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# Teaching Web Based Accounting Information Systems: Benefits and Pitfalls

**Trevor Nesbit**

University of Canterbury  
Christchurch  
New Zealand  
trevor.nesbit@canterbury.ac.nz

**Angela Martin**

University of Canterbury  
Christchurch  
New Zealand  
Angela.martin@canterbury.ac.nz

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**Abstract**

The purpose of this paper is to present the experiences of teaching part of a second year accounting information systems (AIS) course using a web-based AIS and another part of the same course using a traditionally installed stand alone system.

In an earlier paper, one of the authors developed a Small Business Web Based AIS Model that depicts the issues surrounding the selection and use of web-based AIS for small and medium enterprises (SMEs) in a New Zealand context. The experience of the lecturers and the students is analysed and used to evaluate the model.

While there were some issues surrounding the use of the web-based AIS product, most of these could be dealt with, and they also served to reinforce a number of the theoretical aspects that are covered in the course. The findings of this paper were consistent with 5 of the 10 aspects of the Small Business Web Based AIS Model without contradicting the other 5 aspects of the model.

## **Keywords**

Accounting Information Systems, SME

## **Introduction**

In an earlier paper, Nesbit (2009) developed a two phase model for the issues surrounding the selection and use of web-based accounting information systems (AIS) for small and medium enterprises (SMEs) in a New Zealand context. The model was named the Small Business Web Based AIS Model.

This paper describes the experiences and perceptions of introducing the use of a web-based accounting information system (Xero) into a second year accounting information systems course from the perspective of the lecturers involved and a sample of students enrolled in the course. The proposed Small Business Web Based AIS model is evaluated in the light of these experiences and perceptions.

Conclusions are drawn as to the success of the introduction of Xero into the course, and recommendations are made as to how some of the issues raised could be addressed in future offerings of the course.

This paper seeks to address the questions of:

- How successful was the introduction of Xero into the course?
- How can the issues that relate to Xero being web-based be addressed in future offerings of the course?

- How do the experiences of introducing Xero in to the course relate to the Small Business Web Based AIS model?

## **Background**

The Accounting and Information Systems Department at the University of Canterbury introduced a new second year Accounting Information Systems course (ACIS243) in 2008. The typical breakdown of students in the course is 80% students majoring in accounting who are needing to meet the academic admission requirements for the New Zealand Institute of Chartered Accountants, with the other 20% majoring in information systems or management.

In the 2008 offering one part of the course included the use of one small business AIS with Mind Your Own Business (MYOB). This has been traditionally installed as a stand-alone personal computer based application.

For the 2009 offering of the course it was decided to include the use of a second small business AIS, and the decision was made to use a web based product (Xero). The main reasons behind the introduction of Xero were that it would demonstrate:

- An implementation of an application service provider (ASP) or Software as a Service (SaaS) model for the implementation of an information system, which are some of the concepts covered in the theoretical aspects of the course.
- An accounting application that is based on business centric activities as opposed to the traditional look and feel to AIS as found in many other products. This business centric aspect is one of the key ideas

in the Resource-Event-Agent (REA) model for the design of databases for AIS as described in McCarthy (1982), with this also being covered in the theoretical aspects of the course.

Although it wasn't considered at the time, the fact that Xero is web-based meant that the information technology services (ITS) department didn't need to install or maintain Xero was advantageous as there was no burden on the ITS staff even though this was new software. From the lecturers point of view it was advantageous as network infrastructure issues did not need to be taken into account

### **Methodology and Structure**

A brief review of the background to the Small Business Web Based AIS model is presented including a summary of the literature that was reviewed along with the model itself.

The approach to how the two AIS products were taught is described, along with the issues that arose for the lecturing staff as a result of one being a traditionally installed stand alone system and the other being a web-based system.

The results of a survey of a sample of the students about their experiences and perceptions are produced and analysed, with the findings being used to evaluate the Small Business Web Based AIS Model.

A limitation of this study when it comes to the testing of the Small Business Web Based AIS Model were that it was testing the perceptions of students whose experience in using the AIS products was limited to a small number of tutorials and an assignment. As a

consequence it may be impromptu to assume that their views will reflect the views of those using the products commercially. A further limitation is that due to the small sample size it is not possible to make statistically significant generalisations about the perceptions of all of the students in the ACIS243.

### **Review of Previous Work**

The background to the development of the Small Business Web Based AIS model included a literature review that covered issues relating to:

- SMEs, IS adoption and outsourcing including the work of Al-Qirim (2003), Collins (2006) and Bressler and Bressler (2006)
- The application service provider (ASP) model for acquisition including the work of Lee, Lee, Kim and Lee (2007), Sharma and Gupta (2002) and Kim and Kim (2008)
- The software as a service (SaaS) model for acquisition as covered in Bradley (2008) and Lin (2004)
- The cloud computing model as covered in Weiss (2007), Buyya, Yeo and Venugopal (2008) and Kim (2009)

Based on the range of definitions of the ASP, SaaS and cloud computing models a grid of generic and specialised terms was developed for web-based information systems as shown in Table 1. Some of the issues raised in the context of web-based accounting information systems for small businesses will relate (a) to organisations in general or to small businesses

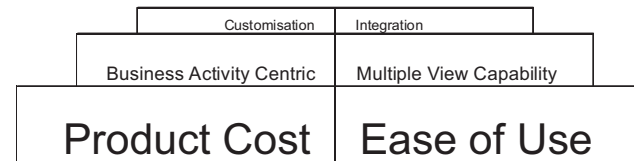
specifically and (b) to the generic information systems or to accounting information systems specifically.

	<b>Organisations in General</b>	<b>Small Business</b>
<b>Generic Information Systems</b>	Web-based Information Systems	Web-based Information Systems for Small Businesses
<b>Accounting Information Systems</b>	Web-based Accounting Information Systems	Web-based Accounting Information Systems for Small Businesses

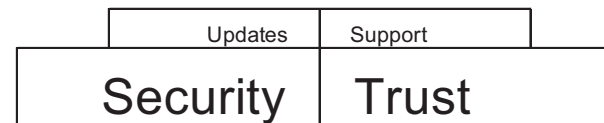
**Table 1 – Generic and Specialised Terms for Web-Based Information Systems Developed in Nesbit (2009)**

The Resource-Event-Agent (REA) model for the design of databases for accounting systems that was developed by McCarthy (1982) was reviewed, with particular emphasis being placed on the notions of being able to provide multiple views of the data (for owners of small business and for their accountants) and on the importance of modeling business events as opposed to the bookkeeping processes performed by accountants. The essence of both of these notions includes the concept of the accountant view of the accounting information being able to be extracted from the business event view, with the reverse of this not being possible.

The reviews of a number of users of small web based AIS were examined, and these were used to develop the proposed Small Business Web-Based AIS Model. The model depicts the most important issues for small businesses choosing to adopt a web-based model for their AIS. The model has both a business phase and a technical phase with the biggest blocks in each part of the model representing the most important issues to be considered for a small business adopting a web based AIS. The two phases of this model are shown in Figure 1 and Figure 2 respectively.



**Figure 1 – Business Phase of Proposed Small Business Web-Based AIS Model Developed in Nesbit (2009)**



**Figure 2 – Technical Phase of Proposed Small Business Web-Based AIS Model Developed in Nesbit (2009)**

### **Incorporating the Two AIS Products into the Course**

Two aspects are focused on in this section of the paper with the first being how the two AIS products were incorporated into the teaching of the course along with the lecturers' observations of how students reacted to

the introduction of the web-based AIS. The second aspect relates to some technical issues that came about as a consequence of adopting MYOB and Xero, and how they were dealt with. Both aspects are related to the proposed Small Business Web-Based AIS Model developed in Nesbit (2009).

*Incorporation of the AIS Products and Observations of Student Reaction*

MYOB (the traditionally installed stand alone product) was covered in weekly lab tutorials across 4 weeks in the first half of the course, with the students then completing an assignment using MYOB. The most recent version of MYOB was used in the course; however it was not possible to make that version available for the students to use off site. A consequence of this was that students could use an earlier version of MYOB at home for the assignment, but if they loaded their data into the version that was available in the computer labs it would not be possible to take the data back home again.

Xero (the web based product) was covered in weekly lab tutorials across 4 weeks in the second half of the course. The issue of not being able to take data backwards and forwards between the computer labs and home for doing the assignment disappeared with the web-based nature of Xero. A number of observations were made by the lecturers involved with the course when the students started using Xero. Common comments made by the students who were majoring in information systems or management were:

- "this is so much easier to use because it is web based"

- "it feels like I don't have to know any accounting to use this one and that is really good"

The reaction of a number of the students majoring in accounting was a bit different and a common comment from some of these students was:

- "I'm not too sure about this one because I can't see what is happening to the transactions"

A common reaction from all of the students appeared to be the ease with which completing the lab tutorials and the assignment could be done anywhere because of the web-based nature of the application.

These reactions are consistent with different aspects of the business phase of the proposed Small Business Web-Based AIS Model. The comments about ease of use being clear in the model, and the comments from the accounting major students about not seeing what is happening to the transactions being a combination of the "Business Activity Centric" part of the model which is the idea of the application capturing the business activity of an event and converting that to the accounting information (transaction) about the event.

*Technical Issues Related to the use of the AIS Products*  
Three main technical issues occurred during the computer labs, with one of these being associated with MYOB and two being associated with Xero.

The issue associated with MYOB which has been mentioned earlier in the paper is the incompatibility of the versions available in the computer labs (the most up to date version) and the version available for the students to install at home. This was dealt with by

making it very clear to the students as the assignment requirements were being distributed what the issue was and that it would require planning of when and where the assignment was to be done. As a result this issue was not of great consequence, but it does however illustrate one of the potential benefits of web-based AIS in that all users are delivered the same version of the product via their browser which is strongly related to the "Updates" part of the technical phase of the Small Business Web-Based AIS Model.

The first of the technical issues related to Xero was that the product is continually evolving and the online documentation (which is the only form of documentation) is continually evolving. This particular issue is seen as being an advantage for the commercial use of Xero in that the documentation is always up to date to reflect any changes and updates that are being made, and as such reflects the "Updates" part of the Small Business Web-Based AIS Model.

However, this created an issue within the course. For the computer labs where Xero was being covered, handouts were being prepared for the students to work through. The handouts included screenshots of different parts of Xero, and in the second week of the course, changes were made to part of the Xero interface in the 3 days between the handouts being finalised and the students using them. This had a direct affect on what the students were doing.

The second of the issues related to Xero was related to the way that the trial version of the application was made available to students. The approach that trial versions of Xero are made available to the general public (and was used with permission from Xero for the

students in the course) was changed one week into the three week period during which the students were working on the assignment. Students who had already completed the assignment were not affected by the change, nor were students who had not started the assignment, however many of the students who were part way through the setup of the assignment lost the work that they had done.

The two issues related to Xero both highlight the potential danger in the "Updates" part of the Small Business Web-Based AIS Model. That the updates are applied to everyone at the same time with a web-based application will in general be a good idea as non-technical owners of small businesses will not need to worry about performing the update themselves or pay a consultant to do the update for them.

The issues that arose with the updates were the timing of them, which may not just be an issue for the use of such a product in a learning environment. If a particular update was of significance, then businesses may want to delay the implementation of the update to a quieter time rather than have it cause potential hiccups at a busy time of the year.

### **Design of Survey**

A survey was conducted of a sample of the students. Due to the timing of the survey (which was after the release of final results for the course for ethical reasons) there were responses from only 27 students.

In the survey the students were asked to indicate their level of agreement with a series of statements about a web based AIS like Xero and were also asked to indicate their level of agreement with the same series

of statements when it came to a traditionally installed AIS like MYOB. These statements are shown in Table 2.

The students were also asked (a) what they saw as being the main advantages of Xero over MYOB and (b) what they saw as being the main advantages of MYOB over Xero.

1	Requires a high level of accounting knowledge and skill
2	Requires a high level of computing knowledge and skills
3	Is suited to a small business owner with little accounting knowledge
4	Creates potential security risks for a business
5	Reduces the complexity of installing upgrades
6	Was straight forward for me to learn how to use for the ACIS243 assignment

**Table 2 – Statements to Rate Level of Agreement with for Xero and MYOB**

The survey was created in Survey Monkey with the students being emailed a link to the survey after they had received their final results for the course.

### Survey Results

The levels of agreement that the students had with each of the statements are shown in Table 3 for Xero and in Table 4 for MYOB.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	0	6	3	16	2
2	0	4	10	13	0
3	9	14	3	0	1
4	1	15	8	2	0
5	12	14	1	0	0
6	19	7	1	0	0

**Table 3 – Levels of Agreement with the Statements Relating to Xero**

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	5	13	3	6	0
2	3	6	10	8	0
3	0	13	8	5	1
4	2	4	9	11	1
5	4	17	5	0	1
6	10	13	2	2	0

**Table 4 – Levels of Agreement with the Statements Relating to MYOB**

The comments made by students about what they saw as being the advantages of Xero over MYOB are shown in Table 5, with the comments made as to what they saw as being the advantages of MYOB over Xero being shown in Table 6.

### Analysis and Discussion

That the lecturers observed the students who were majoring in accounting being more comfortable with MYOB, and the students majoring in information systems or management being more comfortable with Xero points to the importance of an AIS being used in small business being easy to use by the non-accounting focused owners.

With a sample size of 27 it is not possible to make any statistically significant generalisations about the perceptions of all students, however there are some patterns in the responses that are of interest and have the potential to be investigated with a much larger sample.

<b>Advantages of Xero over MYOB</b>
Can be used anywhere
Web based, ease of use
The simplicity of the interface
Its web based so can be accessed from any location of the users discretion
Also the xero interweb is a huge advantage
Easier, no installation or worry over updates
Xero is really user friendly, it looks and feels like any other business software program eg ms office. It can be accessed anywhere there is an internet connection and a computer
Easier access than MYOB- need to have MYOB installed in order to use unlike xero which just requires internet access
We can access anywhere
Easy and understandable
access it anywhere on any computer
Updates by itself and is an online thing you can use at home as well
With Zero, it's Easy to use and very handful and useful in making reports and other things
The business does not need to install software to use Xero.
Being able to have your financial adviser log in to help
Its simplistity - just like using a website so anyone can use
Due to the rapid advancement of technology and the internet, the use of web based accounting packages will increasingly play a bigger role in the business world and how corporations to their books. Therefore it was invaluable for myself to gain some understanding of how such a web based accounting package operates
ease of use and ability to use whenever and where ever you have a internet connection
Xero is more user friendly and better for users without an accounting background

**Table 5 – Advantages of Xero over MYOB Identified by Students**

<b>Advantages of MYOB over Xero</b>
More secure, more reliable. Since Xero is rely on internet
For people with accounting knowledge, possibly more trasnperant.
The completeness of the product
Easy to use without too much Accounting background
Inventory management system with autobuild option. Cheaper (\$300-\$500 per/year for xero in too much in my opinion). More options for advanced users. Can be used over a network.
MYOB is very accountant focused with lots of extras that Xero doesn't appear to have yet. You control the data i.e. installed on one computer and when you choose to upgrade.
Can control update times
Very easy to use, well organized
Secure and good for small businesses
only installed on one computer so you have greater control over who uses it
More traditional approach. Once you are trained in it, its easy to use and other people cannot hack into it and use it to change things
Maybe with MYOB, the main thing that I noticed is you can see and control the inventory which we can't do with Zero
The business can control when to upgrade the software.
Being able to update it when you choose
The operater has more control. doesnt have to rely on the network to operate and when updates are undertaken
The impression I got was that it might still be more secure. Access to the accounting information system can be restricted to a single physical terminal when using MYOB. Therefore not anyone can make alterations using the software. Xero being web based could make it susceptible to online attacks (be it phishing or the like).
security, ability to control and keep within your own firewall. ability to cope with expansion and increasing business size
Slightly harder to use however not being web-based reduces risks associated with the internet.

**Table 6 – Advantages of MYOB over Xero Identified by Students**



The statement "Requires a high level of accounting knowledge and skill" (statement #1 in Table 2) was agreed with by 22% and disagreed with by 67% when it referred to Xero. when it referred to MYOB is was agreed with by 67% and disagreed with by 22%.

The statement "Is suited to a small business owner with little accounting knowledge" (statement #3 in Table 2) was agreed with by 85% when it referred to Xero and was agreed with by 48% when it referred to MYOB.

The statement "Creates potential security risks for a business" (statement #4 in Table 2) was agreed with by 62% and disagreed with by 8% when it referred to Xero and was agreed with by 22% and disagreed with by 44% when it referred to MYOB.

A bigger sample size may result in the differences in perceptions of the two products being statistically significant when it comes to these three statements.

The potential significant difference in statement #1 and statement #3 points to Xero being more suited to people with a non-accounting background. This corresponds to the ease of use aspect in the business phase of the Small Business Web-Based AIS Model which is one of the most important aspects in that phase of the model. The potential significant difference in statement #4 points to the importance of the security issue, which corresponds to one of the most important aspects in the technical phase of the Small Business Web-Based AIS Model.

The relative advantages of the two AIS products that were identified by the students point to the importance of the ease of use and business activity centric aspects

of the business phase of the model; and also point to the importance of the updates, security and trust aspects of the technical phase of the model

### **Conclusions and Recommendations**

The conclusions and recommendations relating to this study are separated into those relating to the Small Business Web Based AIS Model; those relating to the use of Xero in ACIS243; those relating to the development of web based AIS products in general; and some overall conclusions, with these being set out below:

#### *Conclusions and Recommendations Related to the Model*

While some limitations in this study have been identified, the findings do not appear to contradict any of the aspects of the Small Business Web Based AIS Model. The findings of this study appear to be consistent with the following aspects of the model:

- Business Phase:
  - business activity centric and ease of use aspects
- Technical Phase:
  - Updates, security and trust aspects

The aspects of the model that do not appear to have been addressed in this study are:

- Business Phase:
  - customisation, integration, multiple view capability and product cost aspects
- Technical Phase:
  - support aspect

The aspects that have yet to be tested could be tested in a study that investigated the experiences and perceptions of the commercial users of small business web based AIS products. If this was to be done with a sufficiently large sample this would also address the limitations of this study when it comes to the aspects that appeared to be consistent with the findings of this study.

*Conclusions and recommendations related to the use of Xero in ACIS243*

While there were some issues that were experienced with the use of Xero in the course, many of these served to demonstrate some of the theoretical aspects of the course. As a result it is recommended that the use of Xero in the course should continue.

Documentation created for the tutorials should include links to parts of the system as opposed to screen shots of the system so that changes are less likely render the documentation inconsistent with the updated version. However there is still the potential that the links could change.

Discussions with the vendors regarding the timing of updates during the assignment should take place well in advance of the assignment so that there is some scope to move which weeks the assignment is happening in.

*Conclusions related to the development of Web Based AIS in General*

Developers of web based AIS products in general should be aware of issues relating to (a) the timing of updates and (b) the perceived problems associated with security and trust. These could well be factors that

result in some small businesses choosing not to adopt web based products in favour of the more traditionally installed stand-alone AIS product.

An aspect to consider could be hosting updated versions in a manner that enables the old version to be used for a short period of time in parallel so that there is some control over the timing of updates.

*Overall Conclusions*

The introduction of web-based AIS into the ACIS243 course proved to be a success in terms of providing students with some experience that used an alternatively delivered application, and demonstrating many of the theoretical aspects of the course. The issues that arose can be dealt with in most cases, and in others can be used to provide deeper learning for the students when it comes to the adoption of web based AIS products.

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