

CURRENT INTERESTS

Use of Mobile Technologies by Law Students in the Law Library: a Detailed Investigation

Abstract: This paper follows up from a previous study on this topic and outlines the second part of a wider, two-part study on the information seeking behaviour (ISB) of law students. Exploratory work was outlined in a previous publication¹⁷ and there we found that although mobile technologies offered benefits to law students seeking information for their academic studies, there was concern from law librarians that the use of electronic resources via both non-mobile and mobile interfaces resulted in a loss of skills required for information retrieval due to the increasing capabilities of electronic resources' search interfaces. To gain more insight into how law students were using mobile information resources, and better understand the advantages and disadvantages of such, we extended our study to a wider cohort and employed more research techniques including a focus group. This final phase of our study was conducted between 2015 to 2017. Here our cohort included another set of law librarians (13) and a further 54 law students. We expanded our research tools to include 2 thematic questionnaires and a focus group exercise. Our findings discovered that law librarians were concerned with the intangibility of digital formats. Law students remained indifferent to this aspect and valued the speed, multi-tasking and near-ubiquitous accessibility attributes that electronic format use via mobile technologies provided. These learnings and more, with conclusions, are reported in the course of this paper written by Zaki Abbas, Andrew MacFarlane and Lyn Robinson.

Keywords: law students; legal research; mobile technology; surveys

INTRODUCTION

Our previous papers^{4,17} outlined our motivation and findings in the area of how law students used mobile technologies to access academic legal information, this was on the back of a wider literature review which outlined the addictive nature of mobile devices and their impacts on information seeking in general.¹ These devices provided the platform upon which vendors would build applications and services so to maximise the time individuals spent on their screens and there were all kinds of service providers who had tapped into this competitive market space.² We decided to focus on this specific cohort given the voluminous amount of text-based information they are required to examine and the intrinsic challenges this might bring when viewed from a mobile device¹⁸

When it comes to education, mobile technologies are a fact of life, firmly meshed into the livelihoods of generation Z and the millennials alike.³ These devices have

successfully started to bridge gaps between students and teachers by fostering greater collaboration including the use of effective cloud-based document sharing, real-time messaging and video conferencing. Motivated by this observation, we examined how these technologies impacted end-user behaviours for a specific subset of students. We looked at law students in the U.K. and how their information seeking behaviours had been impacted using mobile technologies and the provision of electronic resources within the law library space. We knew from the available literature outlined in our previous studies^{4,17} that students were no longer pinned down to working at a specific location to access library services. This not only provides opportunities for both students and law librarians for flexible learning but also presents challenges on how best to manage service provision through, increasingly used, mobile devices. These are the topics that our research investigated and outlined within this paper.

Our previous publications highlighted the initial research project questions posed and objectives^{4,17}, with findings from the various activities reported within. Findings noted law librarians to be taking a pro-active view of mobile technology usage in a library setting and in working closely with both law students and legal information providers to help exploit mobile technology usage on this context. We also found law students to be confident in their use of mobile technologies and able to shift technology type usage for their academic information seeking in a given context. Both digital and paper-based formats presented challenges and these were noted in our earlier findings.⁴ Barriers outlined especially for the access of legal content via mobile devices with smaller screens proved to be prominent and long-term study using these technologies outlined as impractical by both law librarians and law students alike. To illustrate the understanding of the information seeking behaviour (ISB) of law students searching for legal content via the technologies available to them we built a model that was proposed in our previous paper.⁴ Our study helped us find out how law students were using the many technologies including mobile devices in the law library for their academic information seeking needs and we learnt that although smartphones were the most dominant mobile technology, tablet devices were also occasionally used. Laptops, whilst not specifically classed as a mobile technology per se, maintained a key position for law students conducting legal research and dominated the landscape when it came to activities where information creation – i.e. taking notes, writing essays, etc. was required. Despite this, paper-based resources still maintained a sizable preference amongst the cohort examined.

STUDY BACKGROUND AND CONTEXT

In our previous paper⁴ we used three research instruments which consisted of interview questions and electronic questionnaires fielded to law librarians and law students respectively. The results showed that law librarians were very supportive of the use of mobile technologies to access legal information and favoured law students' readiness towards accessing materials through mobile platforms, literature in this field also supported these views.^{5,6} There were concerns over the limited functionalities that technologies such as smartphones would invite given their limited processing capabilities and physically smaller screens, ill-designed for reading large volumes of legal text. We noted that law students were relatively fluid in their choice of technology use and were often confident in making the selection of technology type dependent on their contextual circumstances. Yet librarians voiced concerns at the possible over-dependence law students displayed towards these technologies, also found in literature.⁷ Our approach in the exploratory study included the use of three research

instruments¹⁷ and the outputs from these helped us form the following conclusions. We discovered that law students' searches were mostly initiated through electronic means – primarily driven through accessing the library catalogue via a smartphone – and this created an inadvertent bias towards digital formats from the outset. Hence if resources were available in both paper-based or electronic, given the initial journey being digital, law students would be likely to continue down that path and fulfil their information seeking need without consulting a paper-based resource, if possible. The capabilities of electronic resources – being accessible via an internet connection – continued to mature towards providing students with a convenient and flexible information service.

Mobile technologies only accelerated this phenomenon by leveraging their portable attributes to a greater application and eventually appearing to overshadow the use of paper-based resources to a significant extent. This pattern troubled the law librarians and they incorporated many strategies to both accommodate the use of electronic resources whilst encouraging use of the wider collection of paper-based content available. Our understanding of the drivers for using the various technologies to access legal resources was illustrated in the proposed model, which when compiled with our findings, leads to an illustration that can be used to elaborate on the ISB of law students more concisely. We also found out about the concerns law librarians had about the impact electronic resources were having on law students research skills – abilities that were an essential part of the professional practice – were now under threat due to the automation and intelligent search capabilities that digital formats could deliver. Hence all three of our research questions as outlined on page 182 in our previous paper⁴ were addressed with the remaining objectives to be fully met.

To succeed in our endeavour, we employed the same research instruments as well as 3 further methods against a new cohort set. The output enabled us to assess the implications the use of mobile technologies has had on academic law librarians and the information services they provided as well as law students insights into mobile technology usage and electronic resource provision. We sought to refine our proposed information seeking behaviour model by using a focus group comprised of law students where their endorsement and inputs would assist in the model's completeness. Our discoveries would also go on to help form a set of recommendations that will better inform law librarians on the ISB of law students in these exciting and changing times.

RESEARCH METHODOLOGY

The overall research methodology employed mixed methods, which are widely used in studies of this sort. For the work reported here, interviews, questionnaires and a focus group study were employed.^{34,35} **Research Instruments I, II and III** were re-distributed to a new

sampling cohort of law librarians and law students. These instruments have already been outlined on p183 in our previous paper.⁴ However, the new instruments we employed in this final study are described here;

Research Instrument IV: the Law Librarian Thematic Questionnaire: was an interview-based approach and the participating law librarians were a subset of those who had already contributed to research instrument I in the detailed investigation. Questions posed to this cohort were created after a thematic analysis of the inputs of Research Instrument I (The Law Librarian Interview). The focus of this questionnaire was to look firstly at the following themes which were inductively and deductively identified respectively¹⁰.

Access vs. Ownership: Law librarians' perceptions on the nature of electronic resources being relatively intangible compared to paper-based products.

Design of electronic resources: The law librarians' perception on what a well-designed legal information resource would look like.

Research Instrument V: the Law Student Thematic Questionnaire: was an electronic questionnaire built to extract qualitative responses. Like research instruments II and III, the rationale for using electronic media to distribute this questionnaire was to capture as many responses from law students as possible. This questionnaire was designed based on the responses received from research instruments II and III. The two emerging themes were found from the analysis of the results during the exploratory study and detailed investigation, these were rationalised to;

The use of mobile technologies: how law students used mobile technologies in the context of academic information seeking.

Design of electronic resources: whilst we had asked a similar question to law librarians, we wanted to capture law students' views on what an ideal legal information resource look like considering the many attributes of existing resources and what did or did not work well.

Research Instrument VI: the Focus Group; was a paper-based questionnaire containing both qualitative and quantitative questions that would be structured around an interactive group-discussion. The question content and structure were assembled from outcomes provided through the responses to all the other research instruments. Law students from a variety of stages in their courses were approached to obtain as fair representation of the cohort as possible. We took the opportunity to obtain first-hand feedback on the proposed law student information seeking behaviour (LSISB) model and where possible, refine it.

THE STUDY PARTICIPANTS

For a re-deployment of research instruments I, II and III we managed to overcome some of the sampling issues we outlined in our earlier paper covering our exploratory study.¹⁷ The demographic detail of the participating

Table 1 – Academic Law Librarian Participation

Higher Education Institution (HEI)	N	%
England	8	61%
Wales	2	15%
Scotland	2	15%
Northern Ireland	1	8%

Table 2 – Law Student Participation

Course Type	N	%
LLB – 1 st Year	7	14%
LLB – 2 nd Year	6	12%
LLB – 3 rd Year	8	16%
LLM – 1 st Year	15	30%
LLM – 2 nd Year	6	12%
PhD/Research – 1 st Year	1	2%
PhD/Research – 2 nd Year	2	4%
PhD/Research – 3 rd Year	1	2%
GDL	4	8%

cohort is covered in tables 1–3. Academic law librarians, viewed as 'gatekeepers' of legal information,^{36,37} were selected to be part of the research cohort due to their role within the academic legal information provision domain. Their participation for Research Instrument I – Law librarian interview was as follows;

For Research Instrument IV – The law librarian thematic questionnaire, we found 3 librarians who were a subset of the above cohort participating with the cohort including 2 from HEI's in England and 1 from Scotland. The total number of law students who completed the questionnaires for Research Instruments II and III was 50. These students were drawn from a group of 7 HEI throughout the UK, widening the participant scope compared to the cohort that took part in the exploratory study as outlined in our earlier paper¹⁷ and now contained students at the following stages of their courses;

For research instrument V we had nine law students taking part from five HEI in England and one HEI in Wales. And for research instrument VI we had a total of six law students all from the same English HEI.

COHORT SAMPLING ISSUES

Sampling issues encountered during the research included limited law student participation in research instruments II and III as the group was largely made up of undergraduates and LLM students with a small proportion of research students. Only three law librarians participated in research instrument IV; law librarian thematic

Table 3 – Smartphone Usage - t-Test: Paired Two Sample for Means

Smartphones	Non-study related information?	Study related information?
Mean	4.24	2.36
Variance	5.41	3.58
t Stat	6.26	
P(T<=t) one-tail	0.0000000472	
t Critical one-tail	1.68	
P(T<=t) two-tail	0.0000001	
t Critical two-tail	2.01	

questionnaire. Whilst 11 law students responded to the questionnaires for research instrument V, most of these students came from HEI based in England (5) with only one from Wales. Law student participation in research instrument VI – the focus group, included students from only one HEI.

RESULTS

To help support our focus we grouped our findings around some key themes from the responses to the questions posed to this cohort during our re-deployment of research instruments I, II and III and then used research instruments IV, V and VI to provide more focus on these key areas;

OWNERSHIP VERSUS ACCESS

Law librarians were positive on the accessibility and space saving opportunities that electronic resources provided⁹ however they remained concerned that these products were generally built on a subscription for access model, this challenged the tangible model that paper-based resources provided. These concerns were also shared by other subject librarians as they challenged the very fabric of the traditional library.⁸ Literature in the area suggested a more joined-up effort of librarians pooling their purchasing power more effectively to leverage better pricing for resourcing and accessibility terms.⁹ Our research found law librarians wanting to maintain their hold on paper-based resources especially at times when electronic resources had proven to be difficult to access due to technical problems or when vendors had unilaterally altered the access method and removed the availability of a specific resource through a portal for business reasons.²³ Libraries in general have worked with a model where the volume, scope and breadth of their collections were a measure of their success, where quality and quantity were interwoven concepts. Digital resources challenged that very notion and had brought about a new service model which could be used to measure a library's strength, that of access to leased resources.^{20,21} Digital content was clearly a totally different proposition

altogether and has challenged this traditional role that law librarians had been accustomed to having when it came to ownership of resources.²² Ultimately digital resources brought a new set of opportunities for law libraries, to reduce shelf space being a primary advantage but also the potential to re-invent itself as a different type of organisation where both electronic and non-electronic resources work together but are managed differently as per their individual characteristics.¹⁹ Having said that, ownership of digital content was a topic raising a lot of interest from law librarians,^{24,25} however for law students this aspect was never a concern and was not raised at any point during our engagement with them.

DESIGN OF RESOURCES

Digital resources were becoming more intelligent and thus the onus of research was placed more on the resource itself as opposed to the law student. This in turn resulted in a cohort that was increasingly reliant on using electronic means to locate resources which would inadvertently lead to a more digitally-biased usage as opposed to exposing students to a wider collection of both electronic and paper-based material. Law librarians saw this trend as a risk of potential over-dependence on even specific types of digital resource and the corresponding content within to be a dominant influence in the legal understanding for law students. This raised the questions on whether electronic resources were a benefit to legal education and whether their use needed to be more strictly managed in favour of a more balanced environment where the entire spectrum of legal resources would be used. Efforts had been made in this area nonetheless with the law librarian cohort advising on such examples of mobile-friendly library catalogues, providing mobile tablet devices to law students with pre-loaded content as well as interactive user-classes to help encourage the effective use of digital legal databases and other legal products. Studies in this area have also been carried out to help guide law librarians through this significant digital transformation whilst maintaining publisher and content neutrality and ensuring that all resources get the most exposure to the end user conducting a search.^{11,12,13,14}

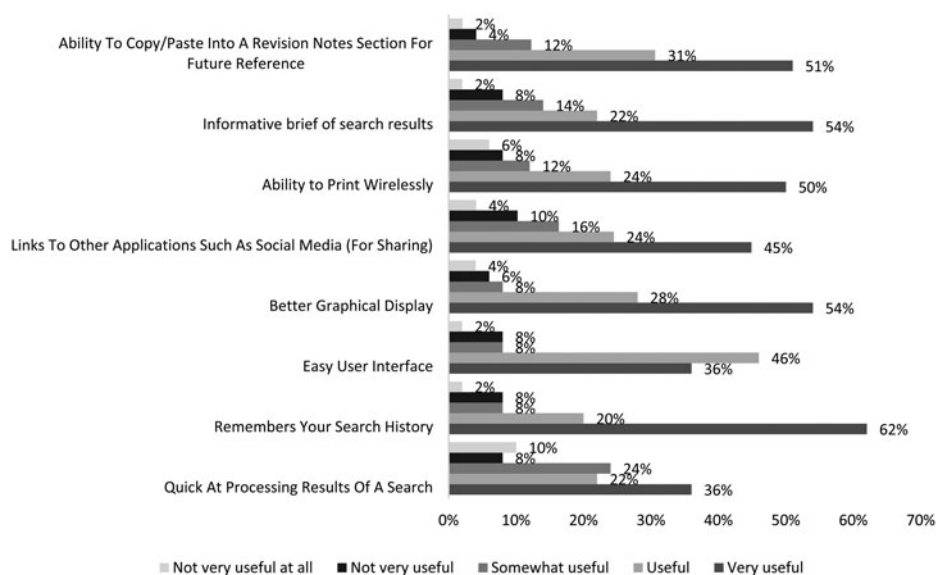


Figure 1: What functions would you deem useful for a study related app to have for your smartphone?

Law students reported that for smartphones, the ideal legal resource would be expected to have several attributes that were like those found in applications installed on laptops such as wireless printing, ability to copy/paste content to create revision notes, etc. They wanted retrieved content to be condensed so that it could be read on a smaller screen and a graphically enhanced user-interface that remembered search queries. Amongst others, the key drivers for using electronic resources were reliability of content, user-friendly interfaces and the depth of information and content they provided.

For tablet devices, the desired attributes were different; law students showed that they were more inclined to be impatient when using tablet devices than smartphones. Accessibility of legal information was also raised as an important attribute as well as access for the disabled student population and user-friendly controls. These were essential aspects and any products that fell short of these requirements would risk facing hesitation towards further adoption and integration into the law library domain.¹⁵⁻¹⁶

Overall, we noted from the students' feedback about their dependence on electronic resources, enforcing the observation made by law librarians of law students' perceived lack of knowledge on what resource would be the most appropriate given their specific legal information need. These matters have been noted in related literature.^{26-27,28} Law students were primarily concerned with being able to locate the information they required with as little effort as possible. Their view was that electronic resources were capable enough to conduct the research for them and enable them to spend more time comprehending the results. Our focus group participants also reflected this sentiment. This presented a significant shift in end-user behaviour compared to earlier generations of law students who would often spend hours in the law library searching through the vast paper-based collection of content. Traditional paper-based legal information

search process was considered a cumbersome and laborious effort which may compromise the available time students could spend on their examination of the texts as opposed to locating them.

USE OF MOBILE TECHNOLOGIES

Barriers to using a smartphone for academic information retrieval included the instability of the application, pop-up adverts leading to distraction, lack of functionality or restrictive functions, slow responses to search and poor compatibility with the smartphone operating system/form-factor. Tablets were not only inhibited by the same barriers as smartphones, but law students also indicated that they would be less tolerant of using a resource that lacked functionality on a smartphone than that on a tablet device, largely due to the former technology being of a more portable nature. Laptops remained a popular and well-trusted technology that provided the right level of functionality, capability, interoperability and durability for most if not all the law students' needs.

For the thematic questionnaires, 66% (N=6) of the cohort reported that they used mobile technologies to access legal resources in some form or another. Smartphones were the most popular type of mobile technology used by students for accessing legal information, with reasons for using mobile technologies for this purpose being the speed (33%/N=3) at which information could be retrieved as well as the portability these devices provided (66%/N=6). The key complaints law students had tended to align with that of law librarians primarily in that mobile devices' screens were too small to be deemed well-suited for the examination of detailed legal content especially for long term study periods, whilst these technologies were better suited for long-term social information usage. Our statistical analysis of the results validated this assertion by way of employing a student's t-test;

$\mu_{0SMRTNS}$ = Time law students spent on smart-phones for non-study related information seeking

μ_{1SMRTS} = Time law students spent on smart-phones for study related information seeking

Our hypotheses were set as: $H_0 : \mu_{0SMRTNS} = \mu_{1SMRTS}$ and $H_1 : \mu_{0SMRTNS} \neq \mu_{1SMRTS}$

Our results showed that $t_{stat} > t_{crit}$ i.e. $6.26 > 2.01$, leading us to conclude that there is a significant difference at the 5% level and so we can reject the hypothesis on the basis that there is a significant difference between the mean time law students spend on their smartphones for academic information seeking and the mean time they spend on their smartphones for non-academic information seeking. Similarly, for tablet devices our results found no significant difference between the mean time law students spent on their tablet devices searching for academic legal information compared to that of non-academic information seeking. Similar results were found for laptops where again there was no significant difference between the two types of information seeking and the same again for desktop computers. These results demonstrated that smartphone devices had an elasticity of usage dependent on the type of information seeking being conducted, with usage decreasing inversely for academic research as time spent increased, while proportionally increasing in usage when time spent for non-academic research (or social information seeking) took place. This, together with the other findings, illustrated the dramatic change in user behaviour to that of students from earlier generations where mobile technologies of this type did not exist and high-speed internet access was not the norm.^{29,30,31,32}

DISCUSSION AND REFINEMENTS TO PROPOSED MODEL

We used the output from each of the research instruments to map against the existing attributes of the proposed ISB model. This helped solidify our models build and support the model's association with the feedback provided by both cohorts who participated in the study.¹⁸ Librarians continued to voice their concerns over the intangibility of electronic resources and fears that law student may become too dependent on mobile technologies (through web-based tools and apps) to conduct most of their initial research, leading to over-dependence on the resource that retrieved the most results and at a quicker speed.

We found an impatient law student cohort which would be quick to dismiss an information resource on the grounds of speed and quantity of output and look increasingly towards user-friendly, multi-tasking capable and largely self-automated discovery tools. However, students still wanted to remain near paper-based resources and larger end-user computing devices such as desktop computers and laptops, both of which delivered multi-tasking

capabilities and larger screens. These technologies had attributes that mobile devices were unable to successfully compete with. We further refined our proposed ISB model using our focus group study, giving students the opportunity to validate the model's attributes as well as propose new ones. As for resources themselves, the groups motivation was to examine the content itself. The desire to spend time and effort searching for it was clearly not as strong as law librarians would like to have seen. This clearly showed a significant shift in the attitudes and more so the information seeking behaviours of law students in today's era where modern technology had allowed for information to be retrieved at greater speeds, with richer variety of content and all this in a near ubiquitous manner through mobile devices, resulting in the creation of an impatient generation.^{33,34} Thus, we refined our proposed ISB with additional attributes illustrating our findings from this final research phase.¹⁸

SUMMARY AND CONCLUSION

Our efforts resulted in a set of proposals for both academic law librarians and law students that would provide them a summary of our findings and use these to help better inform on the design of legal information resources. This also provided supporting insight into the management of the increasingly digital legal content landscape through the various observations we made throughout our research from the cohorts who took part. Academic law librarians were very supportive of electronic resources and had provided a lot of support for law students however they needed support from their IT Departments as well as institutions overall to help fund the additional overheads for managing these products. Ownership of digital content was a concern raised throughout the interview process and librarians were reminded of the harsh reality of digitalization of content when at times products were unilaterally changed by vendors without the librarians being aware or consulted. It was clear that digital content was delivered via a subscription-based model presented a dramatic shift from the traditional tangibility of paper-based resources that generations of librarians were so accustomed to and their departmental model built upon. Our research discovered most of the law librarian cohort facing similar challenges in terms of managing the increasingly digital resource collection they were subscribing to. Discussions led to the need to provide a more unified approach to address these challenges given the changes digital subscriptions present over paper-based subscriptions which are tangible and do not pose the same risk in terms of ultimate ownership. Because our model was focussed on the ISB of law students, this aspect was not included in it, however we recommend that law librarians and their respective HEI create a steering group which will seek to build a forum in which the changes that electronic resources are bringing to the law library domain can be outlined and addressed. This steering group will

potentially provide a greater combined customer base from which law librarians could leverage greater purchase discounts and manageability of service provision from legal information product vendors. We found that law librarians faced challenges in training new law students in the skill of conducting legal research and that the growing digitalisation of the library domain inadvertently added a layer of complexity by making the search for legal content more user-friendly and less structured. Law librarians were making isolated efforts to address these challenges in a variety of ways which were providing positive results, but we could not help but recommend that it would be more effective and meaningful for a wider strategic approach to such a key need. Therefore, we recommend that law librarians create a standard set of training guidelines which can be applied to all law students throughout their studies, delivering a uniform approach to legal research and include both paper-based and electronic resources. A standard legal research training module would not have to be enforced upon all HEI in their entirety and HEI would be at liberty to implement customised versions to suit their specific training methods, however there are opportunities for HEI to combine their efforts somewhat, even at the basic level, to address a common change that they all face – the growth of mobile technologies in their space and the impact these devices have on law students' information seeking behaviours. Law students showed a transitive behaviour for using mobile technologies in that their choice of device changed with their context and overall, electronic resources were popular and there was a

demand for more resources to be made available in this format. Where found, well-designed user interfaces were very popular amongst both law librarians and law students. Overall, we noted that products that ported well between the several types of mobile technologies and made intelligent use of the different form-factors and corresponding functionalities would be a significant benefit to law students and despite the popularity of electronic resources, information printed on paper remained in demand. Our research was concluded resulting in a refined ISB model which we proposed as one which would go towards illustrating law students' academic information seeking behaviours in the context of both paper-based and electronic resources being accessed by the various technologies at their disposal.

RESEARCH ETHICS

All research outputs were checked to ensure that no identification could be made possible of the participants, be it by direct, or deductive disclosure.³⁵ An incentive was employed where each participating law student was awarded a £5 Amazon Gift Voucher for each completed electronic questionnaire. Academic law librarians who participated in the research study did not receive any remuneration and their contribution is highly appreciated. All these methods of engagement and conduct were approved by the ethics committee of the Department of Computer Science Ethics Committee (CSREC).³⁶

Footnotes

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INTERNATIONAL PERSPECTIVES

References to Artificial Intelligence in Canada's Court Cases

Abstract: Artificial intelligence (AI) is a widely discussed topic in many fields including law. Legal studies scholars, particularly in the domain of technology and internet law, have expressed their hopes and concerns regarding AI. This project aims to study how Canada's courts have referred to AI, given the importance of the reasonings of justices to the policy makers who determine society's rules for the usage of AI in the future. Decisions from all levels of both Canada's provincial and federal courts are used as the data sources for this research. The findings indicate that there are four legal contexts in which AI has been referred to in the Canadian caselaw including: legal research, investment tax credits, trademarks and access to government records. In this article the authors use these findings to make suggestions for legal information management professionals on how to develop collections and reference services that are in line with the new information needs of their users regarding AI and the rule of law.

Keywords: artificial intelligence; AI; law; information management; Canada

INTRODUCTION

AI is an emerging and disruptive technology that has already changed how information is managed and

processed and promises to continue doing so in the future. In this paper, we discuss the changes and impacts of AI in the area of legal information management by