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A Case Analysis of the Adoption of Internet Applications by Local Sporting Bodies in New Zealand

Scott Bingley, Stephen Burgess

Centre for Applied Informatics, Victoria University, PO Box 14428, Melbourne, Victoria 8001, Australia

Abstract

As a unique type of community-based organisation (CBO), local sporting clubs are typically run by volunteers who regularly carry out the playing, coaching and administrative roles that keep them functioning. Through a case study involving a New Zealand hockey association, this article examines the extent to which sporting clubs use Internet applications by examining their use of email (for communications), club websites (for information provision) and online statistics (transactions). Rogers' (2003) innovation-decision process provides the theoretical framework for the study.

Introduction

A community is a group of people that have common functions, concerns, and interests (Roberts, 1979). Community based organisations non-profit organisations operating in neighbourhoods to benefit residents. They usually serve a geographic area, with few employed staff and a reliance on volunteers (Kellogg, 1999). CBOs face many challenges in relation to resource poverty (in the form of limited finances, limited available time and shortfalls in expertise) when it comes to the use of information and communications technologies (ICTs) such as the Internet (Burgess 2002; Denison 2005). Whilst it is known that CBOs use the Internet, there is a shortage of studies examining the factors that affect the adoption of Internet applications. More specific research is needed to investigate potential differences between the use of ICTs by CBOs.

Sport can provide a number of benefits to the community, such as networking between members, health improvements and improved self-esteem. Involvement in a sporting club can provide a feeling of belonging and that members matter to each other (McMillan and Cahvis, 1986). Local sporting clubs predominantly rely on volunteers to operate. Volunteers fulfil diverse roles with the sports clubs and their respective associations. These roles involve, but not limited to, coaching, training staff, officials, administrators, managers and people who generally help out (Leisure Industries Research Centre 1996). At a local, or community level, non-profit amateur sports clubs rely more or less exclusively on volunteer administrators (Doherty and Carron 2003). Members of these committees are, as Shibli, et al (1999) label them, *Systematic Volunteers* who *"have a clearly defined role and are required to make a regular commitment to the operation of the club."* (Shibli, et al. 1999, 10). Volunteers can be distinguished from regular business employees as they generally do not expect nor receive any remuneration for their time and effort. Also, volunteering may be thought of as a leisure or extracurricular activity (Green and Chaplip 1998). Daniel et al. (2002) found that the volunteer sector is amongst the lowest levels of e-commerce adoption in the UK.

As with other research into CBOs, there is a lack of research examining Internet adoption in local sporting clubs, especially in relation to how they may support their administrative functions. To what level do they adopt Internet applications? What factors affect their adoption and usage?

Rogers' (2003) innovation-decision process describes the process of passing from first gaining knowledge of an innovation, to forming attitudes towards the innovation, making an adoption or rejection decision, implementing the innovation, and finally confirming this

decision. (Rogers 2003, 168). The steps or stages of the Innovation-Decision Process are, in order of occurrence (Rogers, 2003):

1. **Knowledge** – when a decision maker is made aware of an innovation.
2. **Persuasion** – when a decision maker forms an attitude towards an innovation. One of the aspects that can affect attitude is the *perceived attributes* of the innovation but can also be influenced by other factors. The perceived attributes are *Relative Advantage*: or how an innovation is perceived to be better than the replaced innovation; *Compatibility*: the degree in which an innovation is perceived to be consistent with the present socio-cultural values and beliefs; *Complexity*: the perceived difficulty of implementation, ability to understand, or use the innovation; *Trialability*: the level an individual can experiment (or trial) the innovation; and *Observability*: how perceptible the results of the innovation are to others.
3. **Decision** – when a decision maker engages in activities that lead to either choosing the innovation or rejecting it. Rogers refers to different types of decisions: *optional innovation-decisions* (typically made by an individual); *collective innovation-decisions* (typically made by consensus of members of a group or system) and *authority innovation-decisions* (typically made by a few individuals who have the power, status or expertise to do so). A *contingent innovation-decision* occurs where an innovation has been adopted previously and the choice of whether or not to use the innovation is subsequently made by those now in a position to use it.
4. **Implementation** – when a decision maker puts in place the new innovation.
5. **Confirmation** – when a decision maker wants reinforcement about the decision made to use the innovation. The decision to continue or discontinue use of the innovation is made.

One of the aspects of adoption of an innovation is that the innovation itself does not have to be new, just the idea of adopting the innovation. Whilst the adoption of the 'Internet' as a whole could be examined in a local sporting organisation (for instance: when subscription to an Internet service provider occurs), there are many different applications that encompass use of the 'Internet' and for the purposes of this article it seems more sensible to examine some of those.

One way to classify different Internet applications is to do so according to the dimensions they occupy. In the late 1990's, Angehrn (1997) identified four Internet 'dimensions' that online applications could occupy. These dimensions are information (dissemination), communication (with customers), distribution (of digital goods or services) and (online) transactions. Jelassi and Enders (2005) describe Angehrn's dimensions as:

- Virtual information space – this involves posting information for others to see – such as online advertising and business information.
- Virtual communication space – involving two-way online communication by a business with external parties, such as customers, typically through email, but also through other means.
- Virtual distribution space – allows for the delivery of digital goods (such as digital music).
- Virtual transaction space – allows for automated processing to occur without manual intervention, such as online ordering and real-time payments.

This article reports on a project that examines the adoption of Internet applications by local sporting clubs and the factors that lead to the decision to adopt and affected their implementation.

Case Study

This study examines one particular sporting association as a single case – a hockey association in Christchurch, New Zealand. As per Yin (2003), a combination of data collection approaches were employed to gather data related to the research questions. Surveys and semi-structured interviews were used as data collection instruments. Rogers' (2003) Innovation-Decision Process was used as a basis for identifying how local sporting clubs implemented and used websites.

Sport is generally organised at the local level with sporting clubs being part of an association. The data collection in this case was undertaken at the club and sporting association level. The Sporting associations typically have regular meetings of delegates from their participating clubs. For the survey phase of the study, the hockey association was contacted for the purpose of distributing surveys to club delegates at their association meeting. This ensured a captive audience and it was expected would provide a response rate close to a 'full population' of clubs in the association. The surveys, which took only 5-10 minutes to fill out, asked simple questions related to the knowledge, persuasion, adoption and confirmation stages of the Rogers Innovation-Decision Process. Descriptive surveys were used as they *"describe a particular phenomenon: its current situation, it properties and conditions"* (Williamson 2002, 91). The survey was based on a flow chart diagram typically 'yes' or 'no' responses, which determined which level of the Innovation-Decision Process they were at for a particular Internet Application. Rogers suggested that it might be difficult to delineate between the final stages of the Process (Rogers 2003) - hence, the researchers have kept the first three stages and merged the 'implementation' stage with 'decision' stage. The other reason for doing this is that decision stage is a moment in time, whereas the implementation stage represents how an innovation is implemented over time. Thus, there is a clear difference between the decision to adopt and how the adoption occurs (decision/ implementation) and the decision to continue to use the innovation ('Confirmation').

The hockey association was selected on the basis of convenience – with the location of the researchers at the time allowing them to investigate the association in both countries. Details of the case study and surveys are in Table 1. As can be seen from Table 1, *all* of the clubs in the association responded to the survey.

Table 1: Case Study and Survey details

Details	Christchurch Hockey Association
Country	New Zealand
Locale	Metropolitan
Sport	Hockey
Date of data collection	November 2008
Number of clubs	17
Surveys Completed	17 (100%)

The second (Interview) phase of the study was aimed at the volunteer level of local sporting clubs within each sporting association. This phase was aimed at identifying the *factors* that influenced different stages of the innovation-decision process in regards to the selected Internet applications. Thus, data collection for this phase involved semi-structured interviews. This technique is *"frequently used in case studies"* and *"it can be used to supplement survey data"* (Williams 2002, 241). The interviews were conducted with different volunteers from the clubs (typically in roles such as secretary, president and so forth). The questions again related to the stages of Rogers' (2003) Innovation-Decision Process. Interviews were written

up as soon as possible after they were conducted and analysed in relation to the themes identified, as characterised by the stages of the innovation–decision process. Each interview typically took 45-90 minutes to conduct. Refer to Table 2 for a breakdown of the number of interviews that were conducted.

Table 2: Case Study and Survey details

Details	Christchurch Hockey Association
Date of data collection	November 2008
Number of clubs	3
Number of interviews	5

There were two people interviewed at Club 1, being the President and the Secretary. This was a very large club (according to the Secretary it was the "biggest in New Zealand with over 500 members"). Club 2 was a small club with six teams (four of them being junior teams). One interview (with the Club Treasurer) occurred in this club. Club 3 had ten senior teams (five male and five female teams) and eight junior teams. The two people interviewed were the President and the Secretary.

Due to the lack of studies involving the use of Internet applications by local sporting clubs, the researchers felt it would be advantageous to examine different types of applications (according to Angehrn's virtual spaces). Given the lack of Internet applications using the distribution space in other studies (Burgess, Bingley and Sellitto 2005; Burgess, Quiazon and Breen 2007) it was decided to examine the following applications:

- Electronic email – operating in Angehrn's *communication* space
- Club website – operating predominantly in Angehrn's *information* space
- Online statistics – operating predominantly in Angehrn's *transactions* space.

The Christchurch Hockey Association is based in Canterbury, New Zealand. This is a very large Association with 23 senior divisions (includes men and women), five youth divisions, and 14 junior divisions (includes boys and girls). Games of hockey are played between two teams consisting of two halves, each 30-35 minutes in duration. Table 3 provides a summary of the finding from the surveys.

Table 3: Survey results for Internet application adoption stages

Internet Application	Main virtual space (as per Angerhn (1997))	Stages of Adoption (%)			
		Knowledge	**Persuasion**	**Adoption**	**Confirmation**
Email	Communication	100	100	100	100
Club Website	Information	100	54	46	46
Online Statistics	Transactions	82	82	54	54

Table 3 shows that email had been adopted by all clubs in the association; just under half of the clubs had implemented a club website and just over half of the clubs had adopted online statistics. The discussion will now move onto the factors that affect the adoption of the three Internet applications across clubs in the association. The first of these is email.

- **Email**

The survey responses show that email is the most used Internet application, with all of the clubs using email and in the confirmation stage.

In relation to Club 1, the Club President indicated that he was involved in the setup of email in 1995: "it started with him and another guy at the club swapping emails with each other, and it grew from there". However the Secretary indicated that this became more formalised in 2000. Email was used by the committee, coaches, managers, and also for direct communication with the Hockey Association. Both interviewees used email to "pass information along", as much of their time was dedicated to passing on information to their members, coaches and managers. They both found out about email (Rogers' knowledge stage) in different ways, with the President using it at work first, and the Secretary through communications with her children. Both of the interviewees outlined the benefit of email as the speed of communication. The Secretary also mentioned that before email there used to be a "big mail out". This mail out would become expensive as each of the letters would need to be printed, folded, put into an envelope, and have a stamp put on it. The Secretary also added that if she sent out an email, it "would be actioned on the same day, rather than waiting a few days for snail mail". The communication tool has changed the way both of them do their respective duties. Previously, the Secretary and the President had to mail out the minutes of the club meetings and newsletters, with the Secretary saying that "once you send it, it's done". Both of them also remarked that there were now much less phone calls. In relation to understanding how to use email, the President said that "it was hard in the 1990s. However the Secretary found it much easier, commenting that "once she picked it up, it was easy". Both of them had a chance to try it out and to see it in operation before they used it in their club. Some of the factors that lead to the decision to adopt email in the club were ease of use, ability to contact people, and saving time. They will continue to use email into the future.

In Club 2 the Treasurer was not involved in the setup of email. However, the club did have an email address. One year the Association started sending out emails to clubs, so they used email more often from then on. The Treasurer was frustrated with email at the time of interview, as the Association seemed to send out "hundreds of emails a week". The Treasurer found out about the use of email from within the Association, however she did have a personal account first. Some of the benefits that email provided were speed and because it is typed it easy to read (particularly numbers). When asked whether email had changed the way the club operated the Treasurer replied "not hugely, before email the coach would write a list for parents (what to bring to the games, fixtures, etc), and hand them to the kids. Some would lose it. Now he emails the parents directly and tells them. This is the only process it has really changed". This, of course, discounts having to deal with the association emails. The Treasurer did not have any difficulty understanding how to use email. She had tried it out before through emailing her friends and family overseas. This changed happened about five years earlier. In the future, the club will continue to use email, as it is "much better and quicker. It's more cost efficient and it saves on storage space".

In Club 3, the Secretary said he was the one who drove the adoption of email within the club. Both the Secretary and President use email, with the President using it for contact with the committee and the club members. The Secretary used it for "basically everything, information to the members, giving communication to the members, and publishing the meeting minutes". The Secretary first found out about using email through work and personal use, as did the President. The benefits that email brought were better contact with members, cost efficiencies, it was instant, there were no more mail outs to members and it can be sent to many people at once. It has changed the way they perform their tasks with the Secretary not

having to do mail outs anymore and the President able to reach the members better. It was not difficult for them to understand it, as both of them previously used it for either work, or personal use. The Secretary did have a chance to try it out beforehand, with the club website having an email function. Some of the factors that were listed which lead to the adoption of email in this club were basically cost savings and the fact that messages could be sent "instantly". The Secretary went on to say that "the hardest part of it is keeping the mailing list up to date: "You usually receive about 15-20 emails bounce back" (due to incorrect or out of date email address.

Table 4 shows the main influences around different stages of the innovation-decision process for email as identified from the interviews. Note that the influences are broken up into three different categories:

- Institution (where the influence comes from the hockey association)
- Organisation (where the influence occurs at the club level)
- Individual (where the influence occurs at the individual level).

Table 4 - Revised Framework with the Christchurch Results for Email

Innovation-decision Influences	Innovation-Decision Process			
	Knowledge	Persuasion	Adoption	Confirmation
Institution				
Organisation			-Used for disseminating information	
Individual	-Found out through personal use -Found out via Work	-Relative Advantage -Trialability	-Emails sent between committee members	-Less phone calls required -Easy to use -Saves time -Low cost

Most of the influences across the innovation-decision process for email were at the individual level. Knowledge of email came mainly via its use by individuals or in the workplace. The benefits of email that lead to the decision to adopt it were also the benefits cited after its implementation – it is easy to use, it saves time and is cheaper than the alternatives (regular mail and telephone calls). These benefits equate to 'relative advantage' over previous approaches. Also, a number of club members had a chance to trial email before it was adopted within the club. Its main use was for disseminating information to all club members (an organisational influence) and for communications between committee members. The decision to adopt email was a combination of Rogers (2003) collective innovation-decisions (for its use for committee communications) and optional innovation-decisions (for other uses).

- **Club Website**

The survey results for club website showed that all of the clubs had heard about the having a Club website. However, only just over half of the clubs were in the persuasion stage, with less than half (45%) having adopted a website.

Club 1 had a website, but neither of the interviewees were part of setting it up the club website. The club has an ICT person who set it up and maintains it. The website was used for information provision and was the first point for contact for members and prospective

members. Both of interviewees outlined different benefits of having a website: "you can have a wealth of information on it. Before the website, there was a lot of manual filing and because of that, a lot got lost" (President) and "lots of people contact them from overseas (who are about to move to Christchurch) about joining the club" (Secretary). When asked if anything had changed, the President commented that "it had not had as much of an influence, the operational tasks have stayed the same". The website was difficult for the President to understand and use, which is "I have kept the IT guy on". The President did have a chance to try it out before his club adopted it and also saw the innovation in use beforehand, as he browsed other Hockey websites to "get a feel for it". The President said that some of the decisions that lead to them adopting a club website were its ease of record keeping, access for members and it helped the continual need for transparency of processes at the club. The Secretary viewed the website as "just a promotional tool for the club".

Club 2 did not have a website. However, they do have a listing on the local regional Portal. The committee discussed having a website, but decided not to. This meant they had passed through the Knowledge, Persuasion, and Decision stages.

Club 3's website was developed in 1999, before the current President and the Secretary were in their positions. Over time they have had to change Internet service providers. The last service provider change was due to the fact the company went broke. At the time of interview they were looking for another provider. The Secretary assumed that most people in the club used the website. He used it the most as he was in charge of updating it. The club website is used for to provide information to members, as well as list contact and general information about the club. Whilst not there when the website was initiated, the interviewees noted that other Hockey clubs had them and they were "keeping up with the times". The Secretary said the benefits of having a website were better communication and once you put it on the website everyone can see it. The President viewed it more as a central point for members to find information about the club and for other people to find them and become new members. The website has not changed the way they do their duties at the club just the way that members access information. The President did not find it hard to use, as the Secretary is the one who is in charge of it. However the Secretary did find it hard to manage and update in the beginning, but had overcome those "teething issues". When reactivated they will continue to use the website in the future.

Table 5 shows the main influences around different stages of the innovation-decision process for club websites as identified from the interviews.

Table 5 - Revised Framework with the Christchurch Results for Club Website

Innovation-decision Influences	Innovation-Decision Process			
	Knowledge	**Persuasion**	**Adoption**	**Confirmation**
Institution				
Organisation		-Relative Advantage		-Promotion of club -Wide access for members
Individual	-Found out via ICT Person -Found out via club Committee Member	-Complexity -Trialability -Observability	-Information provision -Implemented by others -Requires training	-Efficiency Gains

As was the case with email, the majority of influences across the innovation-decision process for club website were at the individual level. However, knowledge of club websites came mainly via information gained from ICT experts or a committee member that had some prior exposure. The benefits of club websites that lead to the decision to adopt it were the provision of information, which provided 'relative advantage' over previous approaches. Additionally, there were issues raised to the complexity of setting up and using websites, and the fact that club members had the chance to either trial or observe websites elsewhere before their adoption. This suggests a level of complexity beyond email that was reinforced by the mention of the need for training to assist with the website. The main use of the website was for disseminating information to existing and club members so that they could access it as it was required by them. The decision to adopt the club website was mostly an authority innovation-decision (made by the club committee).

- **Online Statistics**

Similar to the club website, the surveys showed that a large proportion of clubs were aware of the existence of online statistics, but just over half of them (54%) had actually adopted them. In this association every game of Hockey has an umpire. The umpire enters the match results and goal scores directly in the *SportingPulse* website. SportingPulse is a third party online administration system that Associations use to house their fixtures, ladders, match results and players statistics. For this association, the SportingPulse statistics were also accessible on the hockey association's website.

Although Club 1 used SportingPulse, neither of the interviewees were involved in its adoption. In relation to its use, the Secretary stated that "having the fixtures and standings (ladders) online makes things so much easier". The President found out about SportingPulse at an Association meeting. The main benefit of the online statistical package was that it had made team management much easier. The President said "before the website, we had to wait until the end of the season for the standings (ladders) to know who we played in the finals". The Secretary added: "I can't imagine having to wait till the end of the season for the standings". Neither interviewee had a problem with the use of this application. However, the researcher believes that the interviewees are viewing the end result of the system. One of the reasons for this could be that they do not enter the data (the umpires do this). Neither of them had a chance to trial the application, nor observe it in operation before it was adopted. The club will continue to use it into the future. As the President suggested: "it is a great tool, and it gives you up-to-date standings and fixtures".

Club 2 also uses the online statistical part of the Association's website to examine the fixtures and the ladders throughout the season. The Treasurer said that having these online makes "things much easier in terms of planning". She found out about website through the Association.

Neither the President nor the Secretary of Club 3 were involved in the adoption of online statistics. The interviewees used the application more widely than the other two clubs: to view the fixtures, standings and weekly match results. The President found out about the online statistics through the Association, as did the Secretary. They will continue to use the application into the future: "it makes my job so much easier" (Secretary).

Table 6 shows the main influences around different stages of the innovation-decision process for online statistics as identified from the interviews. Interestingly, the main influences across the innovation-decision process for online statistics were at the institutional level (as the association informed clubs about the innovation after it had been adopted) and the individual

level (as individuals within the club decided if and how to use the facility). Knowledge of online statistics arrived via the hockey association.

Table 6 - Revised Framework with the Christchurch Results for Online Statistics

Innovation-decision Influences	Innovation-Decision Process			
	Knowledge	**Persuasion**	**Adoption**	**Confirmation**
Institution	-Found out about application via Association	-Relative Advantage	-Decision to adopt	-Decision to continue use
Organisation				
Individual		-Complexity	-View fixtures -View up-to-date ladders -View up-to-date results	-Improved access to up-to-date information -Easy to use

The benefits of online statistics that lead to the decision to adopt it were improved access to up-to-date information, which provided 'relative advantage' over previous approaches. Additionally, there were issues raised to the complexity of using the online statistics. The main use of the website was for viewing fixtures and up-to-date ladders and results. The decision to adopt online statistics was an authority innovation-decision (by the association) and clubs subsequently determined to use the innovation, but each used different aspects of the innovation (contingent innovation-decision).

Summary

Table 7 summarises the characteristics of adoption of each of the Internet applications within the hockey association. The implementation of email was typically a 'bottom-up' innovation-decision, with individuals within the clubs adopting it for various purposes on the basis of previous usage of the innovation. This graduated to a more formal use by the committee of one club to communicate with each other.

Table 7: Summary of Internet application adoption characteristics

Internet Application	Main virtual space	Type of innovation-decision	Main influence			
			Knowledge	**Persuasion**	**Adoption**	**Confirmation**
Email	Commun-ication	Optional; Collective	Individual	Individual	Individual; Organisation	Individual
Club Website	Information	Authority	Individual	Individual; Organisation	Individual	Individual; Organisation
Online Statistics	Transactions	Authority; Contingent	Institution	Institution; Individual	Institution; Individual	Institution; Individual

The adoption of a club website was typically an authority innovation-decision, with the decision being made by the club committee in each case. There was less chance to trial the innovation, so prior observation became an important persuasion factor in the decision to adopt. Another factor was complexity, as it was obvious that the innovation was more difficult to set up and maintain than email.

Finally, the decision to adopt online statistics was initially an authority innovation-decision, as the hockey association enforced its adoption across the association. However, it was up to clubs to determine how to best use the innovation, so they decide which of the fixtures, ladders, match results and player statistics to implement (contingent innovation-decision). The usage of the system was not complex as clubs or individuals within clubs did not have to keep the details on the SportsPulse website up-to-date – this was carried out by umpires.

Lessons Learned

This case study involved surveys of 17 club delegates (representing all of the clubs in the Christchurch Hockey Association) and five interviews with club committee members from three clubs from the association. The first point to note is that there was a high level of awareness of the different Internet applications within the clubs. This awareness came from different sources, depending upon the type of application. It is reasonable to consider that a similar pattern would occur in other sporting associations. Sporting clubs could take a lesson from Rogers' (2003) and consider his perceived attributes of innovations – examining the relative advantages of a proposed innovation over current practice. Additionally, opportunities to trial or observe more complex innovations should be taken when they become available. Adoption decisions may fall under the auspices of the association (typically authority innovation-decisions); club committees (authority or collective innovation-decisions) and individuals within a club (optional innovation-decisions). There is also a need to consider whether to use innovations after they have been adopted, as occurred with online statistics in the Christchurch Hockey Association (contingency innovation-decision). Each type of decision was encountered in this case and each was the most appropriate for the type of decision and innovation being implemented.

Conclusion

This article has examined the adoption of Internet applications that encompass Angehrn's communication, information and transactions purposes in local sporting clubs through a case study of a New Zealand hockey association. The study examined the extent that clubs in the association have adopted the applications and the factors that affected their adoption examined along Rogers' (2003) innovation-decision framework. There were a number of differences in these factors for each application that could be attributed to the nature of the innovation, the perceived (and eventually achieved) attributes of the innovation (including relative advantage, complexity, trialability and observability) and the source of knowledge of the applications. The authors consider that the lessons learned from the case study would be generally applicable to other, similar sporting associations and their clubs.

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