Examining the application of Web 2.0 in medical related organisations

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Examining the application of Web 2.0 in medical-related organisations

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Abstract

Objectives: This study surveyed Web 2.0 application in three types of selected health or medical-related organisations such as university medical libraries, hospitals and non-profit medical-related organisations.

Methods: Thirty organisations participated in an online survey on the perceived purposes, benefits and difficulties in using Web 2.0. A phone interview was further conducted with eight organisations (26.7%) to collect information on the use of Web 2.0. Data were analysed using both quantitative and qualitative approaches.

Results: Results showed that knowledge and information sharing and the provision of a better communication platform were rated as the main purposes of using Web 2.0. Time constraints and low staff engagement were the most highly rated difficulties. In addition, most participants found Web 2.0 to be beneficial to their organisations.

Conclusions: Medical-related organisations that adopted Web 2.0 technologies have found them useful, with benefits outweighing the difficulties in the long run. The implications of this study are discussed to help medical-related organisations make decisions regarding the use of Web 2.0 technologies.

Keywords: academic, healthcare, health science, librarianship, libraries, Web 2.0.

Key Messages

Implications for Practice

- Provide additional staff training for Web 2.0 technology application.
- Make internship available to knowledgeable Web 2.0 users to help in its implementation.
- Promote the usefulness and convenience of Web 2.0 among the staff.
- Introduce incentives to motivate staff to apply Web 2.0 in their work.

Implications for Policy

- For current Web 2.0 users, to alleviate time constraint and foster staff engagement, provide better staff training and infrastructure for technology application.
- For non-current Web 2.0 users, start with a small-scale plan of Web 2.0 implementation involving one or two departments.

Introduction

Web 2.0 is a term used to describe the second wave of the World Wide Web and has brought a major impact in most sectors of society. With the advancement of Web 2.0 tools such as blogs, Wikis, Really Simple Syndication (RSS), podcasting, social bookmarking, social networking, feeds and Google functions, everybody can participate in the Internet world, creating and contributing information by publishing content.

Nowadays, using the Internet is not only limited to information searching. Web 2.0 has provided new ways of using the Internet for collaborative and interactive applications. This has led medical-related organisations, such as medical libraries, hospital and non-profit organisations to apply Web
2.0 in their workplace. This research aims to investigate the trends in Web 2.0 applications, the reasons for using or not using Web 2.0 and the perceived benefits and difficulties associated with these tools among medical-related organisations.

Different organisations have realised the significant contributions Web 2.0 can provide in organising events, forwarding organisation news or even recruiting volunteers and staff. Crusoe recommended that ‘through careful planning, management and iterative execution, Web 2.0 will provide a positive return on investment’.

A survey by the McKinsey Quarterly on the implementation of Web 2.0 in the business sector showed that more than 75% of companies planned to maintain or increase their investments in Web 2.0. Their survey revealed that the combined use of Web 2.0 tools has strengthened their companies’ internal capabilities in maintaining their marketing position, particularly in breaking down hierarchical and functional boundaries. They noted that companies apply Web 2.0 for both internal and external purposes such as encouraging collaboration within their companies for knowledge development and fostering interaction between customers and business partners.

In the education sector, Wiki has been perceived as an effective tool for improving student collaboration and work quality with undergraduate students during their project work. It was noted that Wiki is an enabling technology for knowledge management that can be used widely in the future. In another study, with 60 selected universities worldwide on the use of Wikis in academic libraries, Chu found that a large number of academic libraries using Wiki perceived that the benefits will outweigh the costs in the long run.

Web 2.0 particularly benefits health professionals and patients by facilitating open access to information in order to share ideas and questions. It also enables medical organisations to link different medical professionals with a similar expertise in a virtual environment and to form a community of practice for sharing common topics. Medical contents for public educational purposes are also delivered through podcasts and videocasts. Hardy also found that tagging is used to allow patients to indicate their information, including age, sex and starting date of sickness symptoms on the Google Map for medical follow-up and reference.

The investigation of Web 2.0 applications in medical-related organisations is of critical importance. Recent trends have indicated the increasing use of Web 2.0 tools in the health sector as shown through a large number of studies. To date, most of the research on Web 2.0 in health has focused on the individual level, e.g. how individuals such as physicians, medical students and patients use Web 2.0.

However, research on the institutional/organisation level, more specifically, how medical-related organisations use Web 2.0 is meagre. This is an important gap to address because medical librarians not only cater to individual but also organisational needs. As such, a study that takes the organisation as the unit of analysis would help both medical librarians and other users of online health information (e.g. doctors, patients and students) become more aware of how institutions are using Web 2.0, become cognizant of its associated benefits and drawbacks and become informed about the issues surrounding its adoption or non-adoption. Therefore, this study attempts to give an overview of the trends and issues associated with medical-related organisations’ adoption or non-adoption of Web 2.0 technologies.

Objectives

The success and satisfaction with applying Web 2.0 were expressed through the past surveys and studies. Most studies about Web 2.0 have been conducted on libraries, business entities and educational institutions. However, not many focus on the application of Web 2.0 in the medical field. As such, more research is needed to investigate how Web 2.0 is used among medical-related organisations. This research aims to fill this gap by studying the use of Web 2.0 among medical-related organisations worldwide. This exploratory research aims to investigate whether medical-related organisations find Web 2.0 beneficial. Qualitative and quantitative data were analysed based on the responses of 30 medical-related organisations.

This study aims to answer the following research questions:
1. What are the trends in the application of Web 2.0 among the selected medical-related organisations?
2. What are the reasons for using Web 2.0 among medical-related organisations?
3. How do medical organisations perceive the benefits and difficulties in applying Web 2.0?

Methods

This study reports on the findings of an online survey and a follow-up phone interview. Both qualitative and quantitative methods were employed to answer the research questions. This mixed-methods approach is expected to generate a better understanding of the phenomenon by building on the strengths of both quantitative and qualitative data.

Data collection and analysis

One hundred and forty organisations were initially selected from websites that may be using the Web 2.0 technology. Maximal variation sampling was employed. This strategy is a type of purposeful sampling wherein the researcher samples cases that differ on some predetermined dimension. For this research, the type of medical-related organisation was the selected criterion. Three different types of medical organisations were selected: university medical libraries, public hospitals and non-profit medical organisations.

All selected organisations were initially invited by email, which was posted on their websites with a contact person, and were asked to complete an online survey system using Survey Monkey. There were two sets of questionnaires, one for organisations currently using the technology (see Appendix A) and another for those who were not using it (see Appendix B). The questionnaires consisted of multiple choice questions, open-ended questions and 10 Likert scale items. For the Likert scale, participants were asked to answer according to a scale of 1–4, with 1 as strongly disagree and 4 as strongly agree. Organisations can also choose ‘don’t know’ if they have no sufficient knowledge to answer the item.

After completing the online survey, respondents were invited to participate in a follow-up phone interview using Skype for approximately 10–15 minutes. Different interview schedules were used for those organisations that were currently using the technology and those that were not (See Appendix C and D). Eight organisations consented to being interviewed on Skype. Interview questions were mainly to confirm or clarify their responses in the survey and probe further for more detailed information. Participants’ consent for audio-recording was gained before proceeding with the interviews and these were later transcribed.

Findings and discussion

Overview and types of Web 2.0 applications

Only 30 of 140 selected organisations (21% response rate) responded and completed the online surveys, despite the follow-up telephone calls for participation. Table 1 shows the breakdown of the three sectors that responded to the survey. In terms of geographical location, the respondents were drawn from organisations based in North America, Europe, Asia and Australia.

Among the 30 that responded, 14 (46.7%) were currently applying Web 2.0 and 16 (53.3%) were currently not using the technology, but of the 16

<table>
<thead>
<tr>
<th>Participating organisations</th>
<th>No. of participants</th>
<th>No. of respondents (% of response)</th>
<th>No. of organisations using Web 2.0 (% of usage)</th>
<th>No. of organisations not currently using Web 2.0 (% of non usage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>University Medical Libraries</td>
<td>60</td>
<td>19 (31.7%)</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>Public Hospitals</td>
<td>51</td>
<td>7 (13%)</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Non-profit Medical Organisations</td>
<td>29</td>
<td>4 (13%)</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>140</td>
<td>30 (21.4%)</td>
<td>14 (46.7%)</td>
<td>16 (53.3%)</td>
</tr>
</tbody>
</table>

Table 1 Breakdown of participating organisations according to their response and usage rates

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to use it in the future, which supports the view by Churchill that Web 2.0 is becoming more widespread. For the 14 organisations that were using Web 2.0, nine were from North America (4 from Canada and 5 from USA), three from Asia (Greater China and Hong Kong) and two from Europe (United Kingdom and Finland). For the 10 organisations that were planning to use Web 2.0, four were from North America (i.e. USA), four were from Asia (Greater China, Hong Kong and Singapore), one from Europe (United Kingdom) and one from Australia.

Eighty per cent of the participants are currently using or are planning to use Web 2.0 in the future, implying that Web 2.0 may be a useful tool for effective information/knowledge management and sharing in medical and health settings. Participants who are currently using Web 2.0 and those who are not were asked the following questions respectively, ‘Which of the following Web 2.0 application(s) does your organization currently use?’ and ‘Which of the following Web 2.0 application(s) does your organization plan to implement?’ Eight choices (blogs, Wikis, Google Document, podcasting, RSS, media sharing, social bookmarking and social networking) and ‘Others’ options were provided. Table 2 shows a summary of responses from 14 participants who are currently using Web 2.0 and 10 of 16 participants who are planning to use Web 2.0.

Really Simple Syndication (75.0%), blogs (62.5%), social networking (62.5%) and Wikis (58.3%) were the applications adopted by the largest number of respondents. RSS and blogs were the most commonly used applications used by organisations that are using Web 2.0 (78.6%) and those planning to use Web 2.0 (80.0%). These results are consistent with Bughin and Manyika’s findings that most users perceive Web 2.0 tools beneficial to their companies and Wikis, blogs and RSS technologies were the most commonly used tools.

Really Simple Syndication stands for ‘Rich Site Summary’ or ‘Real Simple Syndication’, which allows users to subscribe to a website’s content. The information available from the frequently updated websites is called feed. Through RSS, users no longer need to visit different sites to obtain updated information about their content, because the aggregator collates the new information. Through RSS, ‘sense is made of the “torrent” of information’.

Blogs, on the other hand, are interactive websites that consist of regular diary-like entries. Unlike the Web 1.0 web pages, blogs are more dynamic and permit writers to engage in one to many conversations with their readers.

64.3% of the respondents currently using Web 2.0 and 50.0% of those planning to adopt Web 2.0 are using Wikis. This is corroborated by the study of Foley and Chang, who claimed that Wiki technology has been in limited use for several years, but is now gaining widespread use with the popularity of Wikipedia as it facilitates group work and creation of information resources. The social networking application is also popular among

<table>
<thead>
<tr>
<th>Type of Web 2.0 applications used</th>
<th>No. of orgs. currently using ($n_1 = 14$)</th>
<th>No. of organisations planning to use ($n_2 = 10$)</th>
<th>Total ($n_3 = 24$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Really Simple Syndication (RSS)</td>
<td>11 (78.6%)</td>
<td>7 (70.0%)</td>
<td>18 (75.0%)</td>
</tr>
<tr>
<td>Blogs</td>
<td>7 (50.0%)</td>
<td>8 (80.0%)</td>
<td>15 (62.5%)</td>
</tr>
<tr>
<td>Social networking (e.g. Facebook, Myspace, Second Life and LinkedIn)</td>
<td>10 (71.4%)</td>
<td>5 (50.0%)</td>
<td>15 (62.5%)</td>
</tr>
<tr>
<td>Wikis</td>
<td>9 (64.3%)</td>
<td>5 (50.0%)</td>
<td>14 (58.3%)</td>
</tr>
<tr>
<td>Social bookmarking (e.g. delicious)</td>
<td>7 (50.0%)</td>
<td>2 (20.0%)</td>
<td>9 (37.5%)</td>
</tr>
<tr>
<td>Others</td>
<td>6 (42.9%)</td>
<td>3 (30.0%)</td>
<td>9 (37.5%)</td>
</tr>
<tr>
<td>Podcasting (e.g. YouTube and iTunes)</td>
<td>3 (21.4%)</td>
<td>4 (40.0%)</td>
<td>7 (29.2%)</td>
</tr>
<tr>
<td>Media sharing (e.g. Flickr)</td>
<td>3 (21.4%)</td>
<td>1 (10.0%)</td>
<td>4 (16.7%)</td>
</tr>
<tr>
<td>Google Document</td>
<td>2 (14.3%)</td>
<td>0 (0.0%)</td>
<td>2 (8.3%)</td>
</tr>
</tbody>
</table>

Participants could select more than one choice.
respondents. It is adopted by 71.4% and 50% of the respondents who are currently using or planning to use Web 2.0. Research has shown that the number of medical organisations using social networking technologies via network-accessed computers or handheld devices that have wireless network connectivity has the potential to increase, as shown by research results in the educational sector.19

The ratings for the usage of social bookmarking (37.5%) and podcasting (29.2%) are relatively low, which is consistent with Baumbach’s20 finding that over 40% of the respondents have heard of, but never used, podcasting. However, in our study, Media Sharing (16.7%) and Google Document (8.3%) were the most rarely used tools. Of the participants, 37.5% reported the use of other tools such as Toolbar, Ajax, LibGuides, Online Chat, Feednavigator and Screencasting, among others. These tools function similarly as Web 2.0 applications in information sharing, communication and collaboration.

Purpose(s) of using Web 2.0

Table 3 shows how the participants who are using Web 2.0 in their organisations view the purposes of Web 2.0 applications.

More than 70% of respondents chose fostering information sharing (85.7%), promoting existing services (78.6%), fostering knowledge sharing (71.4%) and achieving better teaching and learning (71.4%) as the main purposes of applying Web 2.0. Approximately half of the participants used Web 2.0 applications to develop their new services (57.1%), motivate collaboration across the organisations (42.9%) and enhance organisational culture (42.9%). Additionally, one of the respondents specified the purpose of using Web 2.0 applications as promoting online help.

Based on these findings, most organisations implement Web 2.0 for fostering information or knowledge sharing, and communication as indicated by the interviewee’s comments from this study, ‘…patrons, esp. learners, doctors, the medical students in nursing might use this for communication when they do internship’ and they ‘might be a hundred miles away so online sharing would be a very convenient way to share information with the patrons and communicate with them’. This is consistent with Murray’s8 finding that Web 2.0 tools will increasingly allow for the development of new models of collaboration and group practice in medicine, nursing and other health professions. The new forms of collaboration will provide opportunities for developing new working style based on easier access to information and Web 2.0 could help achieve those purposes as one of the interviewees commented, ‘Fostering information sharing I think is the main purpose because we aim to share information to users, for examples we share our products and services through the blog’.

The participants applied Web 2.0 mostly to promote existing services and achieve better teaching and learning. Web 2.0 enhances sharing and increases users’ networking.21 It has been found that Wiki is a powerful tool in constructivist learning environments that involve collaborative learning.22 Web 2.0 tools can be used in education as learning materials for students, such as using social networking systems for community of learners among professionals, providing potential educational models and promoting existing services to achieve better teaching and learning.23

A number of participants in this study have reported using Web 2.0 tools to develop their new services, which have the potential of complementing, improving and adding new engaging features.
and collaborative dimensions to many Web-based medical, health education and current research services. This is supported by Boulos et al.\textsuperscript{12} study. An interviewee pointed out that the use of Web 2.0 can enhance the existing library services (e.g. online catalogue): ‘users like to use new tools, such as social networking, tagging to get what they want. When they are using new tools, they believe they are happy and do better research for a longer period’.

Benefits and difficulties in applying Web 2.0

Table 4 shows the participants’ responses on the perceived benefits of applying Web 2.0 in medical-related organisations. Among all benefits, sharing information efficiently (3.37) received the highest rating. This indicates that the majority of participants thought Web 2.0 helps to achieve effective information sharing. Five other items, to provide better communication platform, to share knowledge efficiently, to encourage information sharing, to encourage knowledge sharing and to enhance collaboration, all had average ratings above 2.5, indicating that participants view Web 2.0 as generally helpful in achieving these purposes. The item saving money had the lowest overall mean (2.31).

The participants were positive about applying Web 2.0 as it provides a communication platform where they could share and manage information and knowledge efficiently. This is similar to findings reported by Bughin and Manyika.\textsuperscript{5,17} Their studies revealed that most of the commercial organisations were extremely or very satisfied with Web 2.0 for managing knowledge, information and for interacting with customers and business partners. A similar survey conducted in non-profit organisations found that a large proportion of participants were successful in using Web 2.0 for organising events, spreading updated content and other promotional purposes that are closely related to information sharing.\textsuperscript{4} This concurs with other research findings that the use of medical blogs, which is a type of Web 2.0 technology, facilitates knowledge sharing, reflection and debate and that Wikis can be used for obtaining information and knowledge and for engaging users in collaborative learning.\textsuperscript{8,16} Web 2.0 offers opportunities for medical-related organisations to have open access to information so that they can share ideas, questions and opinions.\textsuperscript{12}

Although concerns have been raised about the accuracy of information in Web 2.0, research has shown that these tools such as Wikipedia are usually factually accurate compared with other information sources.\textsuperscript{24,25} In addition, some scholars have raised the argument that the risk of poor information could even be magnified if Web 2.0 technologies did not exist.\textsuperscript{25} However, given that the medical organisations included in this study rated information sharing as the highest benefit of Web 2.0, concerns about its accuracy will continue to be debated.

The constant improvement of Web-based material greatly enhances learning experiences in the digital environment.\textsuperscript{12} The findings indicate that the majority of participants agree that Web 2.0 brings the aforementioned benefits to their organisations. Although many of the organisations were not currently using Web 2.0, with the increasingly successful examples of applying Web 2.0, more organisations may plan to use it.

\begin{table}[h]
\centering
\begin{tabular}{|l|c|c|c|}
\hline
 & Current users & Potential users & Overall \\
 & Mean/(SD) & Mean/(SD) & Mean/(SD) \\
 & \((n_1 = 14)\) & \((n_2 = 5)\) & \((n_3 = 19)\) \\
\hline
Share information efficiently & 3.42 (0.51) & 3.20 (0.45) & 3.37 (0.50) \\
Provide better communication platform & 3.36 (0.63) & 3.00 (0.71) & 3.26 (0.65) \\
Share knowledge efficiently & 3.38 (0.51) & 3.20 (0.45) & 3.33 (0.49) \\
Encourage information sharing & 3.31 (0.48) & 3.20 (0.45) & 3.28 (0.46) \\
Encourage knowledge sharing & 3.36 (0.50) & 3.20 (0.45) & 3.31 (0.48) \\
Enhance collaboration & 3.17 (0.58) & 3.00 (0.00) & 3.11 (0.49) \\
Save money & 2.23 (0.83) & 2.67 (0.58) & 2.31 (0.79) \\
\hline
\end{tabular}
\caption{Comparison of the benefits of applying Web 2.0 between current and potential users}
\end{table}
Establishing Web 2.0 within an organisation requires lots of input, such as human resources, technologies (both software and hardware), time for its implementation and user training. It is also noteworthy that while participants in this study felt Web 2.0 encourages sharing information, only a small proportion of them strongly agreed or agreed that it was cost effective. When asked about the reason, an interviewee reported, ‘Web 2.0 makes our services better, but we have to pay to make the services’. This may reflect why some organisations showed more concern about Web 2.0 than others, and the cost may be one of the major concerns while considering the implementation of Web 2.0.

The majority of the participants felt that Web 2.0 is an effective tool for communication as they reported below:

‘I think the main achievement is about communication. We can share the information to our students, for example the RSS in Wiki’s NewBooks … they can update the information from NewBooks’.

‘It is very convenient and easy to write information, much quicker than going to the email … whenever we get new databases, a new research so we could tell people about a new credit of our library’. Additionally, due to the current difficulties in the economy, a participant commented that ‘when meeting in person is difficult, and conference calls are laborious, Web 2.0 can be effective’.

The emergence of Web 2.0 has provided new ways of using the Internet as a platform for collaborative and interactive purposes. An interviewee commented that as students grouped in a common community can contribute and share their content, ‘they develop a sense of belonging. They believe they may be a small part of the community’ with Web 2.0 providing them the necessary platform to do so. Web 2.0 plays a critical role in medical libraries as each tool has its own way of fostering information or knowledge sharing as one participant said, ‘users can create content by using Web 2.0 tools, in other words, they are no longer passive consumers of the content, so Web 2.0 enhanced communication between library and its users’. The findings also reveal that the application of Web 2.0 would allow medical-related organisations to serve their clients in better ways, such as facilitating user participation and creativity, reaching out to new audiences and to make efficient use of existing resources.

Web 2.0 is an effective tool for service promotion. The participants felt that as many students use Facebook and other social networking sites, it is a great way to promote medical libraries through online platforms. Convenience in creating, editing and sharing collaboratively helps facilitate information and knowledge sharing. Following comments from the participants illustrates their increasing awareness of Web 2.0 in facilitating effective communication and brought the organisation closer to its users.

‘Our website has RSS feed, and it is created for enhancing information sharing. For example, the FeedNavigator …. It will download medical feeds published by web sites and aggregates their content into a single feed automatically, and library users are able to customize those feed’.

‘If we want to further achieve information sharing and communication, I think we should put focus on social networking. … We have just bought a new library catalogue that contains this feature. … And the product itself has the feature of social networking that students are free to use them for sharing information’.

‘Wiki is useful for facilitating collaboration among different departments, because it is able to link different departments together. It enhanced organizational culture… the ‘staff wiki’ facilitated discussion and communication among library staff’.

Table 5 shows the comparison of the perceived difficulties between the current and potential users of Web 2.0. The overall mean ratings of all the difficulties were higher than 2.0. Among the nine difficulties, ‘time-consuming’ and ‘low staff engagement’ were rated above 2.5 overall, indicating that the majority of the participants felt that these two options were the major obstacles in Web 2.0 application.
Clearly, all of the above difficulties between current users and potential users show higher rating from potential users than current users. This may indicate that the potential users perceive more difficulties and anxieties towards anticipated problems than current users in Web 2.0 application. In the Skype interviews, participants were asked about the strategies they used to overcome the difficulties in applying Web 2.0. Most of them were optimistic:

‘We will be confident enough in using the tools when we have discussed them for a certain time … we base on user’s need, other trial examples, someone’s experience and feasibility of a tool before implementing the Web 2.0 in our library’.

‘… using web 2.0 is not difficult … they [users] are lazy to learn how to use the new services. … Marketing is very important, so we have to push the people to use the services, and mention the services’.

In this study, time constraints and low-level staff engagement were cited as the most common difficulties. This was also echoed in a study conducted on 2847 business executives worldwide, which revealed time constraints and limited staff engagement as some of the major barriers to successful Web 2.0 application in the business sector. The time factor was mentioned by the participants in the present study, ‘… time is needed for design, planning, getting user’s requirements and development. Keeping blogs up-to-date is really time consuming’, and ‘… time is needed to customize the system’. One participant commented on the low staff engagement as, ‘what attracts users is not technology but how you make use of the technology so that they can fully utilize the tools to accomplish things they want’. Another participant explained why many organisations disagree that people can easily change the content, ‘Wikis are opened to staff only; only our staff are permitted to edit the content on wiki’. External factors also affect the decision making. For instance, one interviewee suggested, ‘If there are some literature and trial examples about them to show that they are worth using, we would consider adopting them to serve our users’.

Time constraint and staff engagement may be related to each other. Because the staff has limited time, they would be unable to put in effort in the implementation of Web 2.0, resulting in less staff engagement for the application. In addition, Web 2.0 is new to many organisations, and it would be challenging for them to apply it to work without prior experience, especially when they lack the time and manpower to handle the problems.

**Conclusions and implications**

As shown in this study, medical-related organisations that have become familiar with the Web 2.0 tools have found them useful in their workplace. The participants of this study rated the benefits of Web 2.0 application higher than its difficulties and they perceived them to be beneficial for their particular medical-related organisation.
In terms of practical implications, this study suggests the need to raise staff’s awareness in using Web 2.0 applications. This is because low staff engagement was identified as a major hurdle in Web 2.0 adoption among organisations. Training can help equip potential users with the necessary skills. The training can be conducted face-to-face but providing video-conferencing and e-learning platforms may be some of the ways to alleviate cost and manpower. To minimise the cost of manpower and ease the implementation time, those with knowledge of Web 2.0 can be invited for summer internships and help facilitate the implementation of its applications. Promoting the usefulness and convenience of Web 2.0 among the staff is important in informing them of what the new technology can do. Introducing incentives to motivate the staff in learning how to use Web 2.0 in their work is another way of facilitating its implementation.

Although Web 2.0 has had a significant effect on variety of organisations, there are some challenges facing application of Web 2.0 in the medical field. Careful consideration and trial period are necessary for some organisations because of unfamiliarity with the tools. For those organisations that are not currently using the technology, starting with a small-scale implementation of Web 2.0 involving just one or two departments is recommended. However, for those who are already using Web 2.0, providing better staff training and infrastructure for the technology application is recommended as this may help alleviate time constraints and low staff engagement.

The study showed that although participants found time and staff adaptation to be major obstacles in using Web 2.0, the new technology could facilitate information and knowledge sharing when the staff becomes familiar with it. With more positive comments supporting the use of Web 2.0, we conclude that the benefit will outweigh the difficulties in the long run. It is hoped that this study may help decision makers in medical-related organisations to make more informed decisions regarding the use of Web 2.0 technology in their organisations.

Limitations

This study had some important limitations. First, owing to the small sample size, we were not able to do comparisons across geographical boundaries with regard to the use of Web 2.0 tools. Second, as convenience sampling was employed and not random sampling, it is not possible to make generalisations about the patterns of Web 2.0 use in different countries based on our data. A more large-scale study would be needed to make stronger conclusions. Third, inferential statistics was not employed to compare the scores of organisations that use Web 2.0 and those that are not using owing to the small sample size and also sample size differences in the two groups.

References

Appendix A: Survey on Web 2.0 applications in medical-related organisations that are using Web 2.0

We are students from the University of Hong Kong, studying Bachelor of Science in Information Management. We are conducting a survey on the applications of Web 2.0 in medical-related organisations. Medical-related organisations provide medical services and healthcare information to support the needs of health professionals or their healthcare clients.

Web 2.0 describes the changing trends in the use of Web technology and web design that aim to enhance communications, information/knowledge sharing, collaboration and functionality of the web.

This questionnaire is designed to examine the benefits, the challenges and difficulties (if any) in applying Web 2.0 in medical-related organisations. The data collected are for research purposes only. We would greatly appreciate it if you could spare 10-15 minutes to answer the following questions.

*1. Please enter your organisation’s name:

_____________________________________________________________________

*2. Which of the following Web 2.0 application(s) does your organisation currently use? (You may choose more than one)

☐ Blogs
☐ Wikis
☐ Google Document
☐ Podcasting (e.g. YouTube, iTunes)
☐ RSS (Really Simple Syndication)
☐ Media sharing (e.g. Flickr)
☐ Social bookmarking (e.g. delicious)
☐ Social networking (e.g. Facebook, MySpace, Second Life, LinkedIn)

Other (please specify)_________________________________________________
3. How long has your organisation been using the following Web 2.0 application(s)?

- Blogs
- Wikis
- Google Document
- Podcasting (e.g. YouTube and iTunes)
- RSS (Really Simple Syndication)
- Media sharing (e.g. Flickr)
- Social bookmarking (e.g. delicious)
- Social networking (e.g. Facebook, MySpace, Second Life and LinkedIn)

Other (please specify) ————————————————————————————————————

*4. What is your purpose(s) for using Web 2.0 applications? (You may choose more than one)

☐ Fostering information sharing
☐ Fostering knowledge sharing
☐ Achieving better teaching and learning
☐ Motivating collaboration across organisations
☐ Promoting existing services
☐ Developing new services
☐ Training
☐ Archiving
☐ Enhancing organisational culture

Other (please specify) ————————————————————————————————————

*5. Please rate the benefits of using Web 2.0 applications in your organisation.

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<th>Strongly agree</th>
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<td>To save money</td>
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<td>To share information efficiently</td>
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Other (please specify) ————————————————————————————————————

*6. Please rate the difficulties you might have encountered in using Web 2.0 applications in your organisation.

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<th>Strongly agree</th>
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</table>

Other (please specify) ————————————————————————————————————
7. If you selected ‘Strongly agree’ or ‘Agree’ to any of the statements in questions #5 and #6, please explain how the Web 2.0 applications were beneficial for your organisation, or why you experienced difficulties in its use.

8. Would you agree that your organisation has implemented some Web 2.0 applications successfully? If yes, would you please share the strategies your organisation has used to make it successful?

9. Any further comments about the application of Web 2.0 in your organisation?

10. Would you be willing to be interviewed for 10 minutes? If yes, please provide the following contact information.

   Contact person name:
   Job title:
   Contact telephone number (with area code):
   Contact email address:

   Thank you very much for answering the survey.

**Appendix B: Survey on Web 2.0 applications in medical-related organisations not currently using Web 2.0**

We are students from the University of Hong Kong, studying Bachelor of Science in Information Management. We are conducting a survey on the applications of Web 2.0 in medical-related organisations. Medical-related organisations provide medical services and healthcare information to support the needs of health professionals or their healthcare clients.

Web 2.0 describes the changing trends in the use of Web technology and web design that aim to enhance communications, information/knowledge sharing, collaboration and functionality of the web.

This questionnaire is designed to examine the benefits, the challenges and difficulties (if any) in applying Web 2.0 in medical-related organisations. The data collected are for research purposes only. We would greatly appreciate it if you could spare 10–15 minutes to answer the following questions.

*1. Please enter your organisation’s name:
2. Does your organisation plan to implement Web 2.0 applications?

☐ Yes (Please jump to Question 4)
☐ No (Please answer Question 3 and 8)

3. Why is your organisation not interested in using Web 2.0?

4. Which of the following Web 2.0 application(s) does your organisation plan to implement? (You may choose more than one)

☐ Blogs
☐ Wikis
☐ Google Document
☐ Podcasting (e.g. YouTube, iTunes)
☐ RSS (Really Simple Syndication)
☐ Media sharing (e.g. Flickr)
☐ Social bookmarking (e.g. delicious)
☐ Social networking (e.g. Facebook, MySpace, Second Life, LinkedIn)

Other (please specify)

5. When will your organisation start to use Web 2.0 applications?

☐ In this year
☐ 1–2 years later
☐ 3–4 years later
☐ Not decided yet

6. Why does your organisation plan to implement Web 2.0 application?

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<tr>
<th>Strongly agree</th>
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<td>To enhance collaboration</td>
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Other (please specify)

7. Can you tell how your organisation plans to implement Web 2.0 applications?

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Health Information and Libraries Journal
8. Please rate the potential difficulties that you anticipate in using Web 2.0 applications in your organisation.

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<th>Difficulty</th>
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Other (please specify):

9. Any further comments about the application of Web 2.0 in your organisation?

10. Would you be willing to be interviewed for 10 minutes? If yes, please provide the following contact information.

   Contact person name:  
   Job title:  
   Contact telephone number (with area code):  
   Contact email address:  

Thank you very much for answering the survey.

**Appendix C: Follow-up interview questions for organisations that are using Web 2.0**

1. Your answer to Q2 indicates that your organisation is using (state the name of the application that the respondent put in the survey). Please tell me which Web 2.0 applications your organisation find most useful and why?

2. Your answer for Q4 shows that the purpose of your organisation in using Web 2.0 includes (state the reasons that the respondent indicated in the survey). Please tell me which are the primary purpose(s) and which are the secondary ones, and explain why.

3. Your answer to Q5 shows that using Web 2.0 have the following benefits (state the benefits the respondent included). Please tell me why the use of Web 2.0 can help your organisation achieve those benefits? If possible, please give examples.

4. Your answer to Q6 shows that your organisation has encountered the following difficulties in using Web 2.0 (state the difficulties indicated by the participant in the survey). Please tell me how did your organisation tackle these difficulties?

**Appendix D: Follow-up interview questions for organisations that are not using Web 2.0**

1. Your answer for Q4 shows that your organisation plans to use the following Web 2.0 applications (indicate the applications included by the respondent in the survey). Please tell me why your organisation plans to use these applications?

2. How do you think will those Web 2.0 applications benefit your organisation?

3. What are your plans with regard to using Web 2.0 applications in your organisation?

4. Would the technical team in your organisation spend time and resources to develop and implement the Web 2.0 technologies?