The impact of cloud software's agile development on staff roles and delivery of client services: A case study of the University of Auckland Libraries & Learning Services

by

Bryony Sinclair

Submitted to the School of Information Management, Victoria University of Wellington, in partial fulfilment of the requirements for the degree of Master of Information Studies

June 2015

ABSTRACT

Research problem:

In 2014, the University of Auckland replaced its legacy Voyager library management system installed in 1998 with the Ex Libris Alma system, which has been developed around Software as a Service (SaaS) architecture. The objective of this research was to investigate the impact of cloud software's agile development on staff roles and client services delivery in a tertiary library environment, using University of Auckland Libraries and Learning Services as a case study.

Methodology:

Framed by organisational change management in the context of technological innovation, a detailed exploration of the University of Auckland's shift to the cloud software was carried out, from an employee perspective. As a means of collecting rich data from a variety of sources and multiple perspectives from within the organisation, an online survey about Alma Fulfillment, the functional area of Ex Libris Alma used to deliver client services, was distributed to frontline staff six months after Alma's implementation.

Results:

The research found that, notwithstanding the perceived strengths of the new cloud software to deliver enhanced client services from the staff-user perspective, there was a strong preference for ongoing dissemination of information and instruction for frontline staff, particularly on the enhancements and new features regularly deployed by the service provider.

Implications:

This research enables further understanding of factors affecting engagement for employees in new systems and potential barriers to effective and efficient service during significant cultural, functional, and technical change.

Keywords:

Academic libraries; cloud computing; library management systems; integrated library systems; training

ACKNOWLEDGEMENTS

I would like to thank the following people, all of whom have contributed hugely to this research project:

Dr Chern Li Liew, School of Information Management, Victoria University of Wellington, for her guidance as my research supervisor

Janet Copsey, University Librarian and Director, L&LS, for giving me permission to conduct a case study of University of Auckland Libraries and Learning Services and distribute a survey to staff

John Garraway, for his invaluable suggestions and support throughout; Hester Mountifield and Claudia Adams, for their assistance; and

all those from L&LS who either distributed or participated in the staff survey.

Also, I am very grateful to all those who have supported me during the MIS journey, including

the entire team (past and present) at the Sylvia Ashton-Warner Library and Epsom Information Commons, especially Chris Moselen, Helen Whiteman, and Melanie Grant; and

my parents, family, and Dorland, as always.

CONTENTS

1.		6
	1.1 Research problem	6
	1.2 Research objective	7
	1.3 Significance	7
	1.4 Research questions	9
	1.5 Research strategy and framework	9
	1.6 Definition of terms	.11

2.	LITERATURE REVIEW	13
	2.1 Adopting new technologies	13
	2.2 Implementing organisational change	15
	2.3 Engaging in strategic change	17
	2.4 Summary	19

3.	METHODOLOGY	. 21
	3.1 Research design	21
	3.2 Case selection	21
	3.3 Data collection	22
	3.4 Design of the survey	23
	3.5 Ethical considerations	25
	3.6 Data analysis	25
	3.7 Research delimitations and limitations	27

4.	EX LIBRIS ALMA	. 28
	4.1 Ex Libris Group	.28
	4.2 Developing Unified Resource Management (URM)	.28
	4.3 Releasing Ex Libris Alma	.30

5.	ALMA AT THE UNIVERSITY OF AUCKLAND
	5.1 Libraries and Learning Services (L&LS)
	5.2 Implementing Alma
	5.3 Adapting to Alma
6.	SURVEY FINDINGS AND DISCUSSION
	6.1 Demographics
	6.2 Implementation
	6.3 Post-launch
	6.4 Fulfillment tasks53
	6.5 Features and functions
	6.6 Technology use
	6.7 Request for research findings71
7.	CONCLUSION
	7.1 Early days yet72
	7.2 Challenges of constant change73
	7.3 Further research75
8.	REFERENCES
9.	APPENDICES
	Appendix A: Email for distribution to target population81
	Appendix B: Participant Information Sheet82
	Appendix C: Survey questions83
	Appendix D: Survey findings for questions 18 and 19

1. INTRODUCTION

Framed by organisational change management in the context of technology implementation, this study explores the shift to a new cloud-based library management system in a large New Zealand tertiary institution. In 2008, the University of Auckland Libraries and Learning Services (L&LS) was an early adopter of Ex Libris' Primo and Primo Central. In 2014, the organisation migrated from its legacy Voyager library management system installed in 1998 to the new Ex Libris Alma system, which is delivered as a cloudbased service and accessible through any web browser. Developed using an agile approach, Alma has been designed by the library vendor Ex Libris, in conjunction with a number of development partnership libraries, to integrate with its Primo Discovery and Delivery system to provide a seamless, integrated environment. The implications of the new systemmanaged workflows that library vendors promise of their comprehensive, integrated environments are yet to be fully determined in the context of the work performed by client services teams. This small-scale study examined the impact of cloud software's agile development on staff roles and delivery of client services in a tertiary library from a staff perspective. The primary focus is on Alma Fulfillment, the functional area of Ex Libris Alma which supports circulation, as well as resource requests, course reserves, and resource sharing.

1.1 Research problem

Traditional library management systems (LMSs), also known as integrated library systems (ILSs), are based on client-server architecture, with modules for different library functions including acquisitions, cataloguing, circulation, and serials. The new systems being developed around Software as a Service (SaaS) architecture or cloud computing during the past five years have been termed "library services platforms" (Breeding, 2011, p. 34):

This new generation of products—more appropriately called something like library services platform rather than integrated library systems—addresses the fundamental changes that libraries have experienced over the last decade or so toward more engagement with electronic and digital content.

Considerably different approaches are being taken by the various developers and library vendors, with these approaches characterised by another commentator as revolutionary, evolutionary, and open source (Grant, 2012); accordingly, these next-generation systems demand varying knowledge and skill sets. Furthermore, as was recently observed after implementation of one of the more revolutionary designs, Ex Libris Alma, implementation itself is never a single event: "Staff are adjusting to the fact that in the new system change is the new constant" (Green, 2014).

1.2 Research objective

The objective is to examine the impact of cloud software's agile development on staff roles and delivery of client services in a tertiary library environment, using University of Auckland Libraries and Learning Services as a case study with a specific focus on Alma Fulfillment.

1.3 Significance

Outlining recent developments in library automation using cloud computing, Bilal (2014, p. 195) notes that "advances in cloud computing and the offerings provided by proprietary system vendors and open-source firms have shifted many library applications and services to the cloud." Cloud computing is no longer a new technology, as confirmed by Yang and Tate's investigation of cloud computing research in 2012. Their classification framework and descriptive review of refereed, academic journal articles (2012, pp. 42-45) indicates the diversity of topics and subtopics addressed by researchers since 2007:

- *technological issues*, which includes cloud performance, data management, data centre management, software development, service management, security
- business issues, including cost, pricing, legal issues, ethical issues, trust, privacy, adoption
- conceptualising cloud computing includes foundational/introductions, predictions
- *domains and applications*, covering e-Science, e-Government, education, mobile computing, open source, other domains

Significantly, Yang and Tate (p. 45) found that, while technological issues were the "most heavily published research category," it was also the case that "new research themes regarding social and organisational implications" were emerging. And, although determining that "theory-building is still not at the centre of cloud computing research," Yang and Tate (p. 49) concluded that "practitioner and academic research in the evolving phenomenon of cloud computing is intense."

The cloud-based library services platforms are relatively new ground for research. Much of the literature available on these automation systems designed to manage electronic and print collections has been written by industry specialists, such as Marshall Breeding (e.g., 2011, 2014, 2015). However, by late 2014 when the University of Auckland went live with Ex Libris Alma, many of the development partnership libraries and other early adopters of these systems and software products had presented papers and published accounts of their adoption and implementation experiences.

It is apparent that the literature treating migration to platforms such as Alma mostly addresses changes and (potential) challenges for systems staff and/or technical services staff (e.g., Branch, 2013; Fu & Fitzgerald, 2013; Parent & Maclean, 2014; Spring, Drake & Romaine, 2013). Furthermore, there is often only a paragraph or section devoted to the allimportant issue of staff training, and ongoing support. That the shift to cloud computing impacts on the future of academic library practices and services is confirmed by Mavodza (2013, p. 136) who asserts that "librarians' jobs and responsibilities are irreversibly evolving, both at the stage of training and in practice." There is a perceived gap in the literature around training and support in relation to technology implementation and use for teams working at the front desk, traditionally a key point of contact for client queries.

Notably, most of the literature published on implementation and use of Ex Libris Alma in the local region currently comes from Australia, with little (if any) material to date from the New Zealand academic and research domain. This situation may now change as, during the 12

months between December 2013 and December 2014, four New Zealand tertiary institutions launched Alma, and another announced its intention to do so in 2015.¹

Building on the knowledge and experience garnered from previous studies, this research enables further understanding of factors affecting engagement by employees in new systems and potential barriers to effective and efficient service during significant cultural, functional, and technical change.

1.4 Research questions

- How does a shift to cloud software developed through agile methodologies impact on client services staff roles in a tertiary library environment?
- How does a shift to cloud software developed through agile methodologies impact on client services delivery in a tertiary library environment?
- How is the change to a cloud-based management system perceived by frontline staff in a tertiary library environment?

1.5 Research strategy and framework

Using the qualitative researcher's tools of observation, description, and reflection, this interpretative study approaches the research topic through the theoretical lens of organisational change management in the context of technology innovation. Key concepts and terminology underpinning this research are introduced here, with further definitions listed below. Defining the concept of change management itself is not unproblematic. One definition from Moran and Brightman (2001, as cited in By, 2005, p. 369) which serves as well in the current environment is that change management is "the process of continually renewing an organisation's direction, structure, and capabilities to serve the ever-changing needs of external and internal customers."

¹ The University of Otago was an early adopter, going live with Ex Libris Alma in December 2013. Otago was followed by Lincoln University, the University of Auckland, and Unitec Institute of Technology in 2014. Victoria University of Wellington's decision to adopt Alma was announced in November 2014 (Ex Libris Group, Press Release, 2014, November 21).

In this increasingly technological era, an aggressive information technology strategy is a must for tertiary institutions, but assessing the right time to adopt any technological innovation is critical-even where a long-standing relationship between institution and proprietary vendor exists, as in this case. Relevant to the field of technology innovation is Everett Rogers' theory of the adoption of innovations among individuals and organisations. In the 1960s, Rogers (2003, pp. 281-282) identified five categories of adopters: innovators, early adopters, early majority, later majority, and laggards. The adoption of an innovation, Rogers found, "usually follows a normal, bell-shaped curve when plotted over time on a frequency basis," whereas an S-shaped curve results when the cumulative number of adopters is plotted. Regarding the diffusion of innovations, Rogers explains that peer networks influence the rate of adoption, with "the adoption of a new idea result[ing] from information exchange through interpersonal networks."

Once an innovation has been adopted, the implementation stage begins, where the innovation may start to be customised by the adopting organisation: "Adopting an innovation is not necessarily a passive role of just implementing a standard template of the new idea. Many adopters want to participate actively in customising an innovation to fit their unique situation" (Rogers, p. 17). Therefore, implementation may eventuate in what Rogers (p. 424) calls "a mutual adaptation of the innovation and the organisation." However, it might be said that a different situation pertains with adoption of the innovative cloud software. The concept of software as a service is explained in an accessible article (Gruman, 2007) entitled "The truth about Software as a service (SaaS)":

With SaaS, there's just one code base for the software, used by all customers, in what's called a multitenant architecture. While the software might be configurable by users to their individual needs, the code itself is the same for all and is not customisable for any individual customer. Any enhancements made based on one customer's requests immediately become available to all customers. [...] The underlying data model and system architecture of SaaS is also not customisable. The advantage in this for the vendor is that it spends less time managing compatibility and upgrades across several versions of the software. It also spends less to support

customers, as they all use the same version and they don't run it on their own equipment.

After implementation, agile software development may entail both incremental and iterative upgrades, which are pushed by the service provider. Agile methods have been defined as "lightweight software design processes based on small teams using flexible technologies to iteratively improve software using customer feedback to converge on solutions" (Rico, 2008, p. 2). Agile products are typically released early in the development process and, although user collaboration and feedback is an integral part of this process, delivery of client services in adopting institutions will, at least initially, be significantly impacted, not least from the perspective of frontline staff.

1.6 Definition of terms

Adoption: "A decision to make full use of an innovation as the best course of action available" (Rogers, 2003, p. 21).

Client/server computing: "The splitting of an application into tasks performed on separate computers connected over a network. In most cases, the 'client' is a desktop computer device (e.g., a PC) or a program 'served' by another networked computing device (i.e., the 'server')" (Gartner, 2013).

Cloud-based computing: "A model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction" (National Institute of Standards and Technology [NIST], 2011, p. 2).

Cutover: "A rapid transition from one phase of a business enterprise or project to another" (Oxford University Press, 2015).

Implementation: "All of the events, actions, and decisions involved in putting an innovation into use" (Rogers, 2003, p. 420).

Incremental development: "Each successive version of the product is usable, and each builds upon the previous version by adding user-visible functionality" (Agile Alliance, 2013).

Initiation: "All of the information-gathering, conceptualising, and planning for the adoption of an innovation" (Rogers, 2003, p. 420).

Innovation: "An idea, practice, or object that is perceived as new by an individual or other unit of adoption" (Rogers, 2003, p. 475).

Iterative development: "Agile projects are iterative insofar as they intentionally allow for 'repeating' software development activities, and for potentially 'revisiting' the same work products. They are iterative in a third, less essential sense, in being most often structured around a series of iterations of fixed calendar length" (Agile Alliance, 2013).

Multitenancy: "The mode of operation of software where multiple independent instances or multiple applications operate in a shared environment. The instances (tenants) are logically isolated, but physically integrated...." (Gartner, 2013).

Service-oriented architecture (SOA): "A design paradigm and discipline that helps IT meet business demands" (Gartner, 2013).

Software-as-a-Service (SaaS) *architecture*: "The capability provided to the consumer is to use the provider's applications running on a cloud infrastructure. The applications are accessible from various client devices through either a thin client interface, such as a web browser (e.g., web-based email), or a program interface. The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, storage, or even individual application capabilities, with the possible exception of limited user-specific application configuration settings" (NIST, 2011, p. 2).

2. LITERATURE REVIEW

2.1 Adopting new technologies

In an article published in 2011, Breeding (2011, p. 34) addressed the "new phase of library automation," which he forecast would "play out" over the following decade:

This new wave of library tech products will phase in slowly. I observe only a small minority of libraries able to engage as early adopters of new technologies. The majority follow later in the product development and deployment cycle when the products have matured and pose lower thresholds of risk.

At the end of this cycle, in Breeding's assessment, "the result will be seen not just in the form of new products deployed but in the way that libraries consume technology." The following year, in "The future of library systems: Library services platforms," Carl Grant (2012, p. 7) discussed the various approaches taken by the developers of the next-generation systems. Referring to the more radical approaches taken by OCLC (Online Computer Library Center, Inc.), Ex Libris, and Serials Solutions, Grant comments on their perceived need to "start over":

The shared view of these organisations incorporates a line of thinking that says the amount of change we've seen, both in computer technology and in library management/operations, is so substantial that the best way to accommodate the change is to start with a fresh design that can take advantage of all those changes.

Discussing both the advantages and disadvantages of the newly developing systems, Grant notes that "some functionality may be lacking in early releases of the product." In the case of Ex Libris, however, given their narrower focus on the specific requirements of research, academic, national, and corporate libraries, Grant (2012, p. 11) acknowledges that, "despite developing an entirely new product, they've also developed more depth of functionality than competing library services platforms." As mentioned, early adopters have the opportunity to engage with this development process and provide vital feedback to the developers on functionality and operational workflows, as with the Ex Libris Unified Resource Management (URM) project that began in 2007 and developed into the Software as a Service (SaaS) product called Alma. In addition to the feedback being exchanged between these partners, information and feedback is also disseminated among the wider community, not only through networks such as collaborative email lists and other forms of literature such as conference papers, but also through scholarly publications. The published experiences of three development partnership/early adopters libraries in the United States (Purdue University), United Kingdom (University of East London), and Australia (Curtin University) will serve here as exemplars of cases of Alma adoption, implementation, and use.

One of the original development partners on Ex Libris' URM project from 2009, Purdue University Libraries went live with Alma in mid-2013. In an article published in 2012, the extent of preparation required by the organisation implementing the new system is underscored (Bracke, 2012, p. 18): "Launching a major system like Alma is a major undertaking and requires a significant focus on change management issues." However, working with the vendor over an extended period of time was perceived as an advantage, in that "documenting workflows provided an opportunity for staff to begin shifting their mindset about their workflows from one framed by our current technological infrastructure to one framed by our future infrastructure."

The revolutionary infrastructure is also emphasised in an interview conducted in December 2012 at the University of East London, which was an early adopter and the first university in Europe and the UK to go live with Alma in September 2012. According to the report (Chad, 2012, p. 2), this institution "did not so much purchase a product or suite of products but rather a vision to move towards a state-of-the-art library infrastructure." The importance of the sense of belonging to an international community of users is also apparent, as one of the advantages of being a development partner was being able "to engag[e] with their international peers in other institutions around the world."

Unlike Purdue and East London, Curtin University in Australia chose to implement the system "at the earlier end of the change cycle but not the leading edge," going live with Alma in February 2014. Soon afterwards, Green (2014, para. 27) acknowledged that, after a rapid implementation of only five months, Curtin "expects to spend the next twelve months settling in the new system, consolidating staff understanding of the way the new system works and exploiting new functionality such as selection workflows."

In 2015, it is pertinent to make the point that Ex Libris Alma is now viewed as being out of the development stage. In his "Library systems report 2014," Breeding commented (2014, p. 26) that, having "passed the early adopter cycle," Ex Libris Alma "can now be considered a routine offering." Nonetheless, the reality is that Alma is still very much a production model, whereas the legacy Voyager system retired at the end of 2014 after 16 years of use at the University of Auckland had been highly customised by the organisation. Ensuring that an organisation's employees understand the strategies behind any such transition is the responsibility of the change management team.

2.2 Implementing organisational change

For any programme of change to be successful, as one literature review on change management from an organisation-wide perspective (Barnard & Stoll, 2010, Conclusion) found, managers should be aware of the whole environment, and particularly of other changes taking place: "it is important to recognise that employees may perceive themselves to be working within a constantly shifting environment." Another key point emphasised in Barnard and Stoll's review is that "change isn't a single, consistent process, but rather is broken down in to a number of different steps." Therefore, it is vital that

managers consider what strategies, in terms of communication, training, reinforcement etc, are appropriate for the different stages, rather than decide on a single approach that can be applied throughout the process, and at the same time remain flexible and reactive to changes as they happen.

Two so-called classic frameworks/models are those developed by Kurt Lewin and John Kotter. Developed in the 1950s, Lewin's change management model is characterised as a simple, three-step model, which may be applicable to an individual, group, or organisation (Hayes, 2014, p. 23). These three steps, or phases, are *unfreeze* (unlocking the existing level of behaviour); *change* (moving to a new level); and *refreeze* (reinforcing the new behaviour/s). Initially proposed in 1995, Kotter's well-known framework for implementing change is a more complex, eight-step model.

Reprinted by the *Harvard Business Review* in 2007, Kotter's article "Leading change: Why transformation efforts fail" elaborates the following steps for successful organisation transformation: establishing a sense of urgency; forming a powerful guiding coalition; creating a vision; communicating the vision; empowering others to act on the vision; planning for and creating short-term wins; consolidating improvements and producing still more change; and institutionalising new approaches.

The importance of communication to all stakeholders throughout any change process is evident from a study of the effectiveness of internal communication in a strategic change project implemented by a New Zealand tertiary institution (Kingston, 2008). In addition to providing a comprehensive literature review on change management frameworks including Lewin's and Kotter's models, Kingston's research offers useful insights around what communication strategies proved effective, or otherwise, in a large tertiary institution within the same geographical location, and educational market, as the current research.

One theoretical model employed by Kingston (p. 61) to assess internal communication was Barrett's Strategic Employee Communication Model, since Kingston found this to be "one of the few employee communication models discovered in the literature." The five main components of Barrett's model are supportive management; well-positioned staff; targeted messages; ongoing assessment; and effective media/forums. In an exposition of her model, Barrett (2002, p. 221) explains that this model "captures all of the major components of employee communications linking them to each other and to the company's strategy and operations."

The imperative of two-way communication channels between a library's implementation team and all other library stakeholders is underscored in a detailed account of Pepperdine University's migration to the cloud, as "pilot adopters of a system under development," (Dula, Jacobsen, Ferguson & Ross, 2012, p. 11). The article addressing implementation of OCLC's WorldShare Management Service (WMS) at Pepperdine was co-authored by members of the adopting library and the service provider. The OCLC team share a number of useful tips for successful platform migration that would apply equally to implementation of Ex Libris Alma (p. 9):

- Convey to all staff that your migration will be an opportunity to question everything about your current operations
- Temper the anxiety caused by change
- Complete a stakeholder analysis
- Ensure that staff members are ready to take on new roles
- Match skills and interests to roles as much as possible
- Communicate, communicate, communicate

A year after implementation of WMS, the Pepperdine team makes an interesting comment on adopting any new system and human nature:

It is all too easy to talk about the difficulty of change management, resistance to major change, and the human tendency to notice any new problems that come with a new system, while forgetting all of the old problems that have gone away.

2.3 Engaging in strategic change

Communication within an organisation undergoing change is perhaps particularly critical when implementing a cloud-deployed service developed using agile methods, like OCLC's WMS and Ex Libris Alma. However, the impact of any new back-office system and workflows on an organisation's employees cannot be underestimated.

In 2012, Chile conducted a case study in an Australian public library consortium, where a semi-structured questionnaire was deployed to determine what factors influence effectiveness of training for new ILSs in public library consortia. Findings from that research (Chile, 2012) applicable to the single library network of the present research include involving competent and enthusiast staff with training; having a support mechanism for staff throughout the training; using an integrated training module of face-to-face, web based training, and self-paced training to provide flexibilities for staff participation; and good planning.

A similar case study conducted by Antosh in 2012 surveyed staff after implementation of the open-source, integrated system, Evergreen, by a US public library consortium. The aims of Antosh's research were to investigate how library staff reacted to implementation of the new ILS, and what was the best way to train and support them during migration to a new ILS. As with Chile's research, a number of best practices were drawn from the survey data, including careful product selection; reasonable timeline; reasonable expectations of the system; and clear, comprehensive communication. Antosh (2012, p. 21) noted in conclusion that

problems and their potential solutions should be communicated to staff. They should know about expected upgrades, possible downtime, and anything that strays from normal operating functions. A fundamental tenet of librarianship is the dissemination of information, and that is especially true when changing a vital part of the library's operation.

The need to ensure engagement by all employees when implementing a cloud-based service developed with agile methods is illustrated in a comprehensive report on Plymouth University's training programme for Ex Libris Alma, which specifically addresses Alma Fulfillment. In setting up Plymouth's programme, Menéndez-Alonso, an information designer, had to consider that, whereas upgrades for the institution's previous client-server system were scheduled events, Alma is delivered as web-hosted software with frequent updates. The agile development approach means, as Menéndez-Alonso (2013, p. 39) attests, that the institution is "no longer able to schedule or stop the process to ensure everyone has time to learn how to use new features."

Another critical factor for Plymouth, an early adopter of Ex Libris Alma, was that only limited resources were available for training, meaning that the team leaders carrying out the training were often "only a few steps ahead in learning Alma themselves." However, it was realised that this task would be manageable through a self-guided scheme or "learning framework in which our staff could take responsibility for their own learning, with guidance and support from their supervisors." Thus, the Alma Learning Programme was "created around three interconnected concepts": competences; supported self-learning; and self-assessment (Menéndez-Alonso, pp. 39-40).

The author provides an extract of the Fulfillment competences, which include understanding Fulfillment infrastructure; understanding Alma-Primo integration; viewing and understanding patron information; and managing patrons. However, hindsight led Plymouth to reconsider the training in some key areas after implementation, as it was felt that the institution had "compromised by using learning materials provided by Ex Libris, instead of writing our own." Also, according to Menéndez-Alonso (p. 43), "with more time and resources we would have spent longer filtering through the resources to present a more targeted learning experience." Nonetheless, the institution had achieved their goal of "equipping our staff with the best possible skill: the ability to work with Alma in permanent beta." This is an important point, as the commentators emphasise, given the need for staff to adjust to the iterative and incremental updates to the cloud-deployed software. Targeted staff training during implementation is fundamental, but the need for support does not end at the launch date.

2.4 Summary

The primary objective has been to examine research studies and reports which detail experiences of significant organisational change within the academic domain, although not only directly relating to libraries. Critically, Kingston's research underscored the importance of effective internal communication to employees at all levels to ensure sustained organisational change. While Kingston's research was conducted in the New Zealand tertiary context, the overall emphasis on seeking out reports of tertiary educational institutions in disparate locations which have implemented Ex Libris Alma and other library management systems has been deliberate.

It is interesting in this competitive global marketplace to recognise that the various commentators emphasise not only the advantages of being able to collaborate with the vendor throughout the development, adoption, and implementation stages but also the ongoing leverage afforded by collaboration and communication among the growing international user community–collaboration and communication which are enabled by technology and shared community spaces. Presenting conference papers and publishing journal articles play a key part in community networking–for managers at least.

Shared online spaces are also an invaluable source of information and knowledge within large organisations, where staff from different areas might learn of upcoming or even current projects through enterprise social networks. However, it is apparent that system changes and upgrades pushed by the service provider may not always be disseminated effectively to frontline staff, and particularly to those part-time employees only working infrequently and often outside "office hours."

A training programme implemented by one early adopter of Ex Libris Alma has been explored at length, as it uniquely provides detailed information relating to Alma Fulfillment, the primary focus of the present study. But findings from research conducted in public and community libraries have not been ignored here. In addition to the best practices and effective strategies for training and support of library staff found in Antosh and Chile's research, a key reason for including these case studies is that they were conducted by library and information students.

Much of the available literature published about the experiences of university libraries with the new automation systems was found to be written by managers, and therefore articulated from a particular perspective. Furthermore, as Kingston also found, the literature around change management tends to address the organisational level, rather than the needs of employees at all levels of the organisation. This research aims to privilege the perspectives of frontline staff.

3. METHODOLOGY

3.1 Research design

A case study approach was selected for the purposes of researching the impact of implementation of a cloud-based platform on frontline staff working in the tertiary library environment, and identifying strategies or mechanisms that needed to be in place to support client services. This study is a piece of qualitative research within a single case-study design framework, a design appropriate for a detailed exploration of a specific case (Bryman, 2012, p. 45), within its social setting or context. However, as Yin notes in his definition of a case study (2014, p. 16), "boundaries between phenomenon and context may not be clearly evident." There was potential for this study to become too broad and generalised; hence, the need to maintain the focus on the cloud software.

3.2 Case selection

This case has been "self-selecting" to some extent, in the sense of "emerging from opportunities and evidence" (Buchanan, 2012, p. 361). The research topic was initially conceived of as a study of training and support around the implementation of Ex Libris Alma at the University of Auckland, then imminent. However, as the period of time since the launch of the new back-office system at the institution lengthened, it became apparent that the possible effects on frontline staff of the frequent fixes and enhancements to the software being pushed by the service provider after implementation warranted investigating.

Subsequent discussions about where the research might lead, in terms of alignment with planned evaluation of the functionality of the new system-managed workflows, resulted in the focus on cloud software's agile development and its impact on users and delivery of client services, from a staff perspective. Instead of concentrating on one client services team in a single, subject-specific library as originally intended, the research was extended to incorporate the entire client services team across the L&LS system in order to gather a wider range of perspectives.

3.3 Data collection

The case study approach "fosters the use of multiple sources of data," as Denscombe (2010, p. 62) explains, which "facilitates the validation of data through triangulation." It is clear that use of the change management project documentation, staff communications, and training materials available on the case organisation's staff intranet is restricted by (client/vendor) confidentiality. Nonetheless, documentary collection is a key element as documents provide an information-rich source of evidence for a case study. Observing that documents are often under-utilised in organisational research, Lee (2012, p. 389) makes the point that "documents are manifold, playing an important role in organisational life, providing details of policies, procedures, prospective plans...." In this case, the public website provides not only evidence in the shape of documents such as strategic plans and annual reports, but also news items designed to notify stakeholders of changes to the institution's website and services–all of which provides useful background material for the case.

Similarly, press releases providing details on which institutions in the global domain are implementing Ex Libris Alma, and when, are regularly posted on the library vendor's corporate website. The Ex Libris Group website also offers a wealth of documentary material in multiple formats, which allows insights into the development and implementation processes. The Ex Libris Developer Network is a valuable source of information on technical aspects of Alma. Customer stories, including another perspective on the early adoption of Alma by Plymouth University, for example, can be viewed on the discoveralma.com site. All these sites provide background material on product releases and enhancements being deployed.

A further source of case evidence stems from the researcher being a direct participant in the case. As Yin (2014, p. 16) specifies, this case is of a contemporary phenomenon, to be conducted in depth and within its real-world context, which is the researcher's everyday workplace. Yin (pp. 116-117) suggests several advantages for collecting evidence as a participant, including being able to "gain access to events or groups that are otherwise inaccessible to a study," and to "perceive reality from the viewpoint of someone 'inside' a case rather than external to it."

As this case study is articulated from the perspective of an employee, it was recognised that much of the discussion and analysis might be subjective and biased as a result. However, as Morrow (2005, p. 254) has stated, as qualitative researchers, we "acknowledge the very nature of the data we gather and the analytic processes in which we engage are grounded in subjectivity." This form of 'insider' research is recognised as being challenging: From personal experience of researching organisational processes in her own workplace, Tietze (2012, p. 60) warns of the researcher's need to manage "a simultaneous familiarity and strangeness in a way that focuses on addressing research issues." Tietze elaborates: "The researcher process entails asking questions about what is familiar and why; and how to render the familiar strange and novel in order to deepen the understanding of organisational processes."

As a means of collecting rich data from a variety of sources and multiple perspectives from within the case organisation to tell this story, all University of Auckland Libraries and Learning Services staff members in client services roles within levels 1-4 were invited to complete an online questionnaire about Alma Fulfillment. In this organisational context, positions within levels 1-4 typically include that of desk assistant, library and/or information commons assistant, consultant, coordinator, client services librarian, and after-hours supervisor. The position held by the researcher, who is based in one of the specialist libraries, lies within this range.

3.4 Design of the survey

The questionnaire was created through the Qualtrics survey software available through Victoria University of Wellington. A detailed Participant Information Sheet which served to establish the objective of the research preceded the questionnaire (see Appendix B for the Participant Information Sheet). To relate the research topic to the library management system being used by client services staff every day in the workplace, it was explained that the cloud-based Ex Libris Alma system implemented at the University of Auckland was software which had been developed through agile methods.

However, prior to distributing the survey link to the target population, several readers indicated they were unsure what was meant by the phrases "agile development" and "agile methods." As this was a core concept underpinning the case research, it became apparent that an explanation of "agile" in this context might be required to clarify the meaning for research participants from the outset. Therefore, a statement was inserted to explain that agile software development meant that the product is typically released early in the development process, and frequent upgrades are pushed by the service provider via the Internet after implementation. Participants were also informed that the University of Auckland was being used as a case study in the research, and that the primary focus of the survey was the functional area of Ex Libris Alma used for client services.

The questionnaire itself was organised into six blocks of questions around specific topics (see Appendix C): briefly, these addressed demographics; the implementation phase; the post-launch period; Fulfillment tasks; functions and features; and participants' technology use outside the workplace. To ensure participants understood and met the criteria of the target population, the first two questions were mandatory. Those participants who might have received the survey invitation but did not work in a client services role within the specified level 1-4 range were exited.

A mixture of closed, multiple-choice, and open questions, with a maximum of 30 possible questions, was used. The majority of questions were multiple choice. One block, however, solely comprised of open questions inviting participants to comment on most liked and disliked functions or features of Alma Fulfillment, perceived advantages for client services delivery, and suggestions for improvements. Offering a combination of questions provides respondents variety, and, crucially, the open questions enabled individuals the opportunity to say, as Pickard suggests (2013, p. 219), "precisely what is important to them about this topic."

3.5 Ethical considerations

Permission was sought from the researcher's workplace to proceed with the case study, invite employees to participate in an online questionnaire, and identify and name the institution in the research report. Given the small number of tertiary institutions within the national context, it would neither be possible nor was it desirable to anonymise the organisation. However, all possible care has been taken to avoid identifying individual staff members. Deploying an online questionnaire through the secure Qualtrics site provides respondents anonymity, as well as ensuring confidentiality, since IP addresses and email addresses are not collected when the anonymous survey link option is deployed. Before any data collection from employees took place, ethics approval was sought from the School of Information Management's Human Ethics Committee at Victoria University of Wellington.

Once approval was granted in late March, information about the research project and survey was emailed by the L&LS Staff Planning & Development Manager to all Heads of Department, who were asked to forward the embedded survey link to their respective client services teams (see Appendix A for the original email). The Participant Information Sheet heading the survey made it clear that participation in the research was entirely voluntary. Two weeks later, a further email reminding staff to participate, if they wished, was distributed via the same route. Although this method of distribution meant that staff who had already completed in the survey also received the reminder email, it ensured that, as the researcher, I neither knew which individuals had been sent the invitation to participate nor the identities of those who completed the questionnaire.

3.6 Data analysis

In this study, the following process has been applied with the purpose of constructing what Leedy and Ormrod (2013, pp. 141-142) call "an overall portrait of the case": organisation of details about the case; categorisation of data; interpretation of single instances; identification of patterns; and synthesis and generalisations. The first phase, organising the details of the case, entailed making decisions not only about what was pertinent but also how best to present the case itself in the research report.

By way of preparing an introduction to the case, background material on the library systems vendor and the historical development of the cloud software was first collected from a range of online sources. Subsequently, information on the case organisation was gathered, which assisted with reconstructing a narrative timeline of the implementation of Alma at the University of Auckland. While the story of the software and its implementation at L&LS has been presented chronologically for the most part, the process of collecting and writing has not been linear; rather, there has been a constant process of reviewing and refining the data, as with that collected from the survey distributed to staff in late March.

At the conclusion of the three-week survey, the responses to the closed and multiple-choice questions were downloaded from the Qualtrics database to Excel spreadsheets, for the purpose of describing the findings of each question textually and graphically in this report. For the findings and discussion section of the report, the original sequence of the survey was retained. Then came the analysis of the data collected from the four open questions. The responses were exported from the database to Excel, and read and re-read in order to become familiar with the data. Categorising data collected from these questions entailed clustering the data into what Leedy and Ormrod describe as "meaningful groups" (p. 142), through highlighting key phrases and extracts.

Identification of underlying themes was the next step. Braun and Clarke define thematic analysis as "a method for identifying, analysing and reporting patterns (themes) within data" (2005, p. 79). In their definition of a theme, they emphasise the need for the data to relate to the research question(s): "A theme captures something important about the data in relation to the research question, and represents some level of *patterned* response or meaning within the data set" (p. 82, original emphasis). In carrying out the analytic process for this study, what Braun and Clarke call "a rich thematic description of the entire data set" was selected, whereby "the reader gets a sense of the predominant or important themes" (p. 84), rather than a focus on one or a few particular themes. In the final section of this report, following the discussion of the survey data, conclusions as to the findings of the case study in the context of the research questions are presented.

3.7 Research delimitations and limitations

- The survey was restricted to those University of Auckland L&LS client services staff (Levels 1-4) which use Alma Fulfillment in their daily work. This limitation to staff whose position fall within levels one to four was imposed to ensure a non-expert perspective, although a wide range in knowledge, skills, experience, and training within the target population is acknowledged.
- This study primarily focused on analysis of Alma Fulfillment, within the strategic framework of Ex Libris Alma. The focus on Fulfillment stems from the fact that this is the functional area supporting circulation, as well as resource requests, course reserves, and resource sharing, and therefore fundamental to client services.
- Given the time and space restraints of this research project, the study was not able to address the other functional areas comprising Ex Libris Alma or the vendor's index-based discovery services in use at the University of Auckland, Primo and Primo Central.
- The findings of this study may not be generalisable to other libraries; however, some of the findings may be of value to other libraries implementing cloud software and specifically Ex Libris Alma.

4. EX LIBRIS ALMA

4.1 Ex Libris Group

Founded in 1986, the Ex Libris Group promotes itself as "a leading provider of automation solutions," which "leads the way in defining and designing efficient, user-friendly products that serve the needs of academic, research, and national libraries today, enabling them to transition into the future" (Ex Libris Group, 2012). The story of the development of Aleph (Automated Library Expandable Program Hebrew University of Jerusalem), the integrated library system first released by Ex Libris in the late 1990s, is an interesting one (see, for example, Flusfeder, 1995), but this study is primarily concerned with twenty-first century library technologies and strategies.

4.2 Developing Unified Resource Management (URM)

Ex Libris appears to have first broached the topic of their "URM strategy" to customers at the annual Ex Libris Users of North America (ELUNA) conference in May 2007. In a blog post written in June 2007, Jonathan Rochkind of Johns Hopkins University notes that the timeline for the URM strategy at that point was the "next five years or so" (Rochkind, 2007). Interestingly, in an update to his 2007 blog post some 18 months later, Rochkind queries the lack of information on URM on Ex Libris' corporate website, asking "Why is this important initiative re-orienting the entire strategy of your company not being shared with your customers and potential customers in written form?"

Meanwhile, more information on the strategy or framework had apparently been forthcoming from the Ex Libris team at the 2008 ELUNA conference, as reported in the online Ex Librian Newsletter: "Discussion of the upcoming URM generated a great deal of interest, and users took the opportunity to ask questions and offer feedback in both the formal sessions and in the hallways" (Newsletter, 2009, January).²

² All material sourced from the Ex Librian Newsletter or Ex Libris press releases (both located under the *News* tab on Ex Libris' corporate website), or from the Ex Libris Initiatives Blog (under *Blogs*), is referenced in the body of this report as Newsletter, Press Release, or Initiatives Blog, followed by the date of publication.

From 2009, the Ex Librian Newsletter and the Ex Libris Initiatives Blog became key sources of information on the historical development of URM. Just before the following ELUNA conference held in May 2009, Oren Beit-Arie, Chief Strategy Officer at Ex Libris, wrote of the keynote address "on trends affecting next-generation library services and our plans in this realm" that he was to give at the conference (Initiatives Blog, 2009, May 1). According to Beit-Arie, Ex Libris had recognised that "libraries needed a new framework, a new model for library services that focuses on the emerging trends and needs of the future while continuing to address the needs of today." To fulfil this model, three main components were required: "User Services, Management Services, and Transformational Services that take libraries beyond their traditional roles."

Of these components, the first had already been addressed with the development of Ex Libris' Primo, a unified resource discovery and delivery (URD²) platform introduced in 2007. Now, as Beit-Arie continued in his May 2009 post, Ex Libris was "in the process of revolutionising the library's administrative, back-office management of all assets – regardless of their format, type and acquisition method – with our Unified Resource Management (URM) framework." The third component, Transformational Services, had also begun to be addressed with Rosetta (Ex Libris' digital preservation platform) and bX (their scholarly article recommender service).

Attending the 2009 ELUNA conference from the local New Zealand library community was Simon Bendall, who discussed Ex Libris' "new generation of library software platform" in a post published on the LibraryTechNZ blog run by staff at the National Library of New Zealand Te Puna Mātauranga o Aotearoa. Elaborating on the elements making up the framework, Bendall noted that "there has definitely been some rethinking and reworking of the idea of URM since it was first aired at ELUNA last year" (Bendall, 2009). Central to that rethinking and reworking was the feedback being received from an interested library community.

Active collaboration and community involvement was the theme of Vice President of Strategic Partnerships (North America) Susan Stearns' Initiatives Blog post immediately after the 2009 conference. In that forum, Stearns asked readers what "types of support for collaboration and community" might be required of a next generation framework such as URM (Initiatives Blog, 2009, May 12). Subsequently, as Stearns reported in the next newsletter, the URM Focus Group Program was set up and the first sessions held in June 2009. Focus groups were formed around the URM metadata management environment; selection and acquisition functions and interoperability; fulfillment and patron management; and consortial requirements (Newsletter, 2009, August).

Also in June 2009 was the formal start of the Development Partner Program, "with a twoday meeting held at Boston College, attended by representatives of the three partner institutions and Ex Libris staff members working directly on URM development" (Newsletter, 2009, August). In addition to the host library Boston College, the partner institutions were Princeton University, also in North America, and K.U. Leuven/LIBIS library network in Europe. Later in 2009, Ex Libris would announce a fourth development partner, Purdue University, in North America.

During 2010, the first two incremental releases or instalments of the URM, as the framework was still known, to the four partnership libraries took place: the first in June, and the second, six months later, in December. As a result, at the beginning of 2011, library systems specialist Marshall Breeding would assert that there has been "substantial progress" in URM's development: "Although the product is still some time away from general availability, it has progressed from the proof-of-concept prototypes to a functional model" (Breeding, 2011).

4.3 Releasing Ex Libris Alma

In January 2011, the name of Ex Libris' new "backroom" system was announced as the Alma Library Management Service, or Ex Libris Alma (Press Release, 2011, January 6):

Harnessing the Unified Resource Management (URM) framework, Alma supports the entire range of library operations—selection, acquisition, metadata management, digitization, and fulfillment—for all library materials, regardless of their format or location.

President and CEO of Ex Libris Group Matti Shem Tov made the important point in the February 2011 issue of the newsletter that, while most of their existing products at that point were developed as locally implemented solutions and subsequently adapted to a hosted environment, "our next-generation library system, Alma, was conceived from the outset as a cloud-based service that will revolutionise the traditional management of library assets" (Newsletter, 2011, February). The third release of the product to the partner libraries took place in May 2011, and the fourth four months later. By November 2011, Ex Libris reported that over 60 institutions had committed to adopting Alma through various collaborative and early adopter programs (Press Release, 2011, November 17).

The general release of Ex Libris Alma was in 2012. In July 2012, Boston College Libraries, the first of the development partners, was the first institution to go live with Alma. An insight into the early release programme can be gained from the press release excerpt, which refers to the incremental nature of the development process (Press Release, 2012, July 11):

Boston College has played a fundamental role in creating, shaping, and enhancing Alma from its early stages. In keeping with its agile development strategy, Ex Libris released the Alma features incrementally over the last two years for testing by staff at Boston College and other development partners—a process that has come to fruition in the current move to production.

However, Alma was not the only new library services platform coming onto the market at this time. A series of blog posts written between October and December 2012 provides Carl Grant's impressions and perceptions on the new platforms which had been presented at the American Library Association (ALA) Conference in June 2012. While space constraints mean that a comparison of other library platforms is beyond the scope of this small-scale project, Grant's first post provides an introduction and useful descriptions and definitions (Grant, 2012, October 22). Subsequent posts cover Sierra by Innovative, Intota by Serials Solutions, Worldshare by OCLC, OLE (Open Library Environment) by Kuali, Alma by Ex Libris, and, eventually, Open Skies by VTLS (originally, Virginia Tech Library Systems). Ex Libris Alma, which Grant calls "a totally new, ground up rewrite of a product," is treated in Part 6 (Grant, 2012, November 14).

Material from all these posts was also published in 2012 in the *Information Standards Quarterly* (*ISQ*), under the title "The future of library systems: Library services platforms" (see Grant, 2012). The experiences of one of Ex Libris' development partner libraries, Purdue University Libraries, were published in the same issue of *ISQ* (see Bracke, 2012). Purdue would subsequently go live with Alma in mid-2013, and, the following year, another of the original development partners, the LIBIS network in Belgium, launched Alma in September. To date, of the initial development partners, only Princeton University Library has not completed the final implementation stages.

Meanwhile, in the local Australia-New Zealand region, the Alma Collaborative Partner Programme had begun in October 2010 (Newsletter, 2011, February). Partner libraries at that time included Monash University, Swinburne University of Technology, the University of Western Sydney, a consortium of universities in South Australia, the University of South Australia, the University of Adelaide, and UNILINC, a network of academic and research libraries in the Sydney area. Next to join these seven institutions as early adopters in February 2012 were RMIT University in Australia, and the University of Otago in New Zealand.

Of the Australian partners, Swinburne University in Melbourne was the first to go into production with Ex Libris Alma in April 2013, and also the first live Alma site whose cloud-based services was delivered by Ex Libris' new data centre in Singapore. The first New Zealand institution to go live with Alma was the University of Otago in December 2013. Three further New Zealand tertiary institutions launched Alma during 2014: Lincoln University, the University of Auckland, and Unitec Institute of Technology. Victoria University of Wellington is currently implementing the platform in 2015. The following section of this report presents background information on the University of Auckland, then an account of that institution's implementation of Ex Libris Alma during 2014, and concludes with observations on some of the adjustments made since the launch of Alma.

5. ALMA AT THE UNIVERSITY OF AUCKLAND

5.1 Libraries and Learning Services (L&LS)

Founded in 1883 as part of the University of New Zealand, the University of Auckland is the largest research university in New Zealand, and the only one to be listed in the top 100 in the QS World University rankings. Located in New Zealand's largest city, the university is spread over four campuses within Auckland: the City Campus, the Epsom Campus, the Grafton Campus, and the Tāmaki Innovation Campus. In addition, there is a satellite campus in Whangarei, north of Auckland. A further site within Auckland, the Newmarket Campus, will open during 2015.

The university has over 40,000 students across eight academic faculties, and employs over 5,000 full-time staff and 8,000 part-time staff (University of Auckland, n.d.). In 2013, the University of Auckland Library amalgamated with the Student Learning Centre and the English Language Enrichment teams to become the Libraries and Learning Services Division. Headed by the University Librarian and Director, L&LS, the division employs 248 FTE (full-time equivalent) staff, with around 100 staff holding professional library qualifications (University of Auckland Libraries & Learning Services, 2015, p.2).

The largest tertiary library in the country, library users total around 54,000. Occupying its current building since 1968, the General Library (Arts, Business, and Science) is situated on the City Campus. Also on the main campus are the Architecture and Planning Library; the Audiovisual Library; the Business Information Centre; the Davis Law Library; the Engineering Library; the Fine Arts Library; the Kate Edger Information Commons and Kate Edger Short Loan; and the Music and Dance Library.

Other L&LS facilities away from the main campus include the Sylvia Ashton-Warner Library and Epsom Information Commons which serve the Faculty of Education and Social Work on the Epsom Campus, and a satellite branch of the Sylvia Ashton-Warner Library on the Tai Tokerau Campus in Whangarei. Situated across the road from the Auckland City Hospital at Grafton, the Philson Library and Grafton Information Commons supports students and staff of the Faculty of Medicine and Health Sciences, while the Tāmaki Library and Information Commons at East Tāmaki provide services to the Faculty of Science and Population Health on the Tāmaki Innovation Campus. Administered by the General Library, library services are also provided at the Leigh Marine Laboratory, a research station located in Northland. In addition, the L&LS division includes a large off-campus storage facility and the University Bindery, both of which moved to a new location within Auckland during 2014.

5.2 Implementing Alma

For many of the teams making up L&LS, a key focus during 2014 was preparing for the replacement of the legacy Voyager system, which was moving towards the end of its software cycle, with the cloud-based Ex Libris Alma service. Largely reflecting the researcher's own experience of the change-over process, the following account narrates the change management project beginning from January 2014. It was at that point that the University Librarian and Director, L&LS, circulated to all staff the Ex Libris press release which announced that the University of Auckland had selected Ex Libris Alma as its new library management system to replace the Voyager system installed in 1998.

As the 2013 Annual Report on the L&LS website during 2014 indicated, a business case had been approved to start a project in March 2014 to move to a cloud-based replacement system. Little impact on library users was expected, as the University Librarian's overview in the 2013 Annual Report explained: "The Primo discovery layer will remain essentially the same so there should not too many differences for users of the Library's systems" (University of Auckland L&LS, 2014, p. 2). However, the significant infrastructure project impacted L&LS staff at all levels. Those staff members attending the annual Library Perspectives Seminar in February 2014 were presented with the planned timetable for implementing the software. To be managed by an in-house project team, the timetable included overlapping blocks over six months between March and September for the following processes: project management; environment; data migration; integration; configuration; analysis and integrations; training; and discovery.

Between February and April, representatives from the various teams across L&LS were invited to attend seminars and workshops. For client services managers and team leaders, a series of Alma workshops was scheduled for the purpose of viewing of Ex Libris training videos at the General Library. While this material was (and still is) also available for individual viewing at staff workstations, the main advantage of attending the group sessions during that period was that the time was specifically set aside for the purpose. Critically, this was the beginning of the first semester, and therefore one of the busiest periods of the New Zealand academic year. For those involved in the new intake (as all client services staff are), it was all too easy to not find the time to become familiar with the concept and functionality of the new cloud software.

Another advantage of meeting with representatives from the various L&LS facilities was the opportunity this type of forum presented to ask questions in and about the specific library environment. Watching videos of a generic type about any new system or service is perhaps of limited value, except by way of introduction. Fortunately, from March, the Alma Sandbox also became available for this group of staff to practise performing searches and other circulation tasks using a generic log-in. During March and April, a production version of Alma containing L&LS data was also set up. In addition, integrations between Alma and other systems and devices were being set up, and tested. The Alma Project Manager from Ex Libris visited for a series of hands-on workshops during May and June.

In May, email communications from the L&LS project team to all staff commenced. These consisted of general updates on the project of a "what's happening with Alma this week" nature, and also more detailed information on specific areas, such as what effects the implementation of Alma were expected to have on public services. Usefully, the list of communications was also available, and still is some six months after the launch of Alma, for reference by all staff on the project page of the staff intranet. One significant change communicated to staff concerned the launch date for the cloud software. Initially, the proposed go-live date for Ex Libris Alma at the University of Auckland was during August 2014; however, in July, the University Librarian notified L&LS staff that the launch date had been pushed back to mid-September. This change was beneficial in that staff were afforded more time to become familiar with the very different management system.

Hands-on Alma training sessions, based on the workflow guides that were now being produced by L&LS managers rather than Ex Libris training materials, began in July. At this stage, the sessions were largely still targeted at team leaders, as they were to be the

trainers of their own teams. In-house training began in earnest within individual teams the following month. In many cases, training took the form of hands-on introductory sessions for small groups of staff at a time within their workplace, but away from the front desk in training rooms, and using the targeted training materials produced internally by L&LS staff. However, team members were also encouraged to practise whenever possible on the Alma Sandbox at their own workstations/front desk terminals. A series of questionnaires relating to simple fulfillment/circulation tasks which had been created for the team leaders' training was also distributed among frontline staff for self-testing purposes.

The next phase of project communications began in August, when email notifications were sent out to all faculty teaching staff and researchers, advising them of the library management system change and, perhaps more importantly in this context, of the retirement of the Voyager Catalogue search interface from the website. Help sheets were prepared to assist L&LS staff with answering queries, since many long-standing faculty staff had preferred to continue to search for library holdings using the familiar Voyager interface rather than engage with Library Search, the Primo discovery interface on the University of Auckland's website since 2008.

Coinciding with the mid-semester break during Semester Two, Alma cutover took place during the fortnight of 2-15 September 2014. For that period, access to the main Alma production site ceased, and there was a freeze on using the Voyager acquisitions and cataloguing modules. The Voyager Circulation module was last used by staff on 12 September, to enable Ex Libris to take a final extract of patron, loans, and requests data from Voyager and load it into Alma. During the weekend of 13-14 September, prior to launch, testing by the L&LS project team and systems staff took place. Items were issued using Alma offline circulation by client services staff working during that weekend, which meant that they were the first staff to use the new Alma software, as the Projects Librarian would point out.

Critically, client services managers also worked throughout the weekend to assign user roles to all client services staff. User roles define a user's functions and privileges in Alma. However, permissions within each user role are assigned by Ex Libris, and cannot be changed by their customers. In the Fulfillment area, client services staff might be assigned
all or any of the following roles: circulation desk operator; course reserves operator; fulfillment services operator; and requests operator. At managerial or supervisory level, the following user roles might also be assigned: circulation desk manager; course reserves manager; fulfillment services manager; and requests manager. Initially, however, all client services staff members were assigned operator-level user roles.

5.3 Adapting to Alma

On Monday 15 September, the University of Auckland went into production with Alma. The new version of Library Search (Alma-Primo) also went live on the public website, and, after 16 years, the link to the Voyager Catalogue was finally removed from the homepage. Headed "September 2014 changes," a news item on the Library's website informed all users of the upgrade to the Alma library management software. At each library and information commons where Alma Fulfillment was operational, offline transactions from the preceding days were first uploaded. Rather than the generic login used previously, staff now used their personal logins to access the Alma interface through a web browser, and issuing through Alma Fulfillment began "for real."

The transition to the new system went smoothly, for the most part. During the initial days, managers and supervisors attended the lending desks, and many telephone calls and emails were exchanged between the various libraries and other facilities. Processes and procedural manuals continued to be revised, and quick guides and shortcuts created, as a result of the hands-on experience with the live system and workflows. In addition to users needing to become accustomed to the new vision, infrastructure, and workflows, however, there are the demands of the agile development process to take into account, whereby every month the vendor deploys a new release on the Alma production environment via the Internet. An advance warning notification on every user's homepage provides access to the release notes for "more information about the exciting new features and enhancements" in the current release. The release notes, though, frequently require some interpretation. Furthermore, although welcomed, new features and enhancements may be overshadowed by the realisation that a small but frustrating issue has yet to be resolved.

The significance of the Ex Libris Alma project to the tertiary institution is evident from the University Librarian's overview in the 2014 Annual Report (University of Auckland L&LS, 2015, p. 2):

There have been a number of challenges since going live, particularly in relation to the Library's back-office functions. Alma does not yet offer all the functionality that was available within Voyager but it does offer new functionality that wasn't available in Voyager, and the cost of operating the system in the cloud is expected to be considerably less within a relatively short timeframe. This is the first major enterprise system at the University, with all its integrations, to move to the cloud.

This research investigated the impact of the recent shift to the cloud on the organisation's frontline employees by asking their views and opinions. It was anticipated that a range of benefits and drawbacks of using the new cloud-based service during these early stages would be highlighted in the data collected. However, whether the perceived benefits and drawbacks would be attributed, or even could be attributable, to the software's agile software development process could not be predicted. In the following section of this report, findings from the anonymous staff survey created through the Qualtrics survey tool are presented.

6. SURVEY FINDINGS AND DISCUSSION

6.1 Demographics

Following the Participant Information Sheet, the first block of the survey comprised five questions (Q1-5) relating to participants' employment in client services at L&LS. No questions could be asked that would either overtly or inadvertently enable the identification of individual staff members. Therefore, participants were not asked their job title, their role in any team, or even what level their position was. Nor were they asked in which library/information commons or on which campus they worked, although all this information would have been useful for data analysis. Response to the first two questions was mandatory, as a means of filtering out anyone who was not eligible to complete the survey.

Q1. Do you currently work in a client services role at the University of Auckland Libraries and Learning Services?



A total of 33 responses were received to this initial question, of which 82 per cent were affirmative, and six per cent were unsure. The remaining 12 per cent, those who responded that they did not work in client services currently, exited the survey.

Q2. Do you currently work as a desk assistant, library assistant, consultant, coordinator, client services librarian, or after-hours supervisor (Levels 1-4 only)?



The single respondent who selected "no" to this second filtering question also exited the survey. For the majority who fitted the target criteria (97 per cent, or 28 of the 29 respondents), three further questions relating to their employment in client services at L&LS displayed.

Q3: How long have you worked in client services at the University of Auckland Libraries and Learning Services altogether?



The main purpose of this question was to establish whether participants had already been in a client services role at L&LS prior to Alma's implementation; had started during implementation; or had only started working in client services since the change-over. Around two-thirds or 68 per cent of the 28 respondents to this question had worked in client services for more than two years, and would therefore have experienced the entire change process from Voyager to Alma during 2014. Although no respondents had worked between one and two years, 11 per cent indicated that they had worked in a client services role at L&LS for between six and 11 months, and would also have participated in the launch of Alma in September 2014. The remaining 21 per cent had only worked for the institution for less than six months.

Q4: In an average week, how many hours do you work in client services at the University of Auckland Libraries and Learning Services?



Just over half of the 28 respondents to this question (around 54 per cent) indicated that they worked fulltime in their client services role, while nearly 18 per cent worked on average between 20 and 29 hours per week. The remainder worked between 10 and 19 hours per week in client services.

In addition, participants were asked their weekly work pattern. As the graph for question 5 below illustrates, the majority of 28 respondents (around 90 per cent) selected one of the four options falling within the traditional working week, Monday to Friday: Around 61 per cent selected weekdays as their primary work pattern, with almost 11 per cent choosing weekday mornings, around seven per cent weekday afternoons, and almost 11 per cent weekday evenings. Thus, the majority of respondents worked at the same time as, or overlapping with, managers and other team leaders.



Q5: In your client services role, which of the following patterns do you primarily work?

Less than four per cent selected any of the weekend options provided as their primary work pattern (in this case, weekend days), while the remaining seven per cent selected "none of the above."³ To summarise the information collected about the survey participants, seven of the initial 33 participants exited the survey as not eligible after the first two mandatory questions. Nearly three-quarters of the remaining respondents had worked for the organisation in client services for more than two years, and just over half of respondents worked fulltime (37.5 hours per week), with weekdays the most common work pattern.

6.2 Implementation

The second block comprised five statements (Q6-10) relating to the change management project and implementation of Ex Libris Alma at the University of Auckland during 2014. The purpose was to determine whether frontline staff felt the change project was effectively carried out. Therefore, skip logic was employed to ensure that if a participant had indicated previously that they had only started working in client services at L&LS since the launch of Alma, this block did not display.⁴

³ Owing to an error that was not picked up prior to activating the survey, the "weekend afternoons" response option was presented as (a second) "weekday afternoons." Therefore, it is possible that the two respondents who selected "none of the above" primarily worked weekend afternoons.

⁴ Twenty-five responses were received to each of the questions in this block, instead of the 22 that might be expected from the results of question 3 in the first block. Notwithstanding this anomaly, the results for this block are provided.

Q6: Prior to Alma's launch at the University of Auckland in September 2014, I read most of the communications sent out about the new library system.



Of the 25 respondents, 80 per cent strongly agreed or agreed that they had read the information distributed by the project team. The remaining 20 per cent were noncommittal.



Q7: Before Alma's launch, I generally felt informed about the Library's shift from Voyager Circulation to the new system.

Interestingly, 84 per cent of the 25 respondents strongly agreed or agreed that they had felt informed about the Library's shift from Voyager to Alma. The remaining 16 per cent neither agreed nor disagreed. These positive results correspond to those of the previous question, and would indicate that the majority kept up to date throughout the change project. Q8: Prior to Alma's launch in September 2014, I was aware of the reasons the Library was adopting a new library management system.



Responses to this statement were spread right across the five-level scale, unlike the two previous statements in this block, but with the highest percentage strongly agreeing nonetheless. In all, more than half of the 25 respondents (60 per cent) strongly agreed or agreed that prior to Alma's launch they were aware of the reasons the Library was adopting a new library management system. While 24 per cent neither agreed nor disagreed, the remaining 16 per cent disagreed or strongly disagreed.

Q9: Before Alma's launch in September 2014, I received training on Alma Fulfillment in the following (select all options that apply):

Circulation Users Group training Targeted workshops at my library On-the-job training from my team leader/supervisor Other (please specify): ______ I didn't receive any training prior to Alma's launch



Since participants were instructed to select as many options as applied, the results for this question are given numerically, rather than as percentages. Of the options provided, on-thejob training from their team leader/supervisor was the most common (as selected by 17 respondents); followed by Circulation Users Group (CUG) training (11). This is an interesting finding as the so-called Circulation Users Group primarily comprises client services managers and representatives from each of the libraries, suggesting that a third of survey respondents belonged to that group.

Targeted workshops at their library were selected by nine respondents. Three respondents selected "other," and specified the following:

Workshops with senior lending and technical services staff Alma videos on P drive, manuals

PDF guides, and access to the Alma Sandbox

Surprisingly, the option "I didn't receive any training prior to Alma's launch" was also selected three times. However, this may be the result of the block of questions unintentionally displaying to those who indicated that they had only started work in client services at L&LS since September 2014.

Q10: Prior to Alma's launch in September 2014, I would have preferred more training on using Alma Fulfillment.



Almost half of the 25 respondents (44 per cent) selected the neutral or noncommittal option here, neither agreeing nor disagreeing. However, the combined total of those who did not believe that more training during the implementation stage was required (28 per cent) was equalled by the number of respondents who indicated that they would have preferred more training.

In summary, during the implementation of Alma during 2014, over three-quarters of respondents read most of the project communications and, therefore, generally felt informed about the coming shift to a new library management system. More than half of respondents were aware of the reasons for the change. The most common form of training received during the implementation phase was on-the-job training from team leaders and/or supervisors, followed by training provided for the Circulation Users group (mostly client services team leaders/supervisors). Nearly half of respondents were noncommittal about the need for more training prior to Alma's launch, but as many respondents would have preferred more training as those who believed that more training was not required.

6.3 Post-launch

This block of the survey related to the period of approximately six months between the launch of Alma in September 2014 and distribution of the survey in late March 2015. The purpose of the seven statements (Q11-17) was to determine whether staff felt sufficiently informed about the new system they were using, or were at least able to find the information themselves that they needed to perform their tasks effectively. This was seen as particularly significant to the research topic, in light of not only the internal processes and procedures being revised by the University of Auckland during this period but also the software fixes and enhancements being pushed on a monthly basis by the library vendor Ex Libris.





Nearly 70 per cent of the 26 responses were affirmative, while equal numbers were either unsure or negative. However, one participant communicated to the researcher after completing the survey that the phrasing of the statement, and specifically the passive nature of "I have received training," did not allow for the possibility of self-directed learning. This is a valid point, and it is acknowledged that it may have affected the responses given. However, self-directed learning is generally undertaken by highly motivated learners. Otherwise, as one trainer has put it, "Training that is left on the intranet waiting for a learner to discover it is training that is underutilised if utilised at all" (Reed, 2010, p. 9).

Also, the purpose of asking this question was to ascertain whether follow-up training for frontline staff had taken place actively within the various teams across the L&LS system following implementation of the new system. Responding to this statement that participants had received training on Alma Fulfillment since the launch of Alma in September 2014 was compulsory. Thus, if respondents indicated that they had received no further training after the go-live date, the subsequent question about types of training received (Q12) did not display.

Q12: Since September 2014, I have received training on Alma Fulfillment through the following (select all options that apply):

Induction training when I started working in client services at the University of Auckland Targeted workshop(s) held at my library On-the-job training from my team leader/supervisor Other (please specify): _____



As participants were instructed to select as many options as applied, results for this question are given numerically, rather than as percentages. The response "on-the-job training from my team leader/supervisor" was selected 17 times, while "induction training when I started working in client services at the University of Auckland" and "targeted workshop(s) held at my library" were chosen six times each. The following comment was supplied by the respondent who selected "other":

I attended targeted workshops that were held at the main city campus away from my library

In hindsight, response options for this question and the similar question about training received pre-launch in the previous block (Q9) should perhaps have mirrored one another for comparative purposes. However, pre- and post-launch, on-the-job training within the staff member's workplace was clearly the most common form of training received at L&LS.

Q13: My preferred learning style is (please select one of the options provided, or add your own response):

Hand-outs
nstructional videos
Webinars
Self-directed (e.g. from online help)
One-on-one training with supervisor/team leader
Peer training
Group training
Other (please specify):



Twenty-five responses were received. Of the options provided, 40 per cent preferred group training, while the next highest choice (24 per cent) was one-on-one training with supervisor/team leader. Another 16 per cent chose self-directed learning as their preferred style, and four per cent peer training. While eight per cent of respondents selected hand-outs, no-one selected either instructional videos or webinars.

The remaining eight per cent selected "other," and provided the following comments:

I prefer a structured approach to training initially, led by someone from the vendor who thoroughly knows the product This could then be followed by peer training or selfdirected discovery.

Playing in the sandbox environment

Although diametrically opposite in nature, the options of group training and one-on-one training with a supervisor/team leader were the most preferred. Clearly, although web seminars are increasingly favoured by software vendors (Nilssen & Greenberg, n.d.), instructional videos and webinars were the respondents' least preferred methods. However, it must be stated that the various response categories provided were not mutually exclusive categories. For example, the self-directed option, which four respondents selected, might easily include watching the instructional videos and accompanying handouts supplied by the vendor (see also the reference to "Alma videos on P drive" in the "other" comment for Q9).





Of the five response options ranging between "strongly agree" and "strongly disagree," 80 per cent of the 25 respondents to this question strongly agreed or agreed. Of the remainder, 16 per cent neither agreed nor disagreed, while only four per cent disagreed. In this context, the information might refer to the software's extensive online Help, the Ex Libris training videos and handouts on the L&LS staff intranet, and/or the procedural documentation created by L&LS managers.

Q15: I know how often fixes and enhancements are carried out on Ex Libris Alma in the agile development process.



For this statement, 40 per cent of the 25 respondents selected the neutral/noncommittal option, while over a third or 36 per cent disagreed that they knew. As only 24 per cent of respondents strongly agreed or agreed, this result suggests that most frontline staff either did not know or were not sure how often fixes and enhancements were carried out.

Q16: I receive information about fixes and enhancements being made to Alma Fulfillment that are relevant to my role in good time.



Over half of the 24 respondents believed they did receive timely information on relevant fixes and enhancements to be able to perform their role, with around 58 per cent strongly agreeing or agreeing in all. While around 29 per cent neither agreed nor disagreed with this statement, just over 12 per cent of respondents disagreed.

Q17: I would prefer to receive information about fixes and enhancements being made to Alma Fulfillment that are relevant to my role more often.



Interestingly, given the findings of the previous question, a strong majority (64 per cent of the 25 respondents) would prefer to be informed about changes being made to Alma Fulfillment more frequently. Of the remainder, 28 per cent neither agreed nor disagreed, and eight per cent disagreed.

In all, more than two-thirds of respondents received training on Alma Fulfillment during the post-launch period, with the main form of training received being on-the-job training from their team leader and/or supervisor. Group training gained the most votes as the preferred method of training, followed by one-on-one training with their supervisor/team leader. The majority of respondents knew where to find information about Alma Fulfillment to perform their role in client services, but far fewer knew how often the fixes and enhancements took place as a result of the agile development process. While more than half of respondents agreed that they received information about those fixes and enhancements in a timely fashion, over half would prefer to receive information about changes relevant to their roles more often than they did.

6.4 Fulfillment tasks

This block of three questions (Q18-20) related to Alma Fulfillment and tasks performed in the participant's role. In the first two of these questions, matrix tables were employed to ask about multiple items to save space. In each table, 12 tasks performed through the Fulfillment area of Alma were listed in alphabetical order. The first question (Q18) related to frequency performed, with response options for the tasks listed in this table being "usually," "often," "sometimes," "rarely," and "never." The second question (Q19) concerned the participants' confidence levels, for which the response options were "strongly agree," "agree," "neither agree nor disagree," "disagree," and "strongly disagree." The two bar graphs below show the results of these tables at a glance. However, results for each of the individual tasks listed in questions 18 and 19 can be found in Appendix D.

Q18: How often do you perform the following tasks using Alma Fulfillment in your role?

For question 18, four of the 12 tasks were reported as performed "usually" or "often" by the majority of respondents. All tasks performed routinely by client services staff, these tasks include returning items (a combined total of 88 per cent); paying fines and fees (84 per cent); issuing items (80 per cent); and renewing items (76 per cent). All four tasks received 25 responses, as did adding fines and fees; however, this task received a majority of "never" or "rarely" responses (60 per cent).

The seven remaining tasks all received 24 responses. As well as adding fines and fees, there were five other tasks which were performed "never" or "rarely" by a majority of the respondents: These were filling digitised requests (around 71 per cent); processing missing items (around 67 per cent); processing expired holds (around 62 per cent); processing claims returned items (58 per cent); and processing lost items (around 58 per cent). However, most of these tasks, including adding fines and fees, would be less likely to be performed by all client services staff; rather, only one or two staff members in each team might be responsible for all or several of these tasks. The two remaining tasks, which did not show a clear majority of either "usually" and "often" or "never" and "rarely," were filling physical item requests and processing course reserves.

Q18:



Q19: Do you feel confident performing the following tasks using Alma Fulfillment in your role?

In this question as in the previous one, five of the tasks received 25 responses, while the remaining seven received 24 responses. Of the five tasks which received 25 responses in question 19, four each had a combined total of 96 per cent of respondents who either strongly agreed or agreed that they felt confident performing the task. Clearly differentiated in the bar graph below, those four tasks (in the order listed on the matrix table) were again issuing items; paying fines and fees; renewing items; and returning items.

Interestingly, paying fines and fees was the only one of these four tasks (or any other task in this table) about which no respondent either disagreed or strongly disagreed, as the remaining four per cent of respondents (i.e. one participant) selected the neutral "neither agree nor disagree" option here. For each of the other three tasks, the remaining four per cent of respondents (possibly the same participant) disagreed that they felt confident.

Also as in the previous table in question 18, the only other task here to receive 25 responses rather than 24 was adding fines and fees. This exception could be a result of the fact that this was the first task listed in the matrix tables, since the results for this task were quite different to the other four tasks which received 25 responses. However, a majority (70 per cent) of respondents strongly agreed or agreed that they felt confident adding fines and fees.

Of the remaining tasks receiving 24 responses each, a slightly smaller majority of around 62 per cent strongly agreed or agreed that they felt confident filling physical item requests. The other six tasks in this table were not so clear cut, with responses for filling digitised requests, processing claims returned items, processing course reserves, processing expired holds, processing lost items, and processing missing items, being more spread across the range between "strongly agree" and "strongly disagree."

Q19:



To conclude this block about using Alma Fulfillment, a value judgement was sought as to whether participants found Alma easy to use or not.



Q20: Overall, do you find Alma Fulfillment easy to use in your role?

Of the 25 responses to this question, a total of 84 per cent were positive. Twelve per cent neither agreed nor disagreed, while only four per cent disagreed.

In summary, regarding the frequency of the tasks carried out using Alma Fulfillment, more than three-quarters of respondents usually or often performed those of returning items, paying fines and fees, issuing items, and renewing items. As to the degree of confidence felt performing the tasks using Alma Fulfillment, unsurprisingly, nearly all respondents felt confident carrying out the routine tasks they performed most often. However, between half and three-quarters of respondents never or rarely performed the tasks of filling digitised requests, processing missing items, processing expired holds, adding fines and fees, processing claims returned items, or processing lost items. Interestingly, only about one quarter of respondents did not feel confident performing the tasks that they rarely performed. It was also interesting in the context of the findings of the two matrix tables that a significant majority felt that Alma Fulfillment was easy to use. Clearly, user experience of software products is subjective, and difficult to measure or quantify. However, the user feedback in the following block elaborates on what respondents perceived as easy to use or not, and in what context.

6.5 Features and functions

This block specifically sought participants' personal views on using Alma Fulfillment to deliver client services. In order to elicit detailed user feedback, participants were provided with text boxes for their responses to the four open questions (Q21-24). These questions, together with the number of responses received for each, are listed below:

Q21: What is your most liked feature of Alma Fulfillment? Please comment on the reason(s).

This question received 18 responses.

Q22: Please comment on the advantages in using Alma Fulfillment to deliver client services, in your personal view.

Nineteen responses were received.

Q23: What is your least liked feature of Alma Fulfillment? Please comment on the reason(s).

Of varying length, 20 responses were received.

Q24: In your opinion, are there any functions or features of Alma Fulfillment that could be improved in order to enhance delivery of client services?

Eighteen responses were received, many of which were detailed.

Themes:

The key objective in asking staff their likes and dislikes about using Alma Fulfillment in their client services role was to gain a detailed picture of how the cloud software was perceived in the context of the front desk environment. Illustrated by the collective data from these four questions, a number of themes or key concepts identified are discussed below. The themes include design; usability; functionality; navigation; workflows; performance; content; user roles; and, finally, agile development.

Design

For a number of staff, the Alma interface was their most liked feature, and seen as an advantage in the following brief comments:

Interface

Clean and clear layout

alma has a more brighter 'look' compared to voyager

However, apparently referring to density of text with too little white space rather than too much content, wordiness was commented on by another user:

I found it was all too 'wordy' to begin with but am used to it now.

Too many words, small print and lines all close together.

Usability

Usability is defined as "a quality attribute that assesses how easy user interfaces are to use" (Nielsen, 2012). Ease of use was emphasised by many respondents with regard to what they liked most about Alma Fulfillment:

The ease with which a function is fulfilled, issuing materials, etc.

It's very easy to use and comfortable.

Also, in response to perceived advantages for client services delivery:

Easy, interesting and informative plus allows all questions with relation to books there and then

Much easier to use and faster.

However, several staff criticised Alma for not being intuitive, and described interaction with the system as not being natural:

Sometimes it feels like I'm trying to navigate around a labyrinth – trying to place requests for patrons involves so much back and forth clicking. It's not intuitive either.

It can be a bit difficult to find the information/function you're looking for if you haven't been trained in that specific task. It's not the most intuitive system, so some things don't "make sense" naturally until you've learned where to find them.

As Spool (2005) explains, one of the difficulties for designers of a new system is bridging the crucial gap between current knowledge and target knowledge (what knowledge is needed to complete a task). Jef Raskin makes an interesting point in an opinion piece entitled "Intuitive equals familiar": An interface designer involved in the Apple Macintosh computer, Raskin found from experiments that "a user interface is 'intuitive' insofar as it resembles or is identical to something the user has already learned. In short, 'intuitive' in this context is an almost exact synonym of 'familiar'" (1994, p. 18).

Notably, several L&LS staff did not find searching for resources through Alma simple:

If just talking about client services, one thing the Alma should do is the simplicity. It is too complicated to search in repository, as to decide whether under all titles, physical items ... etc.

repository search takes a bit of time to learn

Functionality

A lack of familiarity with the new and very different system also appeared to be the reason for the following positive, but qualified, opinions on Alma's functionality from L&LS staff:

It's very powerful overall-it has lots of functions to allow you to do pretty much anything you would want to do, it's just a matter of knowing how to do it.

Functionality of ALMA seems to be pretty thorough but the steps to do something can be quite convoluted, particularly if you don't do it often.

Others complained of an inconsistency in functionality, depending on the pathway used:

I don't like how depending on how you enter into certain tasks, functions are not available to you. e.g. if you try to go into a patron record via Manage Patron services, you have full functionality. But if you go into a patron's record some other way, e.g. by looking up an item that is on loan, then clicking through the loan info by their upi, you can't get the same functionality. It would be helpful if Alma offered the same functionality in the different areas of information, no matter how you get to it. Multiple pathways between functions can be confusing, especially when available actions in a page can vary depending on how you get there. It would be good to have more linking between patron, item and request management functions.

Navigation

In addition to the respondents who found Alma to be convoluted and labyrinthine, other staff referred to navigation unfavourably, as in the following extracts:

navigation feels clunky at times

... it is very difficult to navigate through the messages sent from the system to users.

One suggestion for an improvement was the ability for staff to have multiple windows open, rather than having to navigate back and forward to various screens:

Being able to have multiple sections or windows of Alma open at the same time would be useful – if a patron comes in to ask about their fines, you might have to look at their account, their loan history, and the item's loan history – but you have to look each of these things up in turn. Being able to view all of this side by side would be really helpful.

However, navigation in Alma was also viewed as a positive feature, in that many users commented that they were able to move from one function, task, or location, to another faster or more easily, particularly around the task of returning items as illustrated below:

... I like the returned item features the most as it allows me to directly put the book on a patrons name without me doing any extra work.

... I also like the fact you can see a patron's name and click through to their account, when they return a book. This is really helpful in speeding up the process if, for instance, you are trying to find out who owns a book that is not from our library or if there is something wrong with the item that has been returned.

I like that you can link easily from a book being returned to the account of the patron who has returned it.

Ability to easily swap between lending and returns desks

Workflows

In the context of a library's front desk, workflows need to be straightforward. Parent and Maclean's (2014, p. 4) depiction of workflows is a useful one: "An organisation's workflows are made up of a group of processes it needs to achieve, the staff and/or resources available to execute those processes, and the connections that occur between them." Owing to the complex data model underpinning Ex Libris Alma, as Parent and Maclean (p. 2) found when preparing for early adopter RMIT University Library's migration to Alma in 2013, "designing workflows was not as simple as replicating tasks from Voyager to Alma." Generally, in the literature, this was seen as requiring both time and understanding of Alma's infrastructure and functionality on the part of adopting institutions.

A range of opinions was submitted by frontline L&LS staff around the current Alma workflows and processes. Many views were expressed on the subject of paying fines and fees, for example. In the following comments from one user, this process was not seen as easy to perform through Alma, but they subsequently suggested an improvement:

... I also don't really like the fines payment part of ALMA- when patrons want to pay specific fines, it's not as easy to do as it was in Voyager.

The fines payment process could be easier- for instance when you select specific fines, it would be helpful if they added up as you went, rather than having to work it out for a student who only wants to pay for a certain amount.

Another user agreed that paying fines could be made more flexible for clients:

The flexibility of paying whichever amount fines a client wants, not just limited to paying specific fines or a full lump sum

Some users specifically did not like the process of requesting physical items:

... Putting a physical item request on an item for a patron takes quite a while, you have to scan the book, then the patron ID card for each item, each field of the item physical request form takes a second or so to load which also adds time to the process.

Do not like the system of reserving the book. The system gets slow there.

The book reserving system

However, another user preferred the process of requesting items through Alma to the same process via Voyager:

I like the request process in ALMA better than in Voyager

Alma analytics (reporting) was also seen as a vast improvement on the previous system by one user:

Reports automated (when set up). Ability to sort by process type to keep an eye on the collection, which is much easier than the old Voyager access databases which often didn't work or took a very long time to generate reports.

Notwithstanding the varied user feedback on work processes, it was acknowledged that the issue of workflows was under review by the organisation:

There are some workflows which have yet to be finalised for all locations in our build, but this is ongoing work.

Performance

Interestingly, networking issues was the subject of most of the negative comments submitted by L&LS staff, with the most prevalent being perceived slowness:

I don't like the fact that it is noticeably slower than Voyager, and I feel like it has had a lot more problems with crashing, and stopping working- which I presume is a side effect of it being cloud based rather than a programme running on the computer.

I think the whole system needs to be a little quicker.

The speed which is at times very slow.

Functions at the speed of the internet – can be slower than expected when scanning patron's card.

I dislike the fact that Alma is browser based - it takes a lot more time to navigate between tabs and functions than Voyager did.

The effects of this issue on work processes were raised by some respondents:

Slow. Many errors. Makes most processes longer than they used to be.

Returns desk feature - having to constantly restart computer

Many comments specifically mentioned printing as being slow and unreliable, an issue widely reported by other institutions. As Ex Libris Alma is cloud-based, printing of slips is done via email directs:

Overall, Alma is slower than the previous system. It takes longer to charge and discharge books as well as printing out slips.

Slow lag times, very slow and unreliable print outputs for transit/requested items, which holds up work processes.

A number of suggestions for improvements also concerned printing:

Improved printing speed for the slips that get printed out from ALMA would also be great.

A better and faster connection between Alma and printers (in the past I have had to restart the system a number of times during my shift in order for printing to work)

The issue of timing out was a source of frustration for one user:

The time out feature- if you have been doing other tasks at the desk and go back to fulfillment to serve a customer, it is annoying that they have to wait while you log in again.

Timing out was also seen by the same respondent as a possible cause of error:

If you can't remove the time out, perhaps make the screen show that ALMA has timed out before you start to perform a task – e.g. on book returns, you scan a book to discharge on a screen that looks ready, the system beeps and asks you to log in because it has timed out, but there is nothing to tell the staff member that the scanned book has not been discharged which can lead to the book being shelved undischarged, causing fines to accrue for the patron, and a problem to sort out later. This tends not to be an issue for staff who regularly work the desk, but other staff who cover the lending desk for an hour once a week can get caught out by things like this.

Content

If performance was perceived as negatively affecting service provision, by far the most comments submitted about respondents' most liked features or functions related to the amount of information or detail available on Alma, as in the following extracts:

I like that Alma gives a lot of information to the operator when performing everyday tasks.

The amount of information available to the client and staff.

Some users commented in general terms on the information available as their most liked feature, and then elaborated on the reason in a subsequent response, for example:

The amount of information available – there's much more detail than there was in Voyager.

You can see loan and fines histories, the amount of information makes it easier to help patrons.

For other staff, specific information enabled enhanced service delivery to clients, particularly regarding current and historic transactions:

Being able to look at a patron's summary of items they currently have on loan, to answer questions about accruing fines or things that need to be returned.

The patron management screens include two very useful features: captured data for historic returns, and a history of attachments generated and delivered to the patron. This lets me quickly verify which notifications have been sent to a person and when, while still continuing a transaction at the desk.

Patron services. This is because patron services enables you to look at so much more than voyager. For example, what items the patron has returned in the past, what requests the patron has pending, what notifications the patron has received via email.

As in the above, the advantages of access to all email notifications which had been sent to a client through Alma were emphasised. Staff found they could answer a client's queries at the desk or on the telephone themselves, without the need to have to refer the query to a supervisor to run a report, as was necessary previously:

I believe it has become easier to solve confusion between staff and clients regarding items that have been recalled, overdue or lost. This is due to the fact that in patron services, you are able to look up easily the notifications the patron has received as well as when the item was returned. Alma has enabled a faster and accurate service for solving client disputes.

... Also I like the fact that you can look up what emails the student has been sent regarding their items, which can solve customer complaints and disputes which makes it easier (sometimes) to solve customer queries and disputes.

The option of email receipts has improved communication between patrons and the library

The advantages for staff of being able to track who had previously been involved in fulfillment transactions, and where and when, were also remarked on. The fact that each individual staff member logged into the Alma interface, rather than the generic login associated with each location with Voyager, was generally seen as an enhancement:

From the patron's perspective I don't know if there is any advantage to them. I feel like it does make it easier for us to track things or find things out if things do go wrong somewhere in the lending process however.

Detail available. For example in returns you can find when, where, and who processed the item.

The benefits from not only having client and item histories in the new system but also a record of which staff had been involved in those transactions, were emphasised in the following comments:

Immediate Record keeping and tracking Reason: system clearly states the time and person doing what kinds of actions. Where in Voyager, there is no specific records on who and where the fulfillment has been done

With Alma, the advantage to deliver client services is giving appropriate information. There should not have any personal opinions, guessing or even preference, as Alma show very precise records on any items. Meaningfully, minimising human errors can upkeep the information client services consistently (not just systematically). Note: client service: library service information service: information seeking and accessing

Similarly, another user saw the advantage of minimising human error:

Feel like there is less room for human error

However, there were also perceived downsides to the automatic notifications: for example, the possibilities of too much information or information being sent out too quickly to clients were raised by another respondent in their comments below:

Real time notification to patrons of available items is useful for patrons – but can have its drawbacks.

...Sometimes don't like the automatic/real-time nature of emails sent to patrons once something is done – if you make a mistake the patron can accidentally be notified about something or spammed.

The important issue of privacy, and the difficulty of keeping client information confidential in the busy front desk environment, was also raised as a disadvantage:

The privilege: That is the most annoying features to deliver information client service. Not just because of credentials or work levels, but also confidential information should not be revealed in public. It would be very easy to expose who is on hold or waiting lists in front of patrons. The privacy can be just broken through unconsciously.

User roles

The previous extract, where roles and access privileges were emphatically "annoying," was one of the few comments on Alma's user roles. Writing from prior experience, Spring, Drake, and Romaine (2013, p. 374) explain this issue well:

Alma bundles permissions together and assigns them to particular user roles; however, institutions do not have flexibility to modify those roles in any way. Staff users assigned a particular role have all the permissions Alma thinks are necessary, whether or not local workflows are in alignment with that assumption.

Another L&LS respondent commented on the limitations of Alma roles:

The granularity of roles and what you can and cannot do in each of them.

The issue of granularity was also addressed by Spring, Drake, and Romaine (p. 374), who nevertheless report a positive outcome from their own experience: "Less granularity when managing permissions has sometimes been a point of frustration for staff, but it has also encouraged reassessment of workflows and responsibilities."

Agile development

Perhaps in view of the fact that the questions in this block did not specifically ask users about the effects of cloud software's agile development, there were few comments on this topic. Nonetheless, one respondent perceived the agile cycle to be advantageous, at least in terms of its potential:

The agile development module provides the ability for more frequent updates to functionality and is potentially more responsive to changing operational demands.

Another user, for whom this was their least liked feature of the software, viewed the development cycle negatively precisely because it was unpredictable:

I don't dislike any particular features in Alma. [...] I do dislike the development cycle with monthly updates which have so far had unpredictable results. Further, there have been additional patches in the form of service packs which are not well documented. We have also had failback issues, which ought to be minimised in a distributed environment. Apparently, not everyone had realised that the frequent changes to the system were not carried out by the institution, and could not therefore be anticipated and prepared for:

... The fact that the system is continuously changing without adequate information about the changes being given to staff in advance.

To summarise, the main disadvantages for effective and efficient client services delivery expressed by staff users were around networking issues. Attributed to the software being web based, slowness was a major cause of frustration. Similarly, some frustration was expressed around the need to come to terms with the functionality and workflows of the new system. In terms of user experience and usability, however, Alma's ease of use was much commented on, reflecting the findings of the last question prior to this block, where a strong majority of respondents had asserted that they found Alma Fulfillment easy to use in their role. Another perceived benefit was the amount of information available to frontline staff compared with the previous system, as the increased access to information was seen as enabling the staff to resolve many client queries themselves. Nonetheless, it was also very interesting, as it was unexpected, that some staff observed that they saw no specific advantages to delivering client services with the new system, either in comparison with Voyager or with other integrated library systems, as below:

I don't see any specific advantages to using Alma compared to other integrated library systems.

I am not sure if there are any advantages for what I do.

Compared to Voyager I find that Alma is similar in function to Voyager.

I find that there are no real advantages over the previous Voyager software.

6.6 Technology use

To follow the block of open questions, five questions (Q25-29) were created to survey participants' knowledge and use of technology outside the workplace. The majority of these questions merely required the participant to answer yes, not sure/sometimes, or no. For each of the five questions below, 22 responses were received.

Q25: Do you own one or more mobile devices?



Perhaps unsurprisingly, 95 per cent of the responses were affirmative. Only one respondent did not own a mobile device.



Q26: Are you an early adopter of new technologies?

Responses as to whether participants were early adopters of new technologies varied, with around 45 per cent of the 22 respondents selecting "sometimes," more than 36 per cent choosing "yes," and the remainder responding "no."

Q27: Do you use cloud computing outside work hours?



A clear majority, almost 82 per cent of the 22 respondents, confirmed that they did use cloud computing outside work hours.



Q 28: How knowledgeable are you about cloud computing and how it works?

As was expected, there was also a variety of responses across the range for this question: At the extreme ends, nine per cent of respondents believed they were very knowledgeable while the same percentage indicated they were not very knowledgeable. Of the mid-range options, 32 per cent thought they were quite knowledgeable, 36 per cent were about average, and 14 per cent believed they were somewhat knowledgeable. In all, 41 per cent were either very or quite knowledgeable.

Q29: Before taking this questionnaire, were you aware what agile software development was?



For this key question, nearly half, or 45 per cent of respondents, indicated that previously they had not been aware what agile software development was.

Therefore, all but one respondent owned a mobile device, and nearly all saw themselves as early adopters some of the time. More than three-quarters used cloud computing outside work hours, and nearly half of respondents felt that they were knowledgeable about cloud computing. Overall in this block, there were no significant findings, with the exception of the final question about participants' prior knowledge of agile development. It is impossible to know, however, whether the number of people who were unaware would have been higher had there been no explanation of agile software development in the information sheet preceding the questions.

6.7 Request for research findings

Q30

At the conclusion of the survey, participants had the opportunity to request a short summary of research findings by entering an email address in a box. Eight email addresses were supplied, and were removed prior to analysis of the survey findings to ensure anonymity of individual responses.

7. CONCLUSION

7.1 Early days yet

This research project investigated the effects of cloud software's agile development in the area of client services in a New Zealand tertiary institution. For the purpose of seeking staff perspectives on changes affecting their roles and how client services were delivered, a survey about Alma Fulfillment was deployed, which has highlighted a range of attitudes and views towards the replacement of the client-server library management system in place for over 16 years with the new cloud software in late 2014.

The majority of those who participated in the voluntary survey had worked in client services for L&LS for at least two years, and thus had experience of using both Voyager Circulation and Alma Fulfillment to deliver client services, as was evident from the data collected where many comparisons were drawn. In analysing the survey findings, it must be remembered that the legacy system had been highly customised by the University of Auckland over a long period of time, whereas Alma is standardised for quick deployment and it is a case of "onesize-fits-all." However, it must also be borne in mind that Voyager was developed for print resources, while Ex Libris Alma's unified resource management framework supports the multiplicity of print, digital, and electronic resources required of the contemporary tertiary environment.

Much of the feedback about specific Alma Fulfillment workflows and processes can be attributed to it still being "early days" with the new system for the organisation. As others have affirmed, it takes time to understand the functionality of the system, and also to optimise the system-managed workflows for the individual institution's requirements. However, L&LS staff acknowledged that they were already becoming more accustomed to the single, unified environment, and a common thread in the feedback received was Alma Fulfillment's ease of use. In particular, the amount of both historical and real-time information available to frontline staff was appreciated for its ability to empower staff and enhance service delivery to clients at the point of inquiry.
Notwithstanding the perceived strengths of the system, there was a strong preference for ongoing dissemination of information and instruction for staff, particularly on the new features being deployed by the service provider on a monthly basis. If networking issues were viewed by many as a barrier towards effective and efficient library operations, it was recognised that the cloud software had powerful functionality, or at least the potential, and application for client services delivery in the tertiary library environment.

7.2 Challenges of constant change

One of the inherent difficulties in seeking user perspectives on software engineered through agile methods is that each release of the product is a new version. This means that, during the six months or so during which the Alma software had been in use at the University of Auckland at the time of the staff survey, at least six versions of the software, each with new features and functionality, were released. Many bugs had been fixed during this time, while other issues remained to be resolved. Therefore, specific data collected through the staff survey on functionality, for example, no longer pertains as it was most likely already out of date a month later. Nonetheless, the research has not been concerned with the product per se, but rather how to manage the effects of constant change on employees. The feedback gathered is invaluable for staff development and information needs.

It must also be emphasised that, while the case study has concentrated on the implementation of Ex Libris Alma during 2014 and subsequent use of the cloud software to deliver client services over some six months, this has been only one of many innovations and substantial infrastructure projects being carried out by L&LS, and its parent organisation, the University of Auckland, during this period of time. During the course of the research, many processes and procedures at L&LS have been revised in response to migration to the new model of library services platform. Internal reorganisation and consolidation, changing needs in the tertiary education industry, and ongoing developments in the information technology industry have also been, and will continue to be, drivers for re-visioning.

One of the challenges for any large organisation is imparting its vision to all employees, but this may be achieved through a robust process of targeted communication. To ensure sustained engagement on the part of all employees, however, the informational process must be ongoing and two-way. Deploying an anonymous survey is an effective means of eliciting feedback from frontline staff. It is important to acknowledge the fact, though, that the views of those staff which took part in the voluntary survey cannot be assumed to be representative of all client services staff in this organisation. The nature of the tertiary environment, for one thing, entails that a number of new staff are employed in casual or part-time positions for the length of the academic year only (March-November). For another, some libraries may have been better represented than others, meaning the findings may not reflect the situation in all facilities across this large and complex institution.

Whether the deployment of an anonymous survey as the collection tool was appropriate for a qualitative research project is another matter: Unlike interviews and focus groups, this means of collecting data does not enable subsequent inquiry into exactly what was meant by any particular response submitted. Nor does an anonymous survey allow for the teasing out of more detail from an individual participant when an interesting viewpoint has been expressed. Yet, the anonymity which an online survey affords employees in the workplace means that personal views and opinions may be expressed that might not be given so freely in a face-to-face situation, particularly where a power imbalance pertains or is perceived between interviewer and interviewee within the workplace.

Findings from the literature and from the survey deployed at the case organisation would suggest that there is a need for a robust programme of active support for frontline staff during the twelve months following implementation of cloud software in a service organisation. However well prepared and carried out a change management project has been, it is evident that pre-implementation communications and training are not sufficient in themselves for a system designed and developed for constant change that is pushed by the service provider, and that ongoing support for an institution's frontline staff during the post-implementation period is equally important, if not more so. Involving employees from all levels of the organisation in any evaluation of functionality and workflows would also be mutually beneficial, and ensure wider engagement by staff going forward.

7.3 Further research

Individual interviews or focus groups would be an interesting adjunct to the current research; deploying another survey in the same organisation in six or 12 months' time would also enable further insights into the ongoing effects of agile development processes on staff and provision of client services. Similarly, as the use of cloud computing in tertiary institutions becomes ubiquitous and agile models underpinned by international collaboration and community involvement become the norm, a comparative case study with other institutions in New Zealand and Australia, or further afield, might inform future practices in the tertiary education domain.

8. REFERENCES

- Agile Alliance. (2013). *Guide to agile practices*. Retrieved January 20, 2015, from <u>http://agilealliance.org/</u>
- Antosh, M. J. (2012). Best practices for training and support of library staff during implementation of an integrated library system. Retrieved August 2, 2014, from <u>http://www.scribd.com/doc/98749151/Best-Practices-for-Training-and-Support-FINAL</u>
- Barnard, M., & Stoll, N. (2010). Organisational change management: A rapid literature review. Short Policy Report No. 10/01. Bristol, England: Centre for Understanding Behaviour Change. Retrieved August 16, 2014, from http://www.bristol.ac.uk/cubec/portal/pr1.pdf
- Barrett, D. J. (2002). Change communication: Using strategic employee communication to facilitate major change. *Corporate Communication: An International Journal*, 7(4), 219-231. doi:10.1108/13563280210449804
- Bendall, S. (2009, May 5). Ex Libris' URM the new generation library software platform. [Web log post]. Retrieved April 3, 2015, from <u>http://librarytechnz.natlib.govt.nz/2009/05/ex-libris-urm-new-generation-library.html</u>
- Bilal, D. (2014). *Library automation: Core concepts and practical systems analysis* (3rd ed.). Santa Barbara, CA: Libraries Unlimited.
- Bracke, P. J. (2012). Alma at Purdue: The development partnership experience. *Information Standards Quarterly, 24*(4), 16-20. doi:10.3789/isqu24n4.2012.03
- Branch, D. (2013). Alma in the clouds: Implementation through the eyes of Acquisitions. *Proceedings of the Charleston Library Conference.* doi:10.5703/1288284315322
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3, 77-101. doi:10.1191/1478088706qp063oa

Breeding, M. (2011). A cloudy forecast for libraries. *Computers in Libraries*, 31(7), 32-34.

Breeding, M. (2014). Library systems report 2014. American Libraries, 45(5), 21-33.

- Breeding, M. (2015). Selection strategies for strategic library technologies. *Computers in Libraries, 35*(1). Retrieved January 23, 2015, from http://www.infotoday.com/cilmag/jan15/Breeding--Selection-Strategies-for-strategic-Library-Technologies.shtml
- Bryman, A. (2012). *Social research methods* (4th ed.). Oxford, England: Oxford University Press.
- Buchanan, D. A. (2012). Case studies in organisational research. In G. Symon & C. Cassell's *Qualitative organisational research: Core methods and current challenges* (pp. 351-370). London, England: Sage.
- By, R. T. (2005). Organisational change management: A critical study. *Journal of change management*, 5(4), 369-380. doi:10.1080/14697010500359250
- Chad, K. (2012). *Library services platforms: Alma case study*. Retrieved September 21, 2014, from <u>http://www.kenchadconsulting.com/wp-</u> <u>content/uploads/2013/01/Alma_UEL_case_study_Dec2012_Final.pdf</u>
- Chile, R. A. (2012). Implementing a new integrated library management system in a public library consortium: A case study on strategies for effective staff training.
 (Unpublished MIS research project, Victoria University of Wellington). Retrieved July 26, 2014, from http://researcharchive.vuw.ac.nz/handle/10063/2356
- Denscombe, M. (2010). *The good research guide for small-scale social research projects* (4th ed.). Maidenhead, England: Open University Press.
- Dula, M., Jacobsen, L., Ferguson, T., and Ross, R. (2012). Implementing a new cloud computing library management system. *Computers in Libraries*, *32*(1), 7-11; 37-40.

Ex Libris Group. (2012). Retrieved October 19, 2014, from http://www.exlibrisgroup.com/

- Ex Libris Group. (2014, November 12). Ex Libris Alma and Primo selected by Victoria University of Wellington [Press release]. Retrieved December, 2014, from <u>http://www.exlibrisgroup.com/default.asp?catid={916AFF5B-CA4A-48FD-AD54-9AD2ADADEB88}&details_type=1&itemid={F6078527-B436-448D-9125-C7E03FD2E7C1}</u>
- Flusfeder, H. (1995, November 13). Instant access, distant library. *Times Higher Education*. Retrieved April 4, 2015, from <u>http://www.timeshighereducation.co.uk/features/instant-access-distant-library/98933.article</u>

- Fu, P., & Fitzgerald, M. (2013). A comparative analysis of the effect of the integrated library system on staffing models in academic libraries. *Information Technology and Libraries,* Sept., 47-58.
- Gartner, Inc. (2013). *Gartner IT Glossary*. Retrieved August 17, 2014, from <u>http://www.gartner.com/it-glossary/</u>
- Grant, C. (2012). The future of library systems: Library services platforms. *Information Standards Quarterly, 24*(4), 4-15. doi:10.3789/isqv24n4.2012.02
- Grant, C. (2012, October 22). Impressions of the new library service platforms: Part 1. [Web log post]. Retrieved March 28, 2015, from <u>http://thoughts.care-affiliates.com/2012/10/impressions-of-new-library-service.html</u>
- Grant, C. (2012, November 14). Impressions of the new library service platforms: Part 6. [Web log post]. Retrieved March 28, 2015, from <u>http://thoughts.care-affiliates.com/2012/11/impressions-of-new-library-services 14.html</u>
- Green, P. (2014). Implementing a new generation library system. *Proceedings of the IATUL Conferences.* Retrieved August 8, 2014, from <u>http://docs.lib.purdue.edu/iatul/2014/libservsys/1</u>
- Gruman, G. (2007, May 21). The truth about Software as a Service (SaaS). *CIO*. Retrieved April 11, 2015, from <u>http://www.cio.com/article/2439004/enterprise-software/the-</u> <u>truth-about-software-as-a-service--saas-.html</u>
- Hayes, J. (2014). *The theory and practice of change management* (4th ed.). Houndmills, England: Palgrave Macmillan.
- Kingston, T. (2008). Organisational communication in a strategic change project. (Unpublished Master of International Communication thesis, United Institute of Technology). Retrieved September 13, 2014, from <u>http://unitec.researchbank.ac.nz/handle/10652/1267</u>
- Kotter, J. P. (2007). Leading change: Why transformation efforts fail. *Harvard Business Review*, Jan., 93-106.
- Lee, B. (2012). Using documents in organisational research. In G. Symon & C. Cassell's Qualitative organisational research: Core methods and current challenges (pp. 389-407). London, England: Sage.
- Leedy, P. D. & Ormrod, J. E. (2013). *Practical research: Planning and design* (International edition; 10th ed.). Boston, MA: Pearson Education.

- Mavodza, J. (2013). The impact of cloud computing on the future of academic library practices and services. *New Library World*, *114*(3/4), 132-141. doi:10.1108/03074801311304041
- Menéndez-Alonso, E. (2013). The Alma Learning Programme at Plymouth University: Learning to learn in permanent beta. *SCONUL Focus*, 58, 39-43. Retrieved from <u>http://www.sconul.ac.uk/sites/default/files/documents/13_11.pdf</u>
- Morrow, S. L. (2005). Quality and trustworthiness in qualitative research in counseling psychology. *Journal of Counseling Psychology*, *52*(2), 250-260. doi:10.1037/0022-0167.52.2.250
- National Institute of Standards and Technology [NIST]. (2011). *The NIST definition of cloudcomputing*. Retrieved August 14, 2014, from <u>http://csrc.nist.gov/publications/nistpubs/800-145/SP800-145.pdf</u>
- Nielsen, J. (2012, January 4). Usability 101: Introduction to usability. Retrieved May 23, 2015, from http://www.nngroup.com/articles/usability-101-introduction-to-usability/
- Nilssen, A. & Greenberg, A. (n.d.). Why trainers are turning to webinars. Retrieved June 2, 2015, from <u>http://www.confertel.net/support/resource-library/why-trainers-are-turning-to-webinars/</u>
- Oxford University Press. (2015). *Oxford dictionaries*. Retrieved April 14, 2015, from <u>http://www.oxforddictionaries.com/</u>
- Parent, M., & Maclean, L. (2014). Go with the flow: Discovering new workflows in Alma. Proceedings from the VALA2014 17th Biennial Conference and Exhibition. Retrieved November 15, 2014, from <u>http://www.vala.org.au/vala2014-proceedings/vala2014session-14-parent</u>
- Pickard, A. J. (2013). *Research methods in information* (2nd ed.). London, England: Facet.
- Raskin, J. (1994). Intuitive equals familiar. Communications of the ACM, 37(9), 17-18.
- Reed, L. (2010, April 1). When the going gets tough, the staff needs more training. *Computers in libraries,* 6-11. Retrieved from the EBSCOHost database.
- Rico, D. F. (2008). What is the ROI of agile vs traditional methods? Retrieved January 17, 2015, from <u>http://davidfrico.com/rico08b.pdf</u>

- Rochkind, J. (2007, June 11). Ex Libris' 'URM strategy,' and the future of library software. [Web log post]. Retrieved March 28, 2015, from <u>https://bibwild.wordpress.com/2007/06/11/exlibris_urm/</u>
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). New York, NY: Free Press.
- Spool, J. M. (2005, January, 10). What makes a design seem 'intuitive'? User Interface Engineering. Retrieved May 28, 2015, from http://www.uie.com/articles/design_intuitive/
- Spring, K., Drake, M., & Romaine, S. (2013). How is that going to work? Rethinking Acquisitions in a next-generation ILS. *Proceedings of the Charleston Library Conference*. doi:10.5703/1288284315289
- Tietze, S. (2012). Researching your own organisation. In G. Symon & C. Cassell's *Qualitative* organizational research: Core methods and current challenges (pp. 53-71). London, England: Sage.
- University of Auckland. (n.d.). Retrieved March 25, 2015, from https://www.auckland.ac.nz/
- University of Auckland Libraries and Learning Services. (n.d.). Retrieved October 19, 2014 from <u>http://www.library.auckland.ac.nz/</u>
- University of Auckland Libraries and Learning Services. (2014). *Annual report 2013*. Retrieved March 10, 2014, from <u>http://www.library.auckland.ac.nz/about-us/our-organisation/annual-reports-and-library-client-survey</u>
- University of Auckland Libraries and Learning Services. (2015). *Annual report 2014*. Retrieved March 18, 2015, from <u>http://www.library.auckland.ac.nz/about-us/our-organisation/annual-reports-and-library-client-survey</u>
- Yang, H., & Tate, M. (2012). A descriptive literature review and classification of cloud computing research. *Communications of the Association for Information Systems*, 31(1), 35-60. Retrieved October 16, 2014, from <u>http://aisel.aisnet.org/cais/vol31/iss1/2</u>
- Yin, R. K. (2014). *Case study research: Design and methods* (5th ed.). Thousand Oaks, CA: Sage.

9. APPENDICES

Appendix A: Email for distribution to target population

INFO 580 Research Project and Alma Fulfillment Survey

This project is designed to analyse the impact of cloud software's agile development on staff roles and client services delivery in the tertiary library environment, in order to determine what strategies or mechanisms need to be deployed to support client services, using the University of Auckland as a case study. The primary focus of my research is Alma Fulfillment, the functional area of Ex Libris Alma which supports circulation, as well as resource requests, course reserves, and resource sharing, and is therefore fundamental to the effective and efficient delivery of client services. Victoria University requires, and has granted, approval from the School's Human Ethics Committee.

To gain user perspectives, I am inviting client services staff (Levels 1-4) at the University of Auckland Libraries and Learning Services to participate in an online questionnaire. The questionnaire should take between 10-15 minutes to complete. All data collected will be kept securely in a password protected file. The survey link is below:

http://vuw.qualtrics.com/SE/?SID=SV_9vuzdwggusQR0fb

The survey will be open between Monday 30 March and Friday 24 April 2015.

If you have any questions or would like to receive further information about this research, please contact me at <u>sinclabryo@myvuw.ac.nz</u> or you may contact my supervisor, Dr Chern Li Liew, Senior Lecturer, at <u>chernli.liew@vuw.ac.nz</u> or telephone (04)463-5213.

Bryony Sinclair

Email: sinclabryo@myvuw.ac.nz

Appendix B: Participant Information Sheet

Alma Fulfillment Survey

Bryony Sinclair, School of Information Management, Victoria University of Wellington

As part of the completion of my Master of Information Studies (MIS) degree at Victoria University of Wellington, this research is designed to analyse the impact of cloud software's agile development on staff roles and client services delivery in the tertiary library environment, in order to determine what strategies or mechanisms need to be deployed to support client services. Victoria University requires, and has granted, approval from the School's Human Ethics Committee.

Agile software development means that the product is typically released early in the development process, and frequent upgrades are pushed by the service provider via the Internet after implementation. The cloud-based Ex Libris Alma system implemented at the University of Auckland in 2014 is software which has been developed through agile methods. Using the University of Auckland as a case study, my research primarily focuses on the Alma Fulfillment, the functional area of Alma which supports circulation, as well as resource requests, course reserves, and resource sharing, and is therefore fundamental to the effective and efficient delivery of client services in the tertiary library.

To gain user perspectives, I am inviting University of Auckland Libraries and Learning Services' client services staff (Levels 1-4) to participate in my research. This questionnaire should take between 10-15 minutes to complete, and will be open between Monday 30 March and Friday 24 April 2015.

By submitting the questionnaire, you are agreeing to participate in this research. Participation is voluntary, and completely anonymous. You will not be identified personally in any written report produced as a result of this research, including possible publication in academic conferences and journals. All material collected will be kept confidential, and will be viewed only by myself and my supervisor, Dr Chern Li Liew, Senior Lecturer in the School of Information Management. The research report will be submitted for marking to SIM, and subsequently deposited in the Victoria University of Wellington Library. The research findings may also be presented at an appropriate conference and/or published in a journal. All data collected from participants will be destroyed within 2 years after the completion of the project.

Thank you for participating in this research. If you have any questions or would like to receive further information about the project, please contact me at sinclabryo@myvuw.ac.nz or you may contact my supervisor Dr Chern Li Liew at chernli.liew@vuw.ac.nz or telephone (04) 463-5213.

Bryony Sinclair

Appendix C: Survey questions

Questionnaire

Part 1

Responses relating to your employment in the tertiary library sector are completely anonymous, and data collected will be aggregated.

Q1*

Do you currently work in a client services role at the University of Auckland Libraries and Learning Services?

O Yes

O Not sure

O No

If *No* Is Selected, Then Skip to End of Survey

Q2*

Do you currently work as a desk assistant, library assistant, consultant, coordinator, client services librarian, or after-hours supervisor (Levels 1-4 only)?

O Yes

O No

If No Is Selected, Then Skip to End of Survey

Q3

How long have you worked in client services at the University of Auckland Libraries and Learning Services altogether?

- **O** Less than 1 month
- **O** Between 1 and 5 months
- **O** Between 6 and 11 months
- Between 1 and 2 years
- O More than 2 years

Q4

In an average week, how many hours do you work in client services at the University of Auckland Libraries and Learning Services?

- \mathbf{O} Less than 10 hours
- **O** Between 10 and 19 hours
- O Between 20 and 29 hours
- **O** More than 30 hours
- Fulltime (37.5 hours)

Q5

In your client services role, which of the following patterns do you primarily work?

- **O** Weekdays
- **O** Weekday mornings
- **O** Weekday afternoons
- **O** Weekday evenings
- **O** Weekend days
- Weekend mornings
- **O** Weekday afternoons
- **O** Weekend evenings
- $\mathbf{O} \quad \text{None of the above} \quad$

Part 2

Display If

How long have you worked in client services at the University of Auckland Libraries and Learning Services altogether?...Less than 1 month

Is Not Selected

Or

How long have you worked in client services at the University of Auckland Libraries and Learning Services altogether?...Between 1 and 5 months Is Not Selected

Please select the option that best describes your position for each of the following statements about the implementation of Ex Libris Alma at the University of Auckland in 2014.

Display If

How long have you worked in client services at the University of Auckland Libraries and Learning Services altogether?...Less than 1 month <u>Is Not Selected</u> Or

How long have you worked in client services at the University of Auckland Libraries and Learning Services altogether?...Between 1 and 5 months Is Not Selected

Q6

Prior to Alma's launch at the University of Auckland in September 2014, I read most of the communications sent out about the new library system.

- O Strongly Agree
- O Agree
- **O** Neither Agree nor Disagree
- **O** Disagree
- **O** Strongly Disagree

Display If

How long have you worked in client services at the University of Auckland Libraries and Learning Services altogether?...Less than 1 month <u>Is Not Selected</u> Or How long have you worked in client services at the University of Auckland Libraries and Learning Services altogether?...Between 1 and 5 months

Is Not Selected

Q7

Before Alma's launch, I generally felt informed about the Library's shift from Voyager Circulation to the new system.

- O Strongly Agree
- O Agree
- **O** Neither Agree nor Disagree
- O Disagree
- **O** Strongly Disagree

Display If

How long have you worked in client services at the University of Auckland Libraries and Learning Services altogether?...Less than 1 month

Is Not Selected

Or

How long have you worked in client services at the University of Auckland Libraries and Learning Services altogether?...Between 1 and 5 months

Is Not Selected

Q8

Prior to Alma's launch in September 2014, I was aware of the reasons the Library was adopting a new library management system.

- **O** Strongly Agree
- O Agree
- **O** Neither Agree nor Disagree
- **O** Disagree
- **O** Strongly Disagree

Display If

How long have you worked in client services at the University of Auckland Libraries and Learning Services altogether?...Less than 1 month

Is Not Selected

Or

How long have you worked in client services at the University of Auckland Libraries and Learning Services altogether?...Between 1 and 5 months <u>Is Not Selected</u>

Q9

Before Alma's launch in September 2014, I received training on Alma Fulfillment in the following (select all options that apply):

- Circulation Users Group training
- □ Targeted workshops at my library
- □ On-the-job training from my team leader/supervisor
- □ Other (please specify):
- □ I didn't receive any training prior to Alma's launch

Display If

How long have you worked in client services at the University of Auckland Libraries and Learning Services altogether?...Less than 1 month

Is Not Selected

Or

How long have you worked in client services at the University of Auckland Libraries and Learning Services altogether?...Between 1 and 5 months

Is Not Selected

Q10

Prior to Alma's launch in September 2014, I would have preferred more training on using Alma Fulfillment.

- **O** Strongly Agree
- O Agree
- **O** Neither Agree nor Disagree
- **O** Disagree
- **O** Strongly Disagree

This section relates to the six months since Ex Libris Alma was launched at the University of Auckland in September 2014, or since you started working in client services at the University of Auckland, if less than six months ago.

Q11*

Since the launch of Alma at the University of Auckland in September 2014, I have received training on Alma Fulfillment.

- O Yes
- **O** Not sure
- O No

Display If

Since the launch of Alma at the University of Auckland in September 2014, I have received training on Alma Fulfillment...No Is Not Selected

Q12

Since September 2014, I have received training on Alma Fulfillment through the following (select all options that apply):

- □ Induction training when I started working in client services at the University of Auckland
- □ Targeted workshop(s) held at my library
- □ On-the-job training from my team leader/supervisor
- Other (please specify below): _____

Q13

My preferred learning style is (please select one of the options provided, or add your own response)

- **O** Hand-outs
- **O** Instructional videos
- **O** Webinars
- **O** Self-directed (e.g. from online help)
- **O** One-on-one training with supervisor/team leader
- Peer training
- **O** Group training
- O Other (please specify below): _____

Q14

I know where to find information about using Alma Fulfillment in my role.

- Strongly Agree
- O Agree
- **O** Neither Agree nor Disagree
- **O** Disagree
- **O** Strongly Disagree

Q15

I know how often fixes and enhancements are carried out on Ex Libris Alma in the agile development process.

- Strongly Agree
- O Agree
- **O** Neither Agree nor Disagree
- O Disagree
- **O** Strongly Disagree

Q16

I receive information about fixes and enhancements being made to Alma Fulfillment that are relevant to my role in good time.

- O Strongly Agree
- O Agree
- **O** Neither Agree nor Disagree
- **O** Disagree
- **O** Strongly Disagree

Q17

I would prefer to receive more information about the types of fixes and enhancements being made to Alma Fulfillment that are relevant to my role.

- **O** Strongly Agree
- O Agree
- **O** Neither Agree nor Disagree
- **O** Disagree
- **O** Strongly Disagree

This section relates directly to Alma Fulfillment and your role.

Q18

How often do you perform the following tasks using Alma Fulfillment in your role?

	Select response for each task						
	Usually	Often	Sometimes	Rarely	Never		
Adding fines and fees	•	•	0	•	О		
Filling digitised requests	•	•	0	•	O		
Filling physical item requests	•	•	0	0	О		
Issuing items	0	0	0	0	O		
Paying fines and fees	•	•	0	•	O		
Processing claims returned items	o	O	0	O	o		
Processing course reserves	0	0	0	0	0		
Processing expired holds	•	•	0	•	О		
Processing lost items	•	•	0	•	О		
Processing missing items	•	•	0	•	О		
Renewing items	•	•	•	•	O		
Returning items	•	•	•	•	•		

	Select response for each task						
	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree		
Adding fines and fees	О	0	•	О	О		
Filling physical item requests	О	O	•	О	О		
Filling digitised requests	О	0	0	0	О		
Issuing items	O	Ο	0	Ο	O		
Paying fines and fees	О	O	•	О	О		
Processing claims returned items	O	O	0	0	O		
Processing course reserves	0	0	0	0	0		
Processing expired holds	О	0	•	О	O		
Processing lost items	О	0	0	О	О		
Processing missing items	O	O	O	О	O		
Renewing items	O	0	•	О	O		
Returning items	О	Ο	Ο	О	О		

Q19 Do you feel confident performing the following tasks using Alma Fulfillment in your role?

Q20

Overall, do you find Alma Fulfillment easy to use in your role?

- Strongly Agree
- O Agree
- **O** Neither Agree nor Disagree
- O Disagree
- **O** Strongly Disagree

This section seeks your views on using Alma Fulfillment to deliver client services.

Q21

What is your most liked feature of Alma Fulfillment? Please comment on the reason(s).

Q22

Please comment on advantages in using Alma Fulfillment to deliver client services, in your personal view.

Q23

What is your least liked feature of Alma Fulfillment? Please comment on the reason(s).

Q24

In your opinion, are there any functions or features of Alma Fulfillment that could be improved in order to enhance delivery of client services?

This section relates to your knowledge and use of technology outside the workplace.

Q25

- Do you own one or more mobile devices?
- O Yes
- O No

Q26

Are you an early adopter of new technologies?

- O Yes
- **O** Sometimes
- O No

Q27

Do you use cloud computing outside work hours?

- O Yes
- O Not sure
- O No

Q28

How knowledgeable are you about cloud computing and how it works?

- **O** Very knowledgeable
- **O** Quite knowledgeable
- **O** About average
- O Somewhat knowledgeable
- **O** Not very knowledgeable

Q29

Before taking this questionnaire, were you aware what agile software development was?

- O Yes
- O Not sure
- O No

Part 7

Q30

Thank you for taking the time to complete this survey. If you are interested in receiving a short summary of research findings, please enter your email address in the box below. All email addresses will be removed before data is analysed to preserve your anonymity.



Appendix D: Survey findings for questions 18 and 19

Q18: How often do you perform the following tasks using Alma Fulfillment in your role?

























Q19: Do you feel confident performing the following tasks using Alma Fulfillment in your role?























