App Advisory in Research Library Websites: A Preliminary Study

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Abstract: This preliminary study examines the websites of U.S. research libraries in one consortium, the Committee on Institutional Cooperation (CIC), to determine the extent and variety of online app advisory services these libraries provide to patrons. App advisory, for the purposes of this study, refers to any suggestions of downloadable mobile applications (whether for phones, tablets, or other devices) for use by patrons. This still emerging phenomenon needs systematic study. I explore how these institutions provide app advisory content on their websites, and the kinds of apps included in their recommendations. The paper will also explore the methodological problems in discovering this content through the many layers of library websites, and areas of interest for further study.

1. Introduction

With the boom in mobile devices, the library professional literature has responded with a spate of articles exploring possibilities for apps that might be useful for libraries and how libraries might develop apps for their patrons. Libraries have also started providing app recommendations to their users. But what kinds of apps are libraries recommending? How frequently are they doing so, and how? As libraries rush to respond to a new perceived patron need, it is worth examining the variety of practices evolving.

This preliminary study examines the websites of U.S. research libraries in one consortium, the Committee on Institutional Cooperation (CIC), to determine the extent and variety of online app advisory services these libraries provide to patrons. App advisory, for the purpose of this study, refers to library recommendations of mobile applications (whether for phones, tablets, or other devices) for use by patrons. Additionally, the focus here is on downloadable mobile apps rather than web apps. Web apps are specialized versions of

websites accessible through the browser of a smartphone, tablet, or other mobile device. While web apps would be worthwhile to include in a similar study, the focus on downloadable apps allows a consideration of what devices or operating systems libraries are supporting with their recommendations, an important aspect of app advisory given that users may own a wide array of devices.

The CIC libraries, it should be noted, resemble one another as large research libraries with relatively decentralized services. Thus, this paper leaves aside discussion of public libraries or other academic libraries that may have very different organizational structures or have less of a research focus. On the other hand, by focusing on a consortium of large research libraries, the study can examine how much variation exists among similar institutions. It is likely that however much difference exists between the frequencies of app advisory services at these institutions is small compared to the broader universe of libraries. The focus on large research libraries also allows analysis of differences among the disciplinary divisions within them. It examines, for example, differences in frequency of app advisory services between science libraries, health and medical libraries, and other disciplinary units or subject specialists—an outcome only possible because examining large research libraries that have extensive subject specialists and often independent disciplinary library services.

2. Library Literature on Mobile Applications

The response of librarians to the increasing presence of mobile apps is evident in the spate of articles that try to grapple with the large number of apps available and filter out those that might be useful for library services. Brown (2012), Mallon (2012), Besara (2012), and Carlos (2012), for example, provide such recommendations for general purpose apps, advocacy, and research. Their recommendations come with such features as descriptions of the apps and their usefulness, what operating systems are supported by the apps, and the price of the apps.

These articles are often focused at offering fellow librarians apps for their own use, with recommendation for patron use often only assumed as one potential effect of this shared knowledge. However, the fact that each article provides similar data points for recommended apps does suggest the important features to look for in app advisory services: beyond a purpose for the apps, users need information about pricing and operating system support.

A second prong of library literature on mobile applications has been the potential for libraries to develop apps. McCarthy and Wilson (2011) and Hahn and Ryckman (2012) developed apps devoted to enhancing basic library services, while Pianos (2012) describes the design process for an app to aid economics and business researchers. Each of these as well as Elder (2012), Evans (2011), and Wong (2012) provide a groundwork for thinking about best practices in mobile app design as well as user needs and preferences. Wong for example compared user responses to a web app and downloadable mobile app to determine which library users prefer, and found patrons split on the issue. While this study does not explore mobile app development, this literature did suggest

the usefulness recording how often libraries were recommending in-house apps as a measure of how often they were creating downloadable applications.

3. Methodology

An initial search of the 15 CIC library websites produced as comprehensively as possible a list of learning objects that recommended downloadable mobile applications to patrons. Learning objects (or LOs), as described by Mestre (2010), are "resource[s], usually Web-based, that can be used and reused to support learning" (809). They often have modular parts that can be added, removed, replaced, or revised while maintaining the integrity of the resource as a whole. This study focused specifically on LOs offered through library websites and found a limited number of types involved in app advisory: specifically webpages, library subject guides (aka LibGuides), and blogs.

Learning objects were discovered by using general library website search interfaces and, where libraries used them, LibGuide search interfaces. Testing revealed the best search terms were "mobile app*" and "mobile device", which seemed to provide the most comprehensive lists of candidates. For example, searches for "tablet", "smartphone", "e-reader", "android app", "ios app", and similar terms always produced results included in the results for the chosen terms. Thus, while the search possibly missed a few relevant hits, these are likely few—and possibly difficult to find for patrons as well.

Once discovered, LOs were copied through screen capture due to their mutability. Information recorded for analysis comprised, for each LO, its web address, its subject, the University of the library producing it, the library unit producing it, and the degree to which the object focused on mobile apps (exclusively, as a key feature, or incidentally). Each specific app recommended by the LO was also recorded by name along with app-specific information such as pricing, the operating system(s) with which it could be used, whether it was an app developed by the library, and the advertised purpose for patrons to use the app.

4. Results

Analysis of the data revealed 952 total app recommendations for 508 unique apps. The recommendations spread across 92 LOs: 74 LibGuides, 9 blogs, and 9 webpages. Thus, the 15 libraries made 63.5 recommendations on average, and each LO included an average of 10.3 recommendations.

Looking at individual Universities shows a wide range of practice outside the mean. While all CIC libraries included at least some app advisory on their websites, practice ranged from only 5 recommendations to 141 recommendations. Similarly, the number of LOs that included app advisory by a given library's departments ranged from 2 to 14 (Table 1).

Universities	Recommendations	Learning Objects	Recommendations per Learning Object	Max Recs in a Learning Object (Usually Outlier)	Average without Max
U Iowa	141	12	11.75	22	10.82
U Michigan	118	6	19.67	97	4.20
U Wisconsin	113	14	8.07	51	4.77
U Minnesota	106	5	21.20	60	10.0
Rutgers	98	6	16.33	80	3.60
U Chicago	77	7	11.00	35	7.0
Indiana U	73	4	18.25	56	5.67
U Nebraska	65	6	10.83	28	7.40
Penn State	58	4	14.50	44	4.67
U Illinois	38	8	4.75	18	2.86
Northwestern	20	3	6.67	16	2.0
Michigan State	18	8	2.25	10	1.14
Purdue	14	2	7.00	13	1.0
Ohio State	8	4	2.00	4	1.33
U Maryland	5	3	1.67	3	1.0

Table 1: Recommendation and Learning Object Totals by University

Learning objects could themselves include an app only incidentally by linking to an app in passing among a set of other resources for a topic, but they could also focus entirely on app recommendations. Thus the average number of recommendations per LO for each university provides a different measure of diversity between institutions. However, the mean in some cases is distorted by one or two LOs that make a massive number of recommendations. For example, 91 of 118 recommendations at the University of Michigan were made in a single Health Sciences LibGuide.

Dividing recommendations by the type of recommending library unit provides a different perspective on the data, revealing different degrees of purchase in different disciplines. Health or medical libraries made by far the most recommendations—376, or over a third of all recommendations—and did so in the second most LOs overall, 25. The sciences in general and law also had a high, similar frequency of recommendations, but these represent very different coverage across institutions: science libraries had the most LOs, 28, where law

libraries only had 4 (Table 2). The mean number of recommendations per learning object was thus highest for law libraries, health libraries, and digital services units. Outliers likewise distort these means, although less frequently and, in the case of law libraries, due to one LO with a much lower number of recommendations than the others.

Unit Type	Recommendations	Learning Objects	Recommendations per Learning Object	Recommendations in Outlier Learning Object	Average without Outlier
Health	376	25	15.0	97	11.63
Science	172	28	6.1	--	--
Law	158	4	39.5	1	52.33
Digital Services	105	4	26.3	80	8.33
General	99	17	5.8	44	3.44
Arts & Humanities	18	5	3.6	12	1.5
Undergrad Libraries	8	2	4.0	--	--
Special Libraries	6	1	6.0	--	--
Unknown	6	2	3.0	--	--
Archives	2	2	1.0	--	--
Business	2	2	1.0	--	--

Table 2: Recommendation and Learning Object Totals by Type of Recommending Library Unit

Law libraries and digital services units shared a tendency to create guides focused entirely on app recommendations, where health and science libraries had a more equal blend of LOs that focused entirely on apps, those where apps were a significant presence but not the focus, and those where apps were incidental to the topic of the LO.

Data about the specific recommendations proved much more difficult to gather, with significant variation in how much information guides gave about the apps they recommended. The data collection instrument included potential fields for the app pricing (free only, pay only, both free and pay, pay in app, subscription-only), availability for different operating systems, whether the app was developed in house, and the purpose of the app as described in the learning object.

Very few learning objects provided all of this information, and several did not provide any such information, simply listing apps with only the app name and general guide topic to give any hint at what an app might be useful for. Those that did provide information often provided incomplete or inaccurate data: for example only listing one available operating system when the app was available on several, or providing misleading price information, such as labeling an app "free" when in fact using the app would require paying for individual components after download. Therefore, this paper does not report statistics for payment types, operating systems, or app purposes. However, recommendations did include apps for Apple, Android, Blackberry, Windows, Bada, and Palm operating systems, with the vast majority of explicit operating system information indicating Apple or Android use. The only app-specific data field that could be determined in all cases besides the app name was whether the app was developed by the library for its patrons: the results revealed only 9 such recommendations for 8 unique apps between only 3 universities. The most recommended apps were those for EBSCOhost and SciVerse Science Direct (18 recommendations each), both key database platforms usable by large segments of any university.

5. Discussion

The data gathered show that research libraries do seem to be actively developing their app advisory services, but unevenly across institutions and subject areas. However, the data represent a very specific sample of similar research institutions which generally have large library systems with a number of independent units. Variation in frequency of app advisory services across these universities likely reflect differences in the extent to which the library cultures have recognized mobile devices as important and unique service vehicles, and similarly the variation within some more decentralized institutions may owe itself to a number of separate reference philosophies and uneven resources.

Variation in the number of recommendations included in any one learning object reveals different approaches to app advisory. Learning objects with only one or a few recommendations tend to focus on broader areas of interest and refer to apps as one means of approaching the topic, where others dedicate an entire guide to apps. These serve different imagined user needs, and the guides that focus entirely on apps may indicate their novelty.

Differences between the app advisory frequencies of specific library unit types could have several sources. These include differences in discipline-specific app availability, different expectations for user interest, and varying knowledge among librarians about potential useful apps. Generally, health and medical libraries have the most intense current engagement with app advisory practices when measured by frequency of recommendations and distribution of those recommendations across many learning objects. This should not be surprising given the long-held interest of the medical professions in point-of-care resources. Science libraries, especially in the physical sciences, have likewise embraced app advisory. Indeed, by at least one measure, science

libraries more frequently provide app advisory services: of the 15 CIC member institutions, 12 had science libraries recommending apps, where only 6 institutions had medical or health libraries doing so. Humanities and social sciences librarians seem much less active in this area by all measures. That said, many of the app recommendations made by the general reference units and digital services units in libraries have clear humanistic uses including citation management, writing, music listening, and reading tools.

Given the interest in library and information science literature in library development of mobile apps, it is surprising to see very few of these large research libraries developing their own apps. However, some of this gap can be attributed to the fact that this study did not include mobile web apps.

5. Conclusion

While the specific nature of the libraries studied here deserves attention, the data collected shows that app advisory services are quickly, if unevenly, becoming common for academic libraries. The sources of that unevenness are unclear and likely multiple, including variations in librarian and institutional interest and awareness. Health and the sciences are the fields most likely to recommend apps, while the humanities and social sciences recommend far less. Law libraries provide an interesting case, with few law libraries from the member institutions making recommendations, but making large numbers of them when they make any.

However, what this study more importantly reveals is that the newness of app advisory manifests in a lack of consensus about what aspects of apps to describe to users when recommending an app. The lack of information, or at other times inaccurate information, in these learning objects shows a need to go beyond the current professional interest in finding apps to recommend.

In short, the profession needs a more thoughtful discussion about what a user needs to know about an app in order to make an informed decision to download it. Given how many recommendations highlighted only one operating system option for app recommendations when the named apps were available on multiple systems, librarians may also be thinking only in terms of a device they have access to and not about the variety of devices their patrons own. A broader assessment of the specific advisory practices used when making recommendations is thus one potential next step for research on app advisory.

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