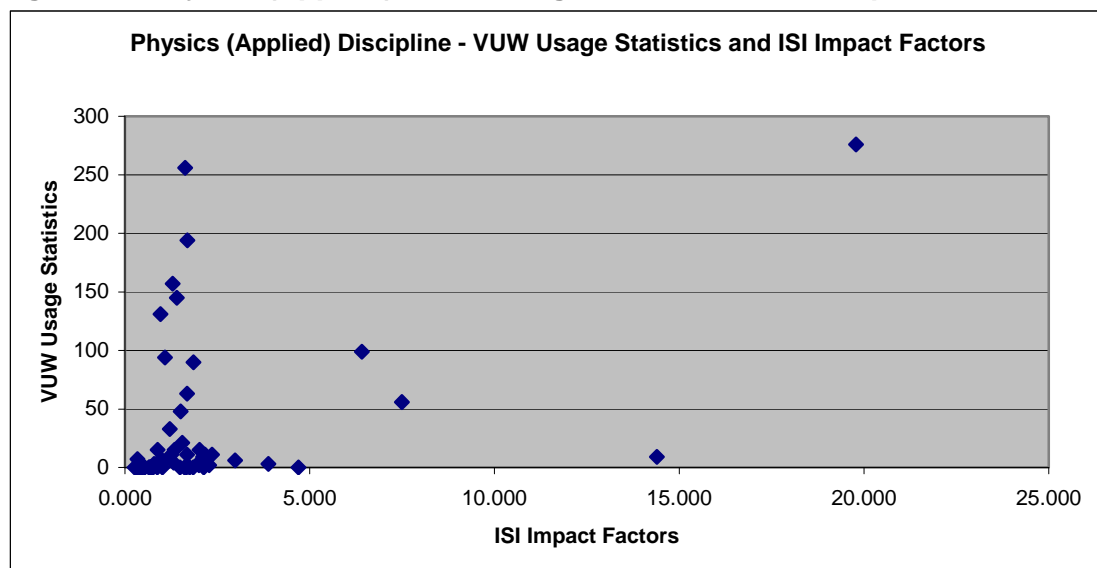
This discipline had the highest number of titles with zero usage, which may be a factor in the low correlation. This result may indicate that this discipline has a higher number of journal titles outside the research and teaching focus of VUW.

## Physics (Applied) Discipline

The *Journal Citation Report* for Physics (Applied) contained 94 titles, 64 of which were selected for data analysis – see Appendix 6.6. Thirty titles were excluded on the grounds that they did not appear in the *Journal Use Report* as per the project limitations noted above.

The level of correlation for Physics (Applied) was reasonable, with  $r = 0.434$ . This is an interesting result considering the high number of zero usage results in the data. Like the results for Mathematics, Physics (Applied) had a large number of excluded titles and a large number of zero usage results. This could indicate that the focus of research and teaching at VUW differs from the titles listed in the *Journal Citation Reports*. That such a large number of journal titles appear not to be being used in electronic format may be worthy of further investigation.

**Figure 11: Physics (Applied) - VUW Usage Statistics and ISI Impact Factors**



*Nature Materials* had a very high Impact Factor rating of 19.782 and the highest usage of 276. This title was followed closely by *Materials Science & Engineering Reports* with an Impact Factor of 14.400, but a usage of only 9. There was an

interesting trend for low Impact Factor journals to achieve some of the highest ratings within the discipline, for example, *Thin Solid Films*, *Materials Letters*, and *Applied Surface Science* with usage of 194, 256 and 145 respectively. The Impact Factors for these titles are similar, being 1.693, 1.625 and 1.406 respectively.

### **4.3 Faculty of Commerce & Administration**

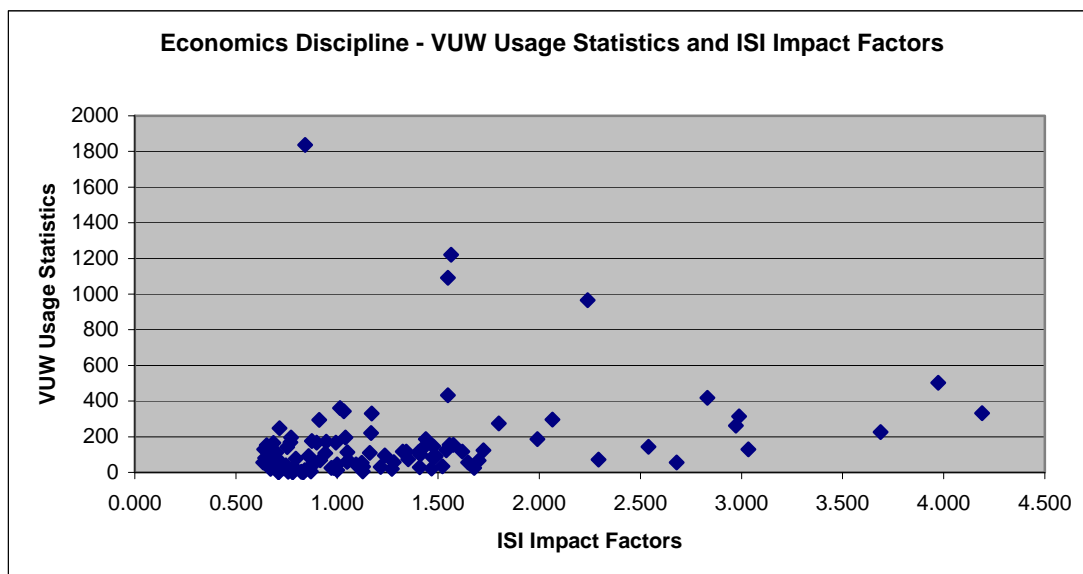
#### **Economics Discipline**

Of the 191 titles in the *Journal Citation Report* for Economics, the first 100 titles were used in data collection – see Appendix 6.7. From the 100 titles, 99 were selected for data analysis. One title was excluded on the grounds that it did not appear in the *ISI Journal Use Report*. This was the best result in terms of the number of titles selected for inclusion in this project.

There was a low level of correlation for the Economics discipline, with  $r = 0.230$ .

There is a significant cluster of titles with Impact Factors between 0.500 and 1.000 and with usage between zero and 200. Three titles had Impact Factors above 3.500, *Journal of Political Economy* with an Impact Factor of 4.190, *Journal of Economic Literature* with an Impact Factor of 3.973 and *Quarterly Journal of Economics* with an Impact Factor of 3.688.

**Figure 12: Economics Discipline - VUW Usage Statistics and ISI Impact Factors**



While the usage for these titles was reasonable, other titles with smaller Impact Factors achieved greater usage statistics. The *Journal of World Development* had usage of 1,221, *Ecological Economics* 1,091 and *Futures* 1,837. The Impact Factors for these three titles were reasonably low, 1.565, 1.549 and 0.843 respectively. The high usage results could be the result of the more interdisciplinary nature of the titles compared to titles with lower usage results.

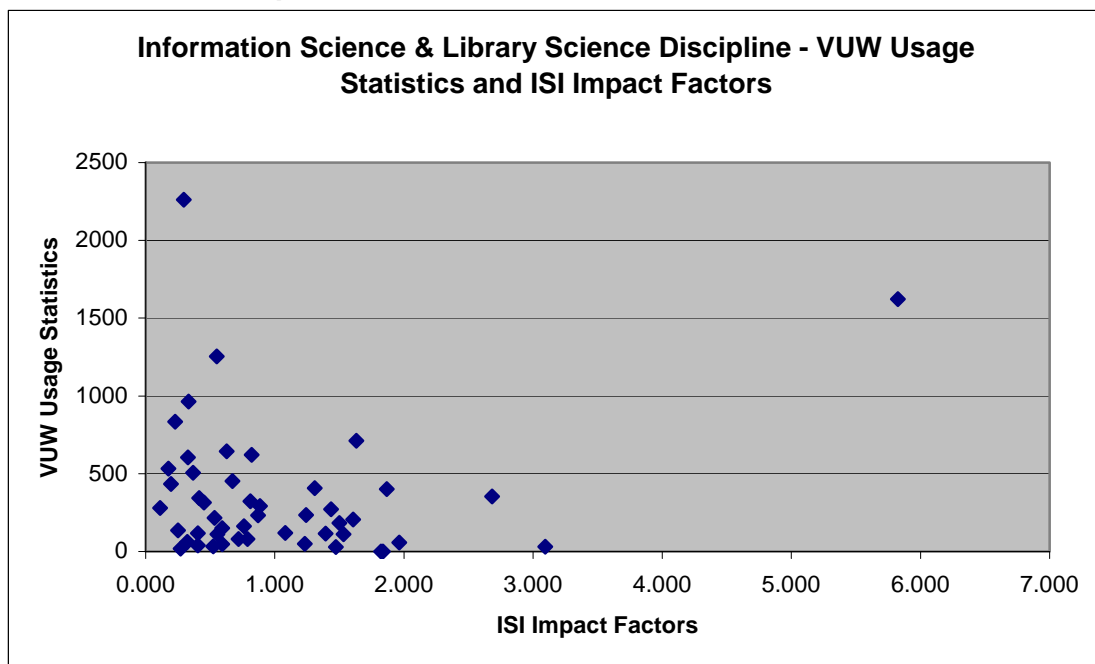
### **Information Science & Library Science Discipline**

The *Journal Citation Report* for Information Science & Library Science contained 56 titles, 48 of which were included for data analysis – see Appendix 6.8. Eight titles were excluded as they did not appear in the *Journal Use Report* as per the limitations listed in the methodology section above.



There was a low level correlation of  $r = 0.137$  for Information Science & Library Science. There were very few titles with usage values under 30, and only one title with a usage value of one. The majority of results appear between Impact Factor ratings 0.000 and 1.500, and usage values of 0 to 500. This is one of the most closely bunched results from all disciplines studied.

**Figure 13: Information Science & Library Science Discipline - VUW Usage Statistics and ISI Impact Factors**



The journal title *MIS Quarterly* had the highest Impact Factor rating in the discipline of 5.826, and a reasonable usage value of 1,623. The only other title with a higher usage value was *Library Journal* with 2,261. However, this title had one of the lowest Impact Factor ratings in the discipline, 0.295.

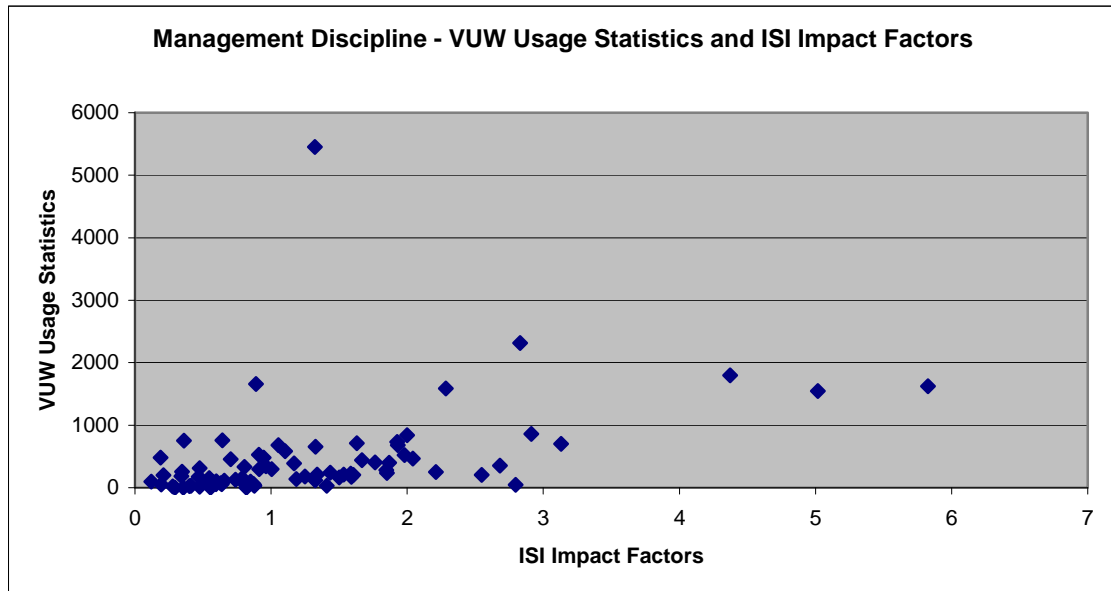
## Management Discipline

Of the 81 titles contained in the *Journal Citation Report* for Management, 79 titles were selected for data analysis – see Appendix 6.9. Only two titles were excluded for not appearing in the *Journal Use Report*.

The Management discipline had a reasonable positive correlation, with  $r = 0.412$ .

The majority of data appears between the Impact Factor ratings of 0.300 and 1.500 and between usage values of 0 and 400. Few titles break this mould, with only three titles with Impact Factors greater than 4.000, *MIS Quarterly* with an Impact Factor of 5.826, *The Academy of Management Journal* with an Impact Factor of 5.017 and *The Academy of Management Review* with an Impact Factor of 4.372.

**Figure 14: Management Discipline - VUW Usage Statistics and ISI Impact Factors**



The highest usage value in the data was 5,452 for *Harvard Business Review*.

Although this journal has a reasonably low Impact Factor of 1.323, it does sit in the upper half of the results. The *Harvard Business Review* was available through four

information providers, though this does not seem to be a factor in the high usage value.

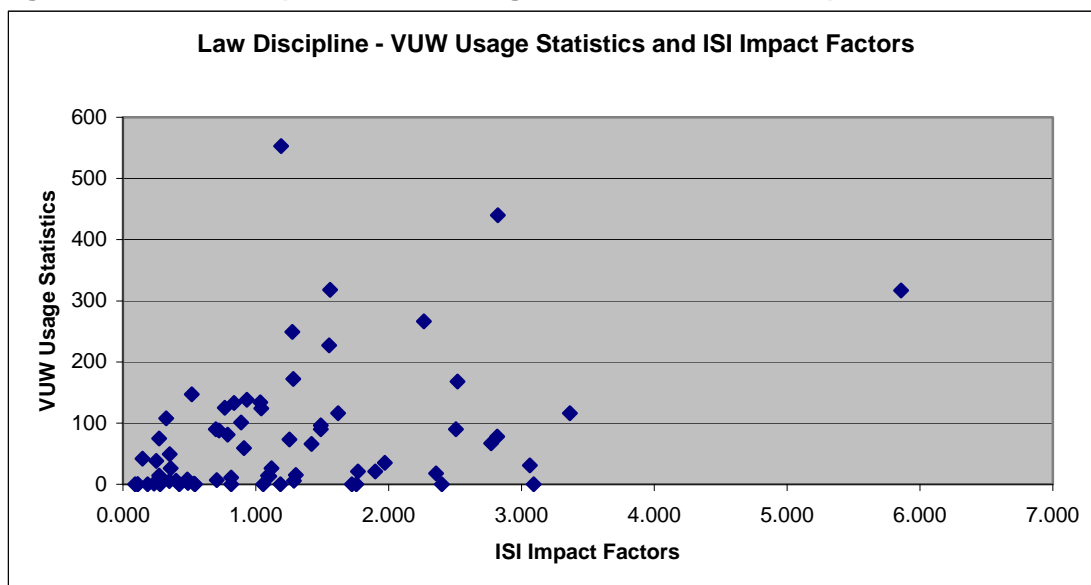
## 4.4 Faculty of Law

### Law Discipline

The *Journal Citation Report* for Law contained 101 titles, the first 100 of which were used for data collection – see Appendix 6.10. Thirty-two titles were excluded from this project on the grounds that they did not appear in the *ISI Journal Use Report* as per the limitations of this project.

There was a low positive correlation for the Law discipline, with  $r = 0.370$ . There are a number of titles with little or no usage between the Impact Factor ratings of 0.000 and 1.000. These titles tend to relate to law and medicine, family law, maritime law, and European law. It could be that these subject areas within the Law discipline are not widely studied at VUW.

**Figure 15: Law Discipline - VUW Usage Statistics and ISI Impact Factors**



There were two titles with usage values over 400, *The American Journal of International Law* with a usage value of 553 and *The Yale Law Journal* with a usage value of 440. The Impact Factors of these journals were 1.191 and 2.821 respectively. *Harvard Law Review* was the journal with the highest Impact Factor of 5.859, however its usage was considerably lower than that of *The American Journal of International Law* and *The Yale Law Journal*. It is interesting to note that the highest used journal was an international title.

## 5 CONCLUSION

The level of correlation between usage statistics for electronic journals at Victoria University of Wellington Library and the journal rankings produced by ISI were less than anticipated. Although there is a small correlation between the VUW usage statistics and the ISI Impact Factor for several disciplines included in this study, these results are not common across all disciplines. Eight out of ten disciplines studies showed a positive correlation, however only three disciplines showed a positive correlation of more than 4.000, History, Physics (Applied) and Management.

As noted above, it is interesting that History, an area not well covered by the *Journal Citation Reports*, should show the highest level of correlation. It is unlikely that this level of correlation is a true reflection of the level of correlation in the History discipline due to the small number of titles included in this study. Of course, having fewer key titles in an area increases the likelihood of an institution not only subscribing, but using those titles.

**Figure 16: Summary of Correlation Levels by Faculty and Discipline**

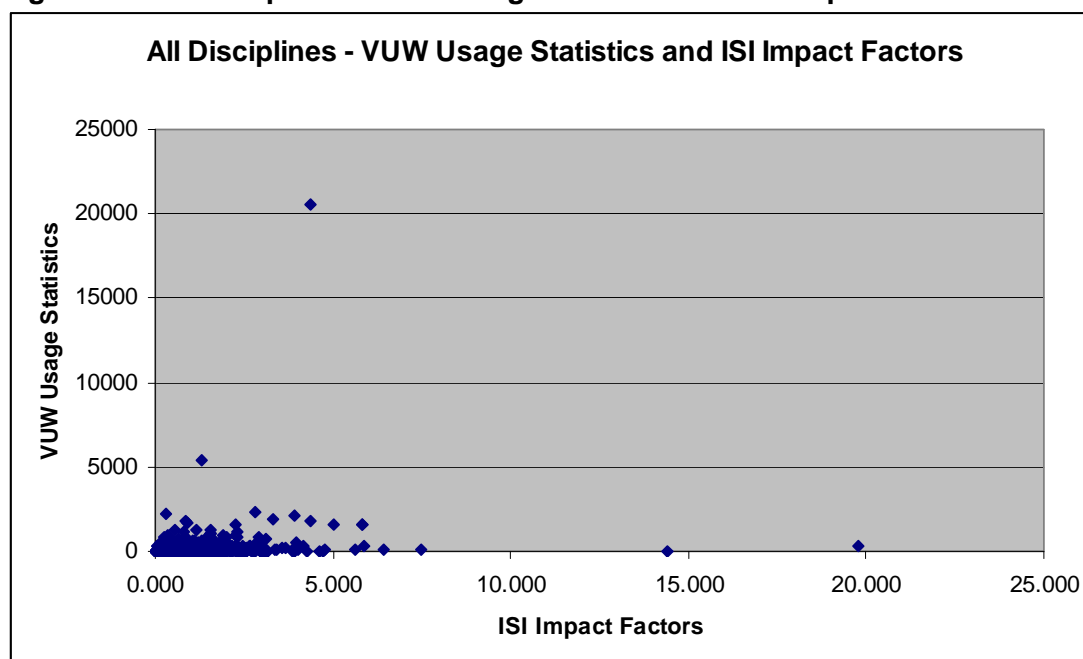
<i>Faculty &amp; Discipline</i>	<i>Correlation Level</i>
Faculty of Humanities & Social Sciences	
History	0.569
Linguistics	-0.049
Political Science	0.331
Faculty of Science	
Environmental Science	0.262
Mathematics	-0.072
Physics (Applied)	0.434
Faculty of Commerce & Administration	
Economics	0.230
Information Science & Library Science	0.137
Management	0.412
Faculty of Law	
Law	0.370

Two disciplines showed a small negative correlation, Linguistics and Mathematics. While the high levels of zero usage for Mathematics may have been a factor in the result, this does not appear to have been a factor for Linguistics. Differences in research, teaching and learning areas within each discipline may be another factor in the result. In the Linguistics discipline, titles relating to brain, memory and language and second language acquisition were used more frequently than those relating to language disorders or child language.

There does not appear to be a statistically more significant correlation in a particular faculty than in another. The Faculty of Law showed the highest level of correlation, although only one discipline was included in this faculty. The Faculty of Humanities & Social Sciences has a similar level of correlation to that of the Faculty of Law; however within the Faculty there were significant differences in the levels of correlation between disciplines.

A total of 648 journal titles were included in this study. The level of correlation across all titles was low, with  $r = 0.138$ . Figure 17 illustrates the spread for all titles studied. Although some individual disciplines showed a higher level of correlation than others, with all titles taken as a whole, the level of correlation is slight.

**Figure 17: All Disciplines - VUW Usage Statistics and ISI Impact Factors**



There were a number of reasons identified throughout this study that could have impacted upon the levels of correlation found in the disciplines:

- The ease of downloading journal articles could mean that articles are being downloaded for a cursory glance rather than for intended use
- The limited number of titles subscribed to by VUW
- The lack of New Zealand and Australasian title representation on the *Journal Citation Reports* and *Journal Use Report*
- The interdisciplinary nature or limited focus of some journal titles
- The focus of research, teaching and learning within a discipline

While further study of whether these issues were significant factors in the levels of correlation between VUW electronic journal usage and ISI Impact Factor is outside the bounds of this project, these issues may be of interest for further research.

While significant levels of correlation were found for some disciplines, other disciplines showed little positive correlation or a negative correlation. Although there were a number of reasons identified as possible factors in the correlation levels, the levels themselves were not of such a significance to enable ISI Impact Factors to be used in isolation as an effective collection management decision-making tool.

The authors experience indicates that there are a number of tools used in collection management for journal evaluation and decision-making processes. One of the most important considerations in journal evaluation is content. This includes the coverage of unique material, often from a New Zealand or Australasian perspective. The number of holding libraries for a resource is also a consideration, particularly for a marginal area of study. Whether a member of the institution is part of an editorial board, uses the journal for publishing their own articles, as well as resource review and citation-based ranking tools can influence the decision-making process.

Budget and access are increasing concerns for academic libraries, especially with regard to electronic material. The cost of an item, along with the availability of consortial discounts should be a consideration. Access issues are often closely related to the cost of providing resources. Price models are available for single or simultaneous access, and perpetual access is often preferred over a subscription model.

Impact Factors and other citation-based ranking tools are some of the evaluation options available to the academic library, but no tool should be used in isolation.



The use of Impact Factors as a collection management evaluation tool continues to be an area of interest to academic researchers. Throughout this study, a number of issues were noted for further research. The relationship between electronic journal use and other journal-ranking tools needs further investigation. The level of use a patron makes of a downloaded electronic article is also of interest – what is the level of downloaded articles that are used in research, teaching, read to increase knowledge or not used at all? Additionally, an analysis of the variances in Impact Factors and usage by information platform would be useful for future collection development and management.

## 6 APPENDIXES

### Appendix 6.1: History Discipline - VUW Usage Statistics and ISI Impact Factors

<i>Journal Title</i>	<i>ISSN</i>	<i>VUW Usage 2007</i>	<i>ISI Impact Factor 2007</i>
American Historical Review	0002-8762	809	1.476
Environmental History	1084-5453	61	0.976
Journal of American History	0021-8723	723	0.851
Past & Present	0031-2746	372	0.607
Journal of African History	0021-8537	283	0.500
Journal of Modern History	0022-2801	284	0.415
Ethnohistory	0014-1801	114	0.400
Journal of Social History	0022-4529	472	0.348
History Workshop Journal	1363-3554	96	0.340
Social Science History	0145-5532	128	0.317
Comparative Studies in Society and History	0010-4175	317	0.197
Journal of the History of Sexuality	1043-4070	163	0.194
English Historical Review	0013-8266	527	0.193
International Review of Social History	0020-8590	42	0.167
Mouvement Social	0027-2671	2	0.119
Journal of Interdisciplinary History	0022-1953	282	0.065

## Appendix 6.2: Linguistics Discipline - VUW Usage Statistics and ISI Impact Factors

<i>Journal Title</i>	<i>ISSN</i>	<i>VUW Usage 2007</i>	<i>ISI Impact Factor 2007</i>
Brain & language	0093-934X	350	2.641
Journal of Memory & Language	0749-596X	268	2.474
Computational Linguistics	0891-2017	0	2.367
Language	0097-8507	169	1.976
Applied Psycholinguistics	0142-7164	88	1.580
Studies in Second Language Acquisition	0272-2631	433	1.485
Linguistic Inquiry	0024-3892	13	1.462
Journal of Speech, Language & Hearing Research	1092-4388	112	1.452
Journal of Phonetics	0095-4470	88	1.439
Language Speech & Hearing Services in Schools	0161-1461	51	1.404
Language & Cognitive Processes	0169-0965	4	1.383
Mind & Language	0268-1064	139	1.311
Language Learning & Technology	1094-3501	61	1.222
Journal of Neurolinguistics	0911-6044	50	1.200
Journal of Fluency Disorders	0094-730X	4	1.188
Research on Language and Social Interaction	0835-1813	1	1.185
Applied Linguistics	0142-6001	1297	1.178
Journal of Communication Disorders	0021-9924	54	1.083
Metaphor & Symbol	1092-6488	0	1.040
American Journal of Speech - Language Pathology	1058-0360	30	1.018
International Journal of Language & Communication Disorders	1368-2822	7	0.984
Journal of Child Language	0305-0009	9	0.880
Modern Language Journal	0026-7902	1170	0.793
Journal of Linguistics	0022-2267	28	0.788
Language & Speech	0023-8309	91	0.757
Bilingualism: Language & Cognition	1366-7289	55	0.756
English for Specific Purposes	0889-4906	190	0.756
Natural Language & Linguistic Theory	0167-806X	19	0.714
Second Language Research	0267-6583	5	0.656
Clinical Linguistics & Phonetics	0269-9206	5	0.615
Journal of Language & Social Psychology	0261-927X	82	0.600
Lingua	0024-3841	64	0.556
Journal of Psycholinguistic Research	0090-6905	57	0.500
Journal of Second Language Writing	1060-3743	166	0.500
Journal of Sociolinguistics	1360-6441	244	0.500
Language & Communication	0271-5309	83	0.488
Journal of Pragmatics	0378-2166	335	0.484
Language Learning	0023-8333	830	0.417
Language in Society	0047-4045	111	0.395
Language Sciences	0388-0001	54	0.373
Foreign Language Annals	0015-718X	254	0.364
International Journal of Lexicography	0950-3846	7	0.342
Linguistics: an Interdisciplinary Journal of the Language Sciences	0024-3949	65	0.338

American Speech	0003-1283	74	0.231
Canadian Modern Language Review/ La Revue Canadienne des Langues Vivantes	0008-4506	84	0.178
Journal of East Asian linguistics	0925-8558	1	0.100
Hispania	0018-2133	122	0.030

### Appendix 6.3: Political Science Discipline - VUW Usage Statistics and ISI Impact Factors

<i>Journal Title</i>	<i>ISSN</i>	<i>VUW Usage 2007</i>	<i>ISI Impact Factor 2007</i>
Political Analysis	1047-1987	5	2.535
American Political Science Review	0003-0554	840	2.317
American Journal of Political Science	0092-5853	258	2.032
Public Opinion Quarterly	0033-362X	311	2.030
Journal of Conflict Resolution	0022-0027	326	1.975
Political Geography	0962-6298	167	1.922
European Journal of Political Research	0304-4130	171	1.679
European Union Politics	1465-1165	14	1.651
Journal of Politics	0022-3816	268	1.456
Political Psychology	0162-895X	240	1.405
International Studies Quarterly	0020-8833	226	1.386
Annual Review of Political Science	1094-2939	44	1.359
British Journal of Political Science	0007-1234	388	1.311
Comparative Political Studies	0010-4140	67	1.213
New Left Review	0028-6060	0	1.156
Electoral Studies	0261-3794	126	1.123
Political Communication	1058-4609	152	1.039
Review of International Political Economy	0969-2290	45	1.000
Politics & Society	0032-3292	33	0.902
Journal of Peace Research	0022-3433	408	0.892
Political Behavior	0190-9320	43	0.879
Journal of Theoretical Politics	0951-6298	34	0.872
Governance: An International Journal of Policy & Administration	0952-1895	305	0.865
Annals of the American Academy of Political and Social Science	0002-7162	824	0.836
Post-Soviet Affairs	1060-586X	0	0.833
Legislative Studies Quarterly	0362-9805	27	0.826
Party Politics	1354-0688	200	0.800
Political Science Quarterly	0032-3195	437	0.784
Europe-Asia Studies	0966-8136	168	0.770
Environmental Politics	0964-4016	17	0.756
American Politics Research	1532-673X	4	0.723
Publius: The Journal of Federalism	0048-5950	134	0.722
West European Politics	0140-2382	134	0.704
New Political Economy	1356-3467	74	0.702
Survival	0039-6338	5	0.684
Journal of Democracy	1045-5736	380	0.663
Journal of Common Market Studies	0021-9886	152	0.653
Armed Forces & Society: An Interdisciplinary Journal	0095-327X	24	0.636
Acta Politica	0001-6810	19	0.605
Australian Journal of Political Science	1036-1146	105	0.582
Terrorism & Political Violence	0954-6553	8	0.581
Studies in Comparative International Development	0039-3606	49	0.571
Human Rights Quarterly	0275-0392	566	0.565
Journal of Political Philosophy	0963-8016	105	0.562

Harvard International Journal of Press/Politics	1081-180x	47	0.561
Scandinavian Political Studies	0080-6757	62	0.553
Communist and Post-Communist Studies	0967-067x	36	0.529
Public Choice	0048-5829	100	0.527
State Politics & Policy Quarterly	1532-4400	2	0.524
Policy Studies Journal	0190-292x	161	0.515
Latin American Politics & Society	1531-426x	123	0.509
Comparative Politics	0010-4159	85	0.489
Political Studies	0032-3217	169	0.488
Local Government Studies	0300-3930	0	0.486
Political Research Quarterly	1065-9129	227	0.486
Political Theory	0090-5917	294	0.453
International Political Science Review	0192-5121	316	0.450
Political Science & Politics	1049-0965	303	0.430
East European Politics & Societies	0888-3254	11	0.413
Problems of Post-Communism	1075-8216	10	0.368
Dissent	0012-3846	73	0.352
Nation	0027-8378	196	0.352
Monthly Review	0027-0520	207	0.344
Scottish Journal of Political Economy	0036-9292	19	0.343
Politische Vierteljahres Schrift	0032-3470	0	0.300
Parliamentary Affairs	0031-2290	161	0.298
Studies in American Political Development	0898-588x	0	0.263
Journal of Strategic Studies	0140-2390	13	0.260
Policy Review	0146-5945	106	0.245
Government and Opposition	0017-257x	108	0.220
Independent Review	1086-1653	85	0.209
Commentary	0010-2601	247	0.204
Latin American Perspectives	0094-582x	156	0.192
Current History	0011-3530	177	0.186
New Republic	0028-6583	63	0.175
The Political Quarterly	0032-3179	116	0.156
Revue D'economie Politique	0373-2630	0	0.113
Politikon: South African Journal of Political Studies	0258-9346	0	0.108
Chinese Law & Government	0009-4609	0	0.091
Journal of Political and Military Sociology	0047-2697	21	0.061
Russian Politics and Law	1061-1940	0	0.020

#### Appendix 6.4: Environmental Science Discipline - VUW Usage Statistics and ISI Impact Factors

<i>Journal Title</i>	<i>ISSN</i>	<i>VUW Usage 2007</i>	<i>ISI Impact Factor 2007</i>
Environmental Health Perspectives	0091-6765	125	5.636
Global Change Biology	1354-1013	111	4.786
Critical Reviews in Environmental Science Technology	1064-3389	2	4.615
Environmental Science & Technology	0013-936X	20601	4.363
Frontiers in Ecology & the Environment	1540-9295	0	4.269
Annual Reviews of Environment & Resources	1543-5938	77	4.036
Conservation Biology	0888-8892	2081	3.934
Global Environmental Change Part A	0959-3780	236	3.915
Environmental Science & Pollution Research	0944-1344	0	3.894
Ecological Applications	1051-0761	228	3.571
Water Research	0043-1354	104	3.427
Biological Conservation	0006-3207	1927	3.296
Applied Catalysis A: General	0926-860X	51	3.166
Environmental Pollution	0269-7491	137	3.135
Geobiology	1472-4677	0	3.114
Remote Sensing of Environment	0034-4257	69	3.013
Journal of Environmental Science & Health Part C: Environmental Carcinogenesis & Ecotoxicology Reviews	1059-0501	0	3.000
Environmental Research	0013-9351	52	2.962
Climatic Change	0165-0009	94	2.890
Environmental International	0160-4120	102	2.797
Chemosphere	0045-6535	148	2.739
International Journal of Hydrogen Energy	0360-3199	60	2.725
Atmospheric Environment	1352-2310	115	2.549
Biogeochemistry	0168-2563	20	2.534
Ecotoxicology	0963-9292	11	2.405
Environmental & Molecular Mutagenesis	0893-6692	5	2.361
Aerosol Science & Technology	0278-6826	0	2.350
Journal of Hazardous Materials	0304-3894	73	2.337
Marine Pollution Bulletin	0025-326X	1142	2.334
Environmental Toxicology & Chemistry	0730-7268	14	2.309
Agriculture Ecosystems & Environment	0167-8809	292	2.308
Journal of Paleolimnology	0921-2728	37	2.287
Science of the Total Environment	0048-9697	324	2.182
Ecological Engineering	0925-8574	136	2.175
Estuaries	0160-8347	66	2.133
Environmental Modelling & Software	1364-8152	83	2.099
Ecotoxicology and Environmental Safety	0147-6513	30	2.014
Journal of Industrial Ecology	1088-1980	2	1.962
Marine Environmental Research	0141-1136	128	1.930

Journal of Aerosol Science	0021-8502	6	1.902
Energy Policy	0301-4215	958	1.901
Journal of Contaminant Hydrology	0169-7722	9	1.852
Journal of Environmental Monitoring	1464-0325	16	1.833
Environmental & Experimental Botany	0098-8472	35	1.810
SAR & QSAR in Environmental Research	1062-936X	0	1.795
Environmental Toxicology	1520-4081	16	1.728
Geomicrobiology	0149-0451	4	1.655
Aquatic Sciences: Research Across Boundaries	1015-1621	8	1.646
Journal of Atmospheric Chemistry	0167-7764	1	1.640
Archives of Environmental Contamination & Toxicology	0090-4341	3	1.620
International Journal of Life Cycle Assessment	0948-3349	3	1.607
Ecological Indicators	1470-160X	92	1.576
International Journal of Biometeorology	0020-7128	3	1.562
River Research & Applications	1535-1459	47	1.551
Ecological Economics	0921-8009	1091	1.549
Ozone: Science & Engineering	0191-9512	0	1.515
Ecohealth	1612-9202	9	1.492
International Journal of Phytoremediation	1522-6514	0	1.489
Ambio	0044-7447	51	1.487
Journal of Environmental Management	0301-4797	294	1.446
Biodiversity & Conservation	0960-3115	159	1.421
Environmental Science and Policy	1462-9011	201	1.415
Environmental Forensics	1527-5922	0	1.412
Journal of Arid Environments	0140-1963	94	1.349
Waste Management	0956-053X	61	1.338
Environment	0013-9157	354	1.293
Environmental Toxicology & Pharmacology	1382-6689	6	1.281
Environmental Modeling & Assessment	1420-2026	17	1.279
Resources, Conservation & Recycling	0921-3449	164	1.270
Antarctic Science	0954-1020	241	1.265
Aquatic Conservation: Marine & Freshwater Ecosystems	1052-7613	88	1.240
Environmental Management	0364-152X	160	1.240
International Biodeterioration & Biodegradation	0964-8305	49	1.233
Water, Air & Soil Pollution	0049-6979	8	1.224
Journal of Occupational Environmental Hygiene	1545-9624	0	1.207
Journal of Environmental Engineering	0733-9372	4	1.174
Environmental Conservation	0376-8929	395	1.143
Water Environment Research	1061-4303	19	1.118
Environmental Geochemistry & Health	0269-4042	2	1.086
Environmental Chemistry Letters	1610-3653	0	1.080
Journal of Cleaner Production	0959-6526	267	1.073



### Appendix 6.5: Mathematics Discipline - VUW Usage Statistics and ISI Impact Factors

<i>Journal Title</i>	<i>ISSN</i>	<i>VUW Usage 2007</i>	<i>ISI Impact Factor 2007</i>
Annals of Mathematics	0003-486X	11	2.739
Communications on Pure & Applied Mathematics	0010-3640	4	2.696
ACTA Mathematica	0001-5962	2	2.560
American Mathematical Society Bulletin, New Series, of the American Mathematica	0273-0979	0	2.464
Journal of the American Mathematical Society	0894-0347	0	2.000
Foundations of Computational Mathematics	1615-3375	0	1.833
Constructive Approximation	0176-4276	4	1.738
Inventiones Mathematicae	0020-9910	0	1.664
Publications Mathamatiques de L'Ihaos	0073-8301	0	1.286
Advances in Mathematics	0001-8708	26	1.235
Proceedings of the London Mathematical Society	0024-6115	6	1.221
Computational Complexity	1016-3328	0	1.182
Journal des Mathematiques Pures et Appliques	0021-7824	5	1.118
Journal of Differential Equations	0022-0396	2	1.097
Nonlinear Analysis	0362-546X	2	1.097
Random Structures & Algorithms	1042-9832	0	1.043
Communications in Partial Differential Equations	0360-5302	0	1.041
Journal of the European Mathematical Society	1435-9855	0	1.040
Geometric & Functional Analysis	1016-443X	3	1.026
Annales Scientifiques de l'Ecole Normale Superieure	0012-9593	0	1.019
Journal of Combinatorial Theory: Series B	0095-8956	45	1.017
Interfaces & Free Boundaries	1463-9963	0	1.000
American Journal of Mathematics	0002-9327	10	0.989
Calculus of Variations & Partial Differential Equations	0944-2669	0	0.985
Bulletin of Symbolic Logic	1079-8986	10	0.921
Journal of Functional Analysis	0022-1236	6	0.893
Compositio Mathematica	0010-437X	0	0.882
Mathematische Annalen	0025-5831	1	0.877
Commentarii Mathematici hel Vetici	0010-2571	0	0.875
Journal of Mathematical Analysis & Applications	0022-247X	12	0.872
Journal of the Institute of Mathematics of Jussieu	1474-7480	0	0.853
Journal of Geometric Analysis	1050-6926	0	0.846
Transactions of the American Mathematical Society	0002-9947	28	0.824
Israel Journal of Mathematics	0021-2172	0	0.801
Selecta Mathematica: New Series	1022-1824	0	0.767
Lecture Notes in Mathematics	0075-8434	11	0.766

Journal of Combinatorial Theory: Series A	0097-3165	0	0.733
Journal of the London Mathematical Society	0024-6107	12	0.733
Computational Geometry	0925-7721	0	0.723
Transformation Groups	1083-4362	0	0.723
Journal of Approximation Theory	0021-9045	0	0.697
Annali di Matematica Pura ed Applicata	0373-3114	0	0.083
Numerical linear algebra with applications	1070-5325	0	0.182
Topology	0040-9383	1	0.217
Journal of Evolution Equations	1424-3199	0	0.684
Mathematische Zeitschrift	0025-5874	0	0.680
Journal of Pure and Applied Algebra	0022-4049	19	0.666
European Journal of Combinatorics	0195-6698	5	0.651
Ergodic Theory & Dynamical Systems	0143-3857	0	0.645
Integral Equations & Operator Theory	0378-620X	0	0.645
Combinatorica	0209-9683	0	0.639
Journal of Algebra	0021-8693	88	0.630
Theory of Computing Systems	1432-4350	0	0.625
Combinatorics, Probability & Computing	0963-5483	0	0.619
Discrete & Computational Geometry	0179-5376	0	0.616
Bulletin of the London Mathematical Society	0024-6093	15	0.615
Annals of Pure & Applied Logic	0168-0072	13	0.613
The Quarterly Journal of Mathematics: Oxford Series	0033-5606	0	0.612
Journal of Symbolic Logic	0022-4812	81	0.609
International Journal of Mathematics	0129-167X	0	0.597
Journal of Algebraic Combinatorics	0925-9899	0	0.582
Acta Mathematica Sinica	1439-8516	0	0.562
Communications in Contemporary Mathematics	0219-1997	0	0.545
Applied Categorical Structures	0927-2852	0	0.538
Historia Mathematica	0315-0860	5	0.536

## Appendix 6.6: Physics (Applied) Discipline - VUW Usage Statistics and ISI Impact Factors

<i>Journal Title</i>	<i>ISSN</i>	<i>VUW Usage 2007</i>	<i>ISI Impact Factor 2007</i>
Nature Materials	1476-1122	276	19.782
Materials Science & Engineering R: Reports	0927-796X	9	14.400
Advanced Functional Materials	1616-301X	56	7.496
Small	1613-6810	99	6.408
Laser & Particle Beams	0263-0346	0	4.696
Organic Electronics	1566-1199	3	3.879
Journal of Synchrotron Radiation	0909-0495	6	2.978
Quantum Electronics	0018-9197	11	2.360
Applied Physics B: Lasers & Optics	0946-2171	2	2.280
Progress in Photovoltaics: Research & Applications	1062-7995	6	2.179
IEEE Transactions on Electron Devices	0018-9383	11	2.165
Nanoscale Research Letters	1931-7573	4	2.158
Plasma Processes & Polymers	1612-8850	0	2.132
IEEE Transactions on Nanotechnology	1536-125X	9	2.110
The European Physical Journal E: Soft Matter	1292-8941	5	2.025
IEEE Photonics Technology Letters	1041-1135	15	2.015
Photonics & Nanostructures: Fundamentals & Applications	1569-4410	2	2.000
Applied Physics A: Materials Science & Processing	0947-8396	90	1.857
Journal of Electromagnetic Waves & Applications	0920-5071	0	1.844
Plasma Chemistry & Plasma Processing	0272-4324	0	1.747
Thin Solid Films	0040-6090	194	1.693
Surface & Coatings Technology	0257-8972	63	1.678
Current Opinion in Solid State & Materials Science	1359-0286	11	1.677
Metrologia	0026-1394	0	1.667
Materials Letters	0167-577X	256	1.625
IEEE Transactions on Device & Materials Reliability	1530-4388	0	1.610
IEEE Transactions on Applied Superconductivity	1051-8223	21	1.551
Microelectronic Engineering	0167-9317	48	1.503
Philosophical Magazine	1478-6435	0	1.486
Applied Surface Science	0169-4332	145	1.406
IEEE Sensors Journal	1530-437X	15	1.340
Journal of Electronic Materials	0361-5235	4	1.320
Current Applied Physics	1567-1739	157	1.291
Solid-State Electronics	0038-1101	11	1.259
Physica Status Solidi	0031-8965	33	1.214
Physica C: Superconductivity	0921-4534	94	1.079
Microelectronics Reliability	0026-2714	0	1.011
Cryogenics	0011-2275	7	0.981
Infrared Physics & Technology	1350-4495	3	0.962
IEEE Transactions on Magnetics	0018-9464	131	0.959

Microsystem Technologies	0946-7076	3	0.912
Vacuum	0042-207X	15	0.881
Journal of Experimental Nanoscience	1745-8080	0	0.875
Optics & Laser Technology	0030-3992	1	0.872
IEEE Transactions on Dielectrics & Electrical Insulation	1070-9878	3	0.792
Journal of Low Temperature Physics	0022-2291	1	0.773
IEEE Transactions on Semiconductor Manufacturing	0894-6507	0	0.765
International Journal of Thermophysics	0195-928X	0	0.698
Laser Physics	1054-660X	0	0.696
Fluctuation & Noise Letters	0219-4775	0	0.696
Materials Science in Semiconductor Processing	1369-8001	0	0.655
International Journal of Modern Physics B	0217-9792	0	0.647
Nanoscale & Microscale Thermophysical Engineering	1556-7265	0	0.538
Journal of Nonlinear Optical Physics & Materials	0218-8635	0	0.474
Technical Physics	1063-7842	0	0.460
Technical Physics Letters	1063-7850	1	0.449
Journal of Superconductivity & Novel Magnetism	1557-1939	0	0.425
Modern Physics Letters B	0217-9849	0	0.400
Solid State Technology	0038-111X	7	0.335
Integrated Ferroelectrics	1058-4587	0	0.334
High Temperature	0018-151X	0	0.332
International Journal of Applied Electromagnetics & Mechanics	1383-5416	0	0.305
International Journal of Infrared & Millimeter Waves	0195-9271	0	0.300
Journal of X-Ray Science & Technology	0895-3996	0	0.262

## Appendix 6.7: Economics Discipline - VUW Usage Statistics and ISI Impact Factors

<i>Journal Title</i>	<i>ISSN</i>	<i>VUW Usage 2007</i>	<i>ISI Impact Factor 2007</i>
Journal of Political Economy	0022-3808	333	4.190
Journal of Economic Literature	0022-0515	503	3.973
Quarterly Journal of Economics	0033-5533	227	3.688
Journal of Accounting & Economics	0165-4101	130	3.034
Journal of Financial Economics	0304-405X	315	2.988
Econometrica	0012-9682	263	2.972
Journal of Economic Perspectives	0895-3309	418	2.831
Journal of Economic Geography	1468-2702	56	2.679
Review of Economic Studies	0034-6527	143	2.539
Journal of Economic Growth	1381-4338	71	2.292
American Economic Review	0002-8282	965	2.239
Economic Geography	0013-0095	297	2.065
Journal of Econometrics	0304-4076	186	1.990
Journal of Policy Analysis & Management	0276-8739	275	1.800
Review of Economics & Statistics	0034-6535	123	1.724
The World Bank Research Observer	0257-3032	66	1.700
Economy & Society	0308-5147	25	1.678
Health Economics	1057-9230	56	1.648
Journal of Law & Economics	0022-2186	116	1.620
The Energy Journal	0195-6574	154	1.575
World Development	0305-750X	1221	1.565
Energy Economics	0140-9883	154	1.557
Ecological Economics	0921-8009	1091	1.549
Economic Journal	0013-0133	433	1.548
Journal of International Economics	0022-1996	124	1.541
Journal of Health Economics	0167-6296	35	1.521
Journal of Law Economics & Organization	8756-6222	90	1.488
Journal of Monetary Economics	0304-3932	146	1.478
Journal of Labor Economics	0734-306X	84	1.473
Games & Economic Behavior	0899-8256	22	1.468
Rand Journal of Economics	0741-6261	187	1.440
Journal of Environmental Economics & Management	0095-0696	151	1.438
Brookings Papers on Economic Activity	0007-2303	100	1.412
International Journal of Forecasting	0169-2070	29	1.409
Journal of Public Economics	0047-2727	114	1.403
Journal of Economic Theory	0022-0531	74	1.353
Journal of Financial & Quantitative Analysis	0022-1090	116	1.342
Industrial and Corporate Change	0960-6491	117	1.325
Economic Policy	0266-4658	57	1.281
European Review of Agricultural Economics	0165-1587	19	1.271
The World Bank Economic Review	0258-6770	30	1.216
Environmental and Resource Economics	0924-6460	95	1.237
Economic History Review: Second Series	0013-0117	331	1.171

Small Business Economics	0921-898X	220	1.168
The Journal of Human Resources	0022-166X	110	1.162
Journal of Business & Economic Statistics	0735-0015	33	1.129
Experimental Economics	1386-4157	5	1.128
Journal of Risk & Uncertainty	0895-5646	54	1.122
Journal of Applied Econometrics	0883-7252	44	1.094
Food Policy	0306-9192	66	1.056
Work, Employment & Society	0950-0170	114	1.051
Resource & Energy Economics	0928-7655	60	1.050
Land Economics	0023-7639	195	1.042
American Journal of Agricultural Economics	0002-9092	343	1.034
Journal of Economic History	0022-0507	360	1.015
Journal of Agricultural Economics	0021-857X	12	1.000
Review of International Political Economy	0969-2290	45	1.000
European Economic Review	0014-2921	167	0.994
Mathematical Finance	0960-1627	25	0.984
Review of Economic Dynamics	1094-2025	25	0.972
Journal of Money Credit & Banking	0022-2879	172	0.947
Journal of Urban Economics	0094-1190	108	0.942
International Economic Review	0020-6598	68	0.917
Journal of Development Economics	0304-3878	294	0.912
Journal of Economic Psychology	0167-4870	167	0.900
Regional Science & Urban Economics	0166-0462	48	0.885
Economic Development & Cultural Change	0013-0079	176	0.875
Journal of Economics & Management Strategy	1058-6407	41	0.875
Journal of the European Economic Association	1542-4766	6	0.871
The Journal of Industrial Economics	0022-1821	92	0.860
Futures	0016-3287	1837	0.843
Bulletin of Indonesian Economic Studies	0007-4918	12	0.840
Post-Soviet Affairs	1060-586X	0	0.833
Quantitative Finance	1469-7688	3	0.824
Journal of Economic Surveys	0950-0804	78	0.797
Journal of Regional Science	0022-4146	30	0.785
Journal of Transport Economics & Policy	0022-5258	0	0.780
Journal of Economic Behavior & Organization	0167-2681	195	0.772
Europe-Asia Studies	0966-8136	168	0.770
Journal of Forest Economics	1104-6899	4	0.759
International Tax & Public Finance	0927-5940	19	0.757
Journal of Banking & Finance	0378-4266	142	0.753
Econometric Theory	0266-4666	40	0.748
Economics of Transition	0967-0750	24	0.736
Oxford Bulletin of Economics & Statistics	0305-9049	33	0.732
The World Economy	0378-5920	247	0.715
Econometric Reviews	0747-4938	0	0.711
Journal of Economic Dynamics & Control	0165-1889	77	0.703

New Political Economy	1356-3467	74	0.702
Cambridge Journal of Economics	0309-166X	111	0.700
Journal of Comparative Economics	0147-5967	43	0.691
Journal of Development Studies	0022-0388	166	0.686
Scandinavian Journal of Economics	0347-0520	83	0.676
Labour Economics	0927-5371	19	0.671
Explorations in Economic History	0014-4983	70	0.667
Journal of Common Market Studies	0021-9886	152	0.653
Oxford Economic Papers	0030-7653	81	0.645
Real Estate Economics	1080-8620	130	0.640
The Australian Journal of Agricultural & Resource Economics	1364-985X	56	0.635

**Appendix 6.8: Information Science & Library Science Discipline - VUW Usage Statistics and ISI Impact Factors**

<i>Journal Title</i>	<i>ISSN</i>	<i>VUW Usage 2007</i>	<i>ISI Impact Factor 2007</i>
MIS Quarterly	0276-7783	1623	5.826
Journal of the American Medical Informatics Association	1067-5027	31	3.094
Information Systems Research	1047-7047	354	2.682
Annual Review of Information Science & Technology	0066-4200	58	1.963
Journal of Management Information Systems	0742-1222	400	1.867
Journal of Health Communication	1081-0730	1	1.836
International Journal of Geographical Information Science	1365-8816	0	1.822
Information & Management	0378-7206	712	1.631
Journal of Information Technology	0268-3962	206	1.605
Information Systems Journals	1350-1917	110	1.531
Information Processing & Management	0306-4573	182	1.500
Scientometrics	0138-9130	28	1.472
Journal of the American Society for Information Science & Technology	1532-2882	271	1.436
Journal of the Medical Library Association	1536-5050	116	1.392
Journal of Documentation	0022-0418	408	1.309
Journal of Global Information Management	1062-7375	235	1.241
Journal of Computer-Mediated Communication	1083-6101	50	1.232
Journal of Information Science	0165-5515	120	1.080
Portal: Libraries & the Academy	1531-2542	291	0.885
Library & Information Science Research	0740-8188	233	0.870
College & Research Libraries	0010-0870	621	0.820
Government Information Quarterly	0740-624X	323	0.810
Law Library Journal	0023-9283	81	0.789
Serials Review	0098-7913	162	0.761
The Information Society	0197-2243	81	0.719
Online Information Review	1468-4527	452	0.671
Library Resources & Technical Services	0024-2527	643	0.628
Telecommunications Policy	0308-5961	150	0.593
Health Information and Libraries Journal	1471-1834	47	0.592
Library Quarterly	0024-2519	110	0.556
The Journal of Academic Librarianship	0099-1333	1255	0.551
Interlending & Document Supply	0264-1615	215	0.533
Social Science Information	0539-0184	33	0.523
International Journal of Information Management	0268-4012	314	0.451
Aslib Proceedings	0001-253X	344	0.413
Journal of Librarianship & Information Science	0961-0006	118	0.405
Social Science Computer Review	0894-4393	40	0.405
Online	0146-5422	505	0.368



Library Trends	0024-2594	964	0.333
Information Technology & Libraries	0730-9295	604	0.326
The Scientist	0890-3670	62	0.322
Library Journal	0363-0277	2261	0.295
Journal of Scholarly Publishing	1198-9742	19	0.270
Library Collections, Acquisitions & Technical Services	1464-9055	136	0.250
The Electronic Library	0264-0473	834	0.228
Econtent	1525-2531	433	0.196
Reference & User Services Quarterly	1094-9054	533	0.175
Program	0033-0337	280	0.111

### Appendix 6.9: Management Discipline - VUW Usage Statistics and ISI Impact Factors

<i>Journal Title</i>	<i>ISSN</i>	<i>VUW Usage 2007</i>	<i>ISI Impact Factor 2007</i>
MIS Quarterly	0276-7783	1623	5.826
The Academy of Management Journal	0001-4273	1548	5.017
The Academy of Management Review	0363-7425	1795	4.372
Organization Science	1047-7039	699	3.130
Administrative Science Quarterly	0001-8392	861	2.912
Strategic Management Journal	0143-2095	2312	2.829
Academy of Management Learning and Education	1537-260X	47	2.796
Information Systems Research	1047-7047	354	2.682
Organizational Research Methods	1094-4281	207	2.548
Journal of International Business Studies	0047-2506	1589	2.283
Research Policy	0048-7333	253	2.211
Organization Studies	0170-8406	464	2.042
Journal of Management	0149-2063	840	2.000
Journal of Organizational Behavior	0894-3796	523	1.981
Management Science	0025-1909	681	1.931
The Journal of Management Studies	0022-2380	734	1.926
Journal of Management Information Systems	0742-1222	400	1.867
Journal of Operations Management	0272-6963	238	1.851
Organizational Behavior & Human Decision Processes	0749-5978	281	1.847
Leadership Quarterly	1048-9843	404	1.763
Long Range Planning	0024-6301	442	1.667
Information & Management	0378-7206	712	1.631
Journal of Information Technology	0268-3962	206	1.605
Corporate Governance	0964-8410	174	1.590
Journal of Product Innovation Management	0737-6782	223	1.585
British Journal of Management	1045-3172	208	1.534
International Journal of Management Reviews	1460-8545	162	1.500
Decision Sciences	0011-7315	243	1.435
International Journal of Forecasting	0169-2070	29	1.409
Journal of Management Inquiry	1056-4926	209	1.338
Omega	0305-0483	654	1.327
Industrial & Corporate Change	0960-6491	117	1.325
Harvard Business Review	0017-8012	5452	1.323
International Small Business Journal	0266-2426	179	1.250
Gender, Work & Organization	0968-6673	140	1.185
Organization	1350-5084	388	1.169
Human Relations	0018-7267	584	1.103
International Journal of Operations and Production Management	0144-3577	683	1.054
Technovation	0166-4972	297	1.004
IEEE Transactions on Engineering Management	0018-9391	343	0.962
California Management Review	0008-1256	483	0.945
Supply Chain Management	1359-8546	297	0.913
Industrial Marketing Management	0019-8501	529	0.911

Tourism Management	0261-5177	1660	0.890
European Journal of Work & Organizational Psychology	1359-432X	33	0.878
Journal of Economics & Management Strategy	1058-6407	41	0.875
New Technology, Work & Employment	0268-1072	60	0.870
MIT Sloan Management Review	1532-9194	96	0.849
Journal of Organizational Behavior Management	0160-8061	2	0.818
International Journal of Service Industry Management	0956-4233	333	0.804
Group & Organization Management	1059-6011	153	0.787
Journal of the Operational Research Society	0160-5682	113	0.784
Management Learning	1350-5076	128	0.738
Journal of Small Business Management	0047-2778	458	0.703
System Dynamics Review	0883-7066	112	0.656
Human Resource Management	0090-4848	760	0.642
Technology Analysis & Strategic Management	0953-7325	55	0.638
International Journal of Selection & Assessment	0965-075X	74	0.631
R & D Management	0033-6807	104	0.597
Academy of Management Perspectives	1558-9080	55	0.594
Interfaces	0092-2102	90	0.575
Journal of Sport Management	0888-4773	0	0.556
The International Journal of Human Resource Management	0958-5192	154	0.546
Group Decision & Negotiation	0926-2644	90	0.526
Research Technology Management	0895-6308	311	0.476
Public Management Review	1471-9037	15	0.475
Systems Research & Behavioral Science	1092-7026	175	0.467
Review of Industrial Organization	0889-938X	33	0.411
Journal of Forecasting	0277-6693	28	0.400
Journal of Organizational Change Management	0953-4814	751	0.360
International Journal of Technology Management	0267-5730	0	0.356
Organizational Dynamics	0090-2616	254	0.345
Negotiation Journal	0748-4526	182	0.340
Betriebswirtschaftliche Forschung und Praxis	0340-5370	0	0.294
Total Quality Management & Business Excellence	1478-3363	22	0.278
Service Industries Journal	0264-2069	198	0.210
Systemic Practice & Action Research	1094-429X	50	0.194
International Journal of Manpower	0143-7720	481	0.188
Revue Canadienne des Sciences de l'Administration/Canadian Journal of Administrative Sciences	0825-0383	98	0.119

### Appendix 6.10: Law Discipline - VUW Usage Statistics and ISI Impact Factors

<i>Journal Title</i>	<i>ISSN</i>	<i>VUW Usage 2007</i>	<i>ISI Impact Factor 2007</i>
Harvard Law Review	0017-811X	317	5.859
Columbia Law Review	0010-1958	116	3.363
UCLA Law Review	0041-5650	0	3.091
Texas Law Review	0040-4411	31	3.062
The Yale Law Journal	0044-0094	440	2.821
University of Pennsylvania Law Review	0041-9907	78	2.817
California Law Review	0008-1221	67	2.770
Stanford Law Review	0038-9765	168	2.517
Virginia Law Review	0042-6601	90	2.506
Psychology, Public Policy & Law	1076-8971	0	2.400
Georgetown Law Journal	0016-8092	18	2.356
Michigan Law Review	0026-2234	266	2.266
Journal of Legal Studies	0047-2530	35	1.972
Northwestern University Law Review	0029-3571	21	1.899
Vanderbilt Law Review	0042-2533	21	1.768
The American Bankruptcy Law Journal	0027-9048	0	1.756
New York University Law Review	0028-7881	0	1.722
Journal of Law & Economics	0022-2186	116	1.620
Journal of Criminal Law & Criminology	0091-4169	318	1.559
Law & Human Behavior	0147-7307	227	1.551
The University of Chicago Law Review	0041-9494	96	1.489
Journal of Law Economics & Organization	8756-6222	90	1.488
Duke Law Journal	0012-7086	66	1.420
Iowa Law Review	0021-0552	15	1.301
Stanford Journal of International Law	0731-5082	6	1.286
Law & Society Review	0023-9216	172	1.283
Journal of International Economic Law	1369-3034	249	1.274
The American Criminal Law Review	0164-0364	73	1.253
The American Journal of International Law	0002-9300	553	1.191
Administrative Law Review	0001-8368	0	1.186
Common Market Law Review	0165-0750	26	1.117
The Business Lawyer	0007-6899	13	1.100
American Journal of Law & Medicine	0098-8588	14	1.091
Antitrust Law Journal	0003-6056	0	1.055
Journal of Law Medicine & Ethics	1073-1105	124	1.042
Behavioral Sciences & the Law	0735-3936	134	1.033
Law & Social Inquiry	0897-6546	138	0.933
Harvard Journal of Law & Public Policy	0193-4872	59	0.912
American Business Law Journal	0002-7766	101	0.889
European Journal of International Law	0938-5428	133	0.836
Harvard Civil Rights: Civil Liberties Law Review	0017-8039	0	0.815
Psychology, Crime & Law	1068-316X	11	0.815
Law Library Journal	0023-9283	81	0.789

International Journal of Law & Psychiatry	0160-2527	125	0.766
The Washington Quarterly	0163-660X	88	0.723
Supreme Court Review	0081-9557	7	0.706
American Journal of Comparative Law	0002-919X	90	0.699
Annual Review of Law & Social Science	1550-3585	0	0.543
Washington Law Review	0043-0617	1	0.535
Journal of Law & Society	0263-323X	147	0.519
Journal of Maritime Law & Commerce	0022-2410	2	0.488
Judicature	0022-5800	8	0.485
European Journal of Migration & Law	1388-364X	0	0.424
Legal & Criminological Psychology	1355-3259	6	0.400
Law & Philosophy	0167-5249	26	0.359
International Journal of Constitutional Law	1474-2640	49	0.352
Journal of Legal Medicine	0194-7648	5	0.350
Social & Legal Studies	0964-6639	108	0.326
Columbia Journal of Law & Social Problems	0010-1923	0	0.280
International Review of Law & Economics	0144-8188	75	0.273
Ocean Development & International Law	0090-8320	14	0.273
Issues in Law & Medicine	8756-8160	38	0.250
European Constitutional Law Review	1574-0196	1	0.234
Family Law Quarterly	0014-729X	0	0.186
International Journal of the Sociology of Law	0194-6595	42	0.148
Juvenile & Family Court Journal	0161-7109	0	0.111
Natural Resources Journal	0028-0739	0	0.111
Chinese Law & Government	0009-4609	0	0.091

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