

*Exploring the Use of Text Messaging to Enhance Reference Services
at The University of the West Indies Mona Campus Library*

Karlene Nelson

Abstract

Mobile technology is one of the most phenomenal developments to have taken place in the Jamaican telecommunications industry. The liberalization of this industry has resulted in widespread access to mobile telephones. Jamaicans are today more likely to subscribe to a mobile phone service than a fixed line service. In addition, a number of Jamaicans have gravitated towards the use of mobile telephones because of the innovative service packages offered by leading providers. These packages include free text messages, and bundled minutes among other options. As a result, text messaging has become a common means of communication among many Jamaicans and has also given rise to new ways for libraries to communicate with their patrons. Libraries can now communicate synchronously with patrons providing useful responses to simple queries very quickly. Many libraries therefore, have embraced text messaging to augment existing reference services.

This study examined the determining factors for the use of a text-messaging reference service at The University of the West Indies (UWI), Mona Campus Library. The objectives were: to find out to what extent will the determinants of technology adoption drive patrons to use a text-messaging reference service at the UWI, Mona Campus Library and to find out from patrons about some of the problems they believe they would likely encounter while using a text-messaging reference service at the Library. A questionnaire was used to collect data for this study. The questionnaire contained demographic questions as well as questions that addressed those determinants that were likely to result in patrons' use of a text-messaging reference service. Respondents were also asked to state some of the likely problems they believe they would encounter using a text-messaging reference service. Of the 300 questionnaires distributed, 199 useable questionnaires were returned, yielding a response rate of 66.33%.

The results imply that perceived usefulness and convenience are the key determinants for patrons' use of a text-messaging reference service. The findings also reveal that the mean values for perceived ease of use and speed were not so favourable. Likewise, technical difficulties are considered to be major problems that are likely to be encountered by patrons when using a text-messaging reference service. Nevertheless, the results of the survey also

show that the majority of the patrons surveyed would use a text-messaging reference service if it were ever to become available at The UWI, Mona Campus Library.

Keywords: Karlene Nelson; Electronic Reference Services (Libraries); The University of the West Indies, Mona, Jamaica; Academic Libraries; Mobile Technologies; Text Messaging Reference Services

Introduction

The use of mobile telephones worldwide grew at a phenomenal rate between the years 2000-2012, moving from less than one billion to six billion users, or three-quarters of the world's population. This movement has resulted in developing nations having more access to mobile phones than even some developed nations. The factors accounting for this growth among developing nations were the availability of multi-sim card phones, low value charges and mobile payment plans (The World Bank 2012). Jamaica is among the developing nations that saw significant increases in mobile telephones usage.

The liberalization of the telecommunications sector in Jamaica at the turn of the 21st century, and the accompanying affordability of phones have led to widespread access to mobile technology. Prior to the liberalization of the telecommunications sector, most Jamaicans did not own a phone. However, in just a few years this position changed significantly, resulting in most Jamaicans, if not all, owning a mobile phone (Fair Trading Commission and Office of Utilities Regulations 2007). According to *The Gleaner*, Jamaica ranks high among nations in terms of mobile access, reporting that the country "has about 122 active phones for every 100 people, which equates to one of the highest mobile subscriber densities in the world" (The Gleaner 2012). Jamaican householders today are more likely to subscribe to a mobile telephone service than to a fixed line service. In fact, up to December 2011, there were approximately 2,945,395 cell phone users in Jamaica which equates to a mobile penetration rate of 109%. However, computer based Internet penetration rate for the same period was approximately 4% as indicated by the 118,259 subscriptions to Internet service providers. At the same time there were overall, 1,581,100 Internet users in Jamaica which gives a penetration rate of 55% (Marsh

2012). This means that although many persons did not have an account with an Internet service provider, they still had access to the Internet via their mobile phones or some other mobile device. It is for this reason that Marsh (2012) posited that companies in Jamaica would have a far greater reach in the mobile market than the traditional computer desktop market.

Liberalization has brought several competitors into the Jamaican telecommunications market resulting in a significant reduction in the cost of telephone services. Leading providers such as Digicel and LIME, now offer many innovative service packages which include free text messages and bundled minutes among other options. Most of the plans offered by these telecommunication providers have made text messaging a cost efficient, and therefore popular, means of communicating. At the global level, The World Bank report (2012), states that close to 5 trillion text messages were sent in 2012. A North American study (Perez 2010) found that 72% of adult cell phone users send and receive text messages. Similarly, in a study which looked at Jamaicans and mobile technology, it was found that text messaging was popular among 66.7% of the Jamaicans surveyed (Dunn 2007). Mobile technology, such as text messaging, therefore offers new ways of communicating with library patrons. According to Little (2011), "mobile technologies are changing the ways we consume, distribute, and create information."

The concept of text-messaging reference service (TMRS) is fairly new in libraries. It is worthwhile to study the potential for its application in Caribbean academic libraries and more specifically, The University of the West Indies (UWI) Mona Campus Library. The adoption of TMRS has been widely studied in developed countries but is less explored in the Caribbean context. There are possible benefits of a TMRS at the UWI Mona Campus Library; however questions still remain as to whether patrons will adopt such a reference service.

The article presents the results of a survey conducted at the UWI Mona Campus Library. A questionnaire was deployed to answer the following research questions:

- 1) To what extent will the determinants of technology adoption influence selected patron's use of a TMRS?
- 2) What are some of the problems which the selected patrons believe that they are likely to encounter in using a TMRS at the UWI Mona Campus Library?

Text Messaging and the Librarian

Text messaging originated in the United Kingdom in the 1980s and later spread to the rest of the world. It is also called short messaging service (SMS), and is the practice of sending short messages usually limited to 160 characters via mobile telephones (Encyclopedia Britannica 2012). Many persons see the limited number of characters that a text message can accommodate as a major drawback to sending messages. As a result, a new vocabulary of contracted words especially among young persons has been developed to circumvent this hindrance. What has emerged are shortened words such as UR for "your" or "you're," IMHO for "in my humble opinion," BTW for "by the way," and CUL8R for "see you later," as well as the employment of "emoticons," or "smileys," to express emotions (Holtgraves 2011).

Progressive librarians must therefore be mindful of this trend of communication among their patrons. According to Batool and Asaghar (2012) librarians have been using text messaging mainly for social interactions with family and friends. However, the changing landscape suggests that the use of text messaging should be incorporated into the librarian's job related functions. Despite the limitations in using this technology, it is an avenue for librarians to reach their patrons bearing in mind the required brevity in sending text messages. Herman (2007) suggested that in sending text messages, librarians need to be very concise, practice spanning (sending a response via multiple messages) and become familiar with the abbreviations used in texting.

Apart from its use in reference services, Goh and Liew (2009) indicated that librarians could use text messaging for broadcasts to the library's patrons to promote services such as tours and

tutorials, new databases, new books or extended library hours. They suggested it could also be used to send out reminders to individuals or groups of people who may have booked specialised library instruction sessions, rooms and/or equipment.

Text-Messaging Reference Service

Libraries are utilizing mobile technology to connect to their users by providing answers to reference queries via text messages. Text-messaging reference service has the ability to enhance the perception of libraries as current and user-oriented. According to Stahr (2009), if a library was to introduce a TMRS, it would demonstrate that “the library is on the cutting edge of technology and is willing and interested in meeting the needs of its users.” Also, introducing text messaging to the library’s existing reference services would result in a public relations boost. A TMRS would allow the library to reach its commuting population. Stahr (2011) found that the combination of telephone, e-mail, online chat, and text-message reference provided strong support for many students who commuted or took online classes. Text-message reference, along with other reference services, is considered essential to the academic support of distance learning. Even in those instances where a different communication medium was needed to complete the reference transaction, the TMRS was able to provide that important first contact between patron and library. In this regard, Kohl and Keating (2009) described a TMRS as an enhancement of, rather than a replacement for face-to-face, telephone, e-mail, instant messenger or chat reference.

Today, TMRS is well established and several libraries have tapped into this technology. Jetty and Anbu K. (2013) revealed that libraries are using texting to complement other reference services in higher education libraries. Even in instances where in-depth research was required to satisfy a reference query, libraries were using text messaging to alert users of the outcome of their query. In a pilot study conducted by Goh and Liew (2009) where they looked at users’ acceptance of a SMS based cataloguing system, it was found that only 13% of the messages received required library staff to send their responses in two or more messages. This suggests

that users are aware of the capabilities of such a system. Breithbach and Prieto (2012) supported this view. In their examination of text messaging via Google voice, they found that very few questions were of a complex nature, requiring multiple sources and/or sophisticated search strategies. They concluded that patrons recognized the limitations of a TMRS and were therefore asking questions that could be easily answered through such service.

Despite the success that some libraries have experienced, there are concerns about a TMRS. Goh and Liew (2009) reported that these concerns included the absence of the face to face interview process, as well as limitations in the number of characters users had to express their query and for library staff to send their responses. Although there are limitations to a TMRS, Stahr (2009) pointed out that these limitations are relatively few and suggested that since text-message reference service provides a relevant instant opportunity to reach users, libraries should consider text messaging for other functions.

User Perceptions

The use of any library service will depend on the users' perception of such service. According to Goh and Liew (2009), users were overly positive about a TMRS. The majority of the users surveyed said the service was easy to use; they experienced no problems using the service and would use it again. Ruppel and Vecchione (2012) also contended that users placed a high value on the ease and convenience of using a TMRS. They also noted that despite this ease of use, users felt that face-to-face reference services are crucial to their academic success. Ruppel and Vecchione (2012) reported that users found it was much easier to learn in face to face situations, that text messaging lessened interaction with the librarian and that answers were often short and to the point without any elaboration. Chow and Croxton (2012) in considering the information seeking behaviour and reference medium preferences of faculty, staff and students at a university, also found that despite the different options available, when given a choice, the face to face interaction is the first choice of most users seeking reference assistance.

Determinants of Technology Adoption

Many factors may positively or negatively influence users' adoption of mobile technology. These factors include convenience, speed, perceived ease of use, perceived usefulness and facilitating conditions.

Convenience

According to Berry, Seiders and Grewal (2002), convenience depends on time and effort. Therefore a product or service is considered convenient when it saves time and effort. A product or service is convenient when it lowers the cognitive, emotional and physical burdens for a user (Chang, Yan and Tseng, 2012). Gupta and Kim (2007) also revealed that perceived convenience is an antecedent factor that affects intention to use.

Speed

Speed is of equal importance when considering the adoption of technology. Users in a study carried out by Luo (2011) mentioned that they chose to use a TMRS because of urgent information need. Stahr (2011) found that patrons who used a TMRS were appreciative of the speedy responses to reference queries via this medium. In fact, this study revealed that approximately 10% of the incoming messages received over a four year period were thank you messages from satisfied patrons.

Perceived Ease of Use, Perceived Usefulness and Intention to Use

Many researchers have put forward theories to examine the determinants of technology adoption. Most notable among them is Davis (1989) who posited the Technology Acceptance Model (TAM). In this model there are two determinants of technology adoption – perceived ease of use and perceived usefulness. Perceived ease of use is the degree to which a person believes that using a particular information system or information technology would be effortless. Perceived usefulness, on the other hand, is the degree to which an individual believes that using a particular information system or information technology would enhance

his or her job or life performance. Both concepts of perceived ease of use and perceived usefulness will affect attitudes toward an information system; that is, they affect individual's intention to use and accept an information system (Yong, Li and Carisson 2010). Users will be interested in adopting a technology only if they are comfortable using such technology and if it adds value to their work.

Facilitating Conditions

Acceptance of any new technology largely depends upon how the user perceives the technology as well as the presence of facilitating conditions. Facilitating conditions are defined by Venkatesh et al. (2008) as the degree to which an individual believes that organizational and technical infrastructures exist to support the use of the system. There is a significant correlation between facilitating conditions that are in place and the creation of positive attitudes towards the adoption and acceptance of technology (Tarcan, Varol and Toker 2010).

Mobile Technology at The UWI Mona

The University of the West Indies (UWI), Mona has already been using mobile technology to communicate with the student population. Among the departments that utilize this method of communication is the UWI Bursary (UWI Mona 2012a). This office uses text messaging to inform students of matters concerning their financial status. The Library has also adopted mobile technology for a number of activities. At present the library uses text messaging to inform patrons about the availability of reserved items, and to communicate with student workers. In addition to text messaging, library patrons are now able to access a number of subscribed databases using their smart phones or other devices.

Reference Services

The UWI Mona Campus Library currently provides a range of reference services to its users. These include in-person, telephone, email and e-chat. A virtual reference service was introduced at the UWI Mona Campus Library during the academic year 2009/2010 (UWI Mona

2010). This service provides users with twenty-two hours of live chat reference service. An e-mail reference is also available to patrons twenty four hours per day and seven days per week. The patron may use this form to submit a query to the Library at any time. The turnaround time for e-mail queries is twenty-four hours. The virtual reference service is staffed by librarians from the Main Library as well as the branch libraries. The UWI Mona Campus Library utilizes the OCLC Questionpoint software for its virtual reference service. This software allows for the filing, tracking and management of web-delivered forms from patrons. It also facilitates the automatic routing of questions to librarians using a request manager.

In 2010, OCLC and Mosio Text a Librarian collaborated to integrate Mosio's Text a Librarian text-messaging reference software with OCLC's Questionpoint reference management service in order to provide a comprehensive virtual solution for libraries. According to Jay Jordon, OCLC "users are increasingly relying on mobile technologies, and Questionpoint is committed to providing libraries with the tools they need" (Mosio 2010). A library which subscribes to both software packages is able to receive and respond to patrons' text messages inside the QuestionPoint interface. The software currently used by the UWI can accommodate text messaging and the Library would only need an upgrade if it should consider adding text messaging.

As mentioned in the 2009/2010 Departmental Reports, the UWI Mona Campus Library is committed to a virtual library concept and has made efforts to publicize its virtual reference service by strategically placing links on different student portals. The UWI Main Library virtual reference has been doing quite well. A user survey of AskMona, the virtual reference service conducted by OCLC over the academic year 2011/2012 sought to determine the quality of the service, its usefulness and ease of use. The survey revealed that patrons were satisfied with all the areas measured. Most of the respondents (94.7%) thought that AskMona was a needed service and should be continued (UWI Mona, 2012b).

Methodology

Three hundred questionnaires were distributed to students of the UWI, Mona Campus. Convenience sampling was used because it is quick and it is also a relatively cost-effective method for gathering data. The questionnaire consisted of four parts. The first section contained the demographic questions such as gender, age, year of study and Faculty. The second section looked at those factors that would result in the use of a TMRS. The responses were measured using a five point Likert scale. The third section focused on the intention to adopt a TMRS, and used a three point Likert scale. The final section consisted of an open ended question which sought to ascertain from the respondents some of the likely problems they believed they would encounter while using a text messaging reference service.

Findings

Of the 300 questionnaires distributed, 199 were returned, resulting in 66.33% response rate.

Table 1 shows the demographic profile of the respondents.

TABLE 1. Demographic Profile of Respondents

| Demographic | Percentage % |
|------------------------------------|--------------|
| Gender | |
| Male | 11.1 |
| Female | 88.9 |
| Age | |
| Below 20 | 3 |
| 20-29 | 48.7 |
| 30-39 | 36.7 |
| 40-49 | 9.4 |
| 50-59 | 2.5 |
| 60 and over | 0 |
| Year of Study | |
| 1 st Year Undergraduate | 4 |
| 2 nd Year Undergraduate | 33.7 |
| 3 rd Year Undergraduate | 39.7 |
| 4 th Year Undergraduate | 7.5 |
| Postgraduate | 14.1 |

| | |
|----------------------|------|
| Other | 1 |
| Faculty | |
| Humanities | 29.1 |
| Law | 6.5 |
| Medical Sciences | 17.6 |
| Science & Technology | 19.6 |
| Social Sciences | 27.1 |

The data in table 1 shows that most of the respondents were females (88.9%). This corresponds to the higher female to male ratio of students at The UWI, Mona Campus. The results also reveal that almost half of those who responded (48.7%) were from the 20 to 29 years age-group while 36.7% were between 30 and 39 years of age, 9.4% between 40 and 49 years of age and 2.5% between 50 and 59 years of age. None of the respondents was above age 60 and only six (3.0%) were below the age of 20. The largest categories of respondents were third year undergraduate students (39.7%) and those pursuing programmes in the Faculty of Humanities and Education (29.2%).

Survey Statements and Responses

- 1) *A text-messaging reference service would be a convenient medium for me to get answers.*

TABLE 2. Perceived Convenience of Text-Messaging Reference Service.

| Responses | Age Group and Responses in Percentage % | | | | | |
|-----------------------|---|-------|-------|-------|-------|------------------|
| | Below 20 | 20-29 | 30-39 | 40-49 | 50-59 | Total Population |
| Disagree | 0 | 2.1 | 4.1 | 0 | 0 | 2.5 |
| Undecided | 16.7 | 25.8 | 24.7 | 27.8 | 20 | 25.1 |
| Agree | 0 | 36.1 | 35.6 | 50 | 80 | 37.2 |
| Strongly Agree | 83.3 | 36.1 | 35.6 | 22.2 | 0 | 35.2 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |

Convenience is one of the key drivers of technology adoption. The findings revealed that 72.4% of the respondents surveyed believed that a TMRS would be a convenient medium for them to obtain answers to their reference queries. Those strongly agreeing were of the age group 29 and under. These results are not surprising, since the majority of users would gravitate towards a system that lowers the physical burdens for them (Chang, Yang, Tseng, 2012). This is also consistent with the results of a study done by Ruppel and Vecchione (2012) which found that users placed a high value on the convenience of a TMRS.

2) A text-messaging reference service would be easy for me to use to communicate my reference question to a librarian and get assistance.

TABLE 3. Perceived Ease in Using a Text-Messaging Reference Service

| Responses | Age Group and Responses in Percentage % | | | | | |
|-----------------------|---|-------|-------|-------|-------|------------------|
| | Below 20 | 20-29 | 30-39 | 40-49 | 50-59 | Total Population |
| Disagree | 0 | 2.1 | 5.5 | 0 | 20 | 3.5 |
| Undecided | 16.7 | 37.1 | 37.0 | 22.2 | 60 | 35.6 |
| Agree | 0 | 34 | 32.9 | 44.4 | 20 | 33.3 |
| Strongly Agree | 83.3 | 26.8 | 24.7 | 33.3 | 0 | 27.6 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |

Table 3 shows that 35.6% of the respondents were not sure if a TMRS would make it easier for them to communicate their reference questions to a librarian and get assistance. Those expressing the greatest level of uncertainty were between 50 and 59 years of age. This may be because many persons in this age group may not be as proficient in the use of such technology. Interestingly, persons between 20 and 39 years of age recorded the second highest level of uncertainty. It is often felt that persons within this age group are usually more competent and comfortable with this kind of technology, therefore this level of uncertainty is unexpected. Notably, many persons (74.4%) viewed TMRS as a convenient means of obtaining answers to their reference queries, yet ease of use was not rated as favourably. Since ease of use as stated

is one of the key determinants of adoption of technology, this raises some concerns. Yoon and Kim (2007) argued that convenience of service does not often translate into adoption by users. They noted that adoption will only happen when it is supported by a human network and a strong system built with customer experience in mind. In this regard, the uncertainty expressed here may not be a lack of ability to use the technology, but may be uncertainty with other factors which the respondents feel may pose some hardship for them to use a TMRS. One factor may be that users do not see TMRS as an effective, robust means of communication given the limitations in the number of characters that can be used for messages, thereby resulting in very concise answers without any elaboration. In promoting a TMRS the library should therefore encourage patrons to use the service for short simple factual questions and other reference mediums for longer and more complex queries. In addition, librarians must be prepared to do spanning (sending messages in multiple texts) like Herman (2007) said in order to remove any uneasiness users feel with using such a service.

3) *A text-messaging service would enable me to get a response to my reference query more quickly.*

TABLE 4. Perceived Speed in Using a Text-Messaging Reference Service

| Responses | Age Group and Responses in Percentage % | | | | | |
|-----------------------|---|-------|-------|-------|-------|------------------|
| | Below 20 | 20-29 | 30-39 | 40-49 | 50-59 | Total Population |
| Disagree | 0 | 3 | 5.5 | 33.3 | 60 | 8.1 |
| Undecided | 16.7 | 43.3 | 39.7 | 38.9 | 20 | 40.2 |
| Agree | 0 | 27.8 | 34.2 | 27.8 | 20 | 29.1 |
| Strongly Agree | 83.3 | 25.8 | 20.5 | 0 | 0 | 22.6 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |

A similar result to that relating to ease of use was seen when persons were asked if they believe a TMRS would enable them to get a response to their reference query more quickly. Of the persons surveyed 48.3% were not sure the service would result in a more speedy response to their query. The age group 20-29 years recorded the highest level of uncertainty. Of note, too is

that 60% of those in the age group 50-59 years believed that a TMRS would not afford them a speedy response to their reference queries, if any at all. The whole matter of technology reliability may have something to do with the responses to this question. According to Venkatesh et al (2008), if the user does not perceive the technology to have the support infrastructure, this will affect its adoption. Therefore, in implementing any technology based service, the service provider must ensure that all elements are in place to provide a reliable and speedy system.

4) *A text-messaging service at the UWI library would be useful.*

TABLE 5. Perceived Usefulness of a Text-Messaging Reference Service

| Responses | Age Group and Responses in Percentage % | | | | | |
|-----------------------|---|-------|-------|-------|-------|------------------|
| | Below 20 | 20-29 | 30-39 | 40-49 | 50-59 | Total Population |
| Disagree | 0 | 3.1 | 5.5 | 0 | 0 | 3.5 |
| Undecided | 0 | 33.0 | 27.4 | 27.8 | 60 | 30.2 |
| Agree | 83.3 | 22.7 | 32.9 | 33.3 | 20 | 29.1 |
| Strongly Agree | 16.7 | 41.2 | 34.2 | 38.9 | 20 | 37.2 |
| Total | 100 | 100 | 100 | 100.0 | 100.0 | 100.0 |

Although, there was some uncertainty regarding the ease of use and speed of a TMRS, more than fifty percent of the respondents (66.3%) felt that a TMRS would be useful. This evidence is important when considering the implementation of any technology-related services. As Davis (1989) pointed out, perceived usefulness is an important predictor of technology adoption. When compared to the other factors, perceived usefulness emerged as the best predictor of the respondents' intention to use a text-messaging service. This is an encouraging indication that a TMRS at UWI Mona Campus Library is worth consideration.

5) *I would use a text-messaging reference service if I am provided with more information about it.*

TABLE 6. Intention to Use a Text-Messaging Reference Service

| Responses | Age Group and Responses in Percentage % | | | | | |
|-----------|---|-------|-------|-------|-------|-------|
| | Below 20 | 20-29 | 30-39 | 40-49 | 50-59 | Total |

| | | | | | | |
|-----------------|-----|------|------|------|-----|------------|
| | | | | | | Population |
| Yes | 100 | 73.2 | 76.8 | 66.7 | 20 | 73.4 |
| No | 0 | 8.2 | 6.8 | 0 | 20 | 7.0 |
| Not Sure | 0 | 18.6 | 16.4 | 33.3 | 60 | 19.6 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |

This question considered the intention to use a TMRS and the results are encouraging. A large number of the respondents (73.4%) indicated that they would use the service if they are provided more information about it. Seven percent of the respondents indicated that they would not use a text-messaging reference service and 19.6% were not sure they would use it. The results correspond to those for perceived usefulness reported by Davis (1989) who indicated that if perceived usefulness of a technology is ranked favourably among respondents, then this will be translated into intention to use. It is therefore imperative that the library provides all the information the users need to help them make the decision to use a TMRS. Doris Small-Helfer (quoted in Cummings, Cummings and Frederiksen 2007) believes that in order for any new service to be successful, it must be promoted since “advertisement of the service would increase the amount of questions that the library gets.” She suggested that placement of logos and buttons for the service on various pages of the library’s website is integral to promotional efforts.

6) What are some of the problems you are likely to encounter in using a text-messaging reference service?

TABLE 7. Problems Perceived to be Associated with a Text-Messaging Reference Service

| Problems | Results % |
|-------------------------------|------------------|
| Cost of sending text messages | 18.6 |
| Technical Difficulties | 35.2 |
| Limited hours of Service | 7.5 |

| | |
|---|------|
| Limited answer | 30.2 |
| Impersonal nature of service | 7.5 |
| Inability to send and receive text messages | 1.0 |

The responses to the open-ended question presented in Table 7 show the potential problems that those persons surveyed, believe could pose a challenge to the use of a TMRS. The problems identified included: cost of sending text messages, technical difficulties, limited hours of service, shortened answers, impersonal nature of service, and the inability to send and receive text messages. Technical difficulties were deemed to be the major problem that the respondents felt they were likely to encounter while using this service. Ranking second to technical difficulties, was shortened answers. In a number of instances, a user is limited in the number of characters he/she can use while sending text messages and this may be a deterrent for some persons. As pointed out by Venkatesh et al. (2008), facilitating conditions are of utmost importance as this can severely hinder the use of any system. While there may be some things that are outside of a library's control, a library must try to minimize those elements within its power that may cause hardship to users in accessing its services and resources.

Conclusion and Recommendations

This paper has given an account of the factors that would influence patrons of UWI Mona Campus Library use of a TMRS. In this investigation, the aim was to identify the extent to which the determinants of technology adoption would drive patrons to use such a service as well as likely problems they would experience using the service. Evidence from the research revealed that perceived usefulness and convenience are factors that will positively influence the use of a TMRS at the UWI Mona Campus Library. Of note is the fact that the mean values for speed and ease of use were not so favourable. This may reflect the respondents' uncertainties about the reliability of such a service. Notwithstanding, the results imply that the UWI Mona Campus

Library's patrons perceived a TMRS to be useful as well as convenient and are likely to embrace such service if it should become available. The findings therefore suggest that the Library should adopt this innovation. In adopting this technology, the Library must emphasize the benefits through a number of public relations efforts; provide adequate information and clear guidance to its users on the use of this service, and ensure that the service is reliable.

Limitations and Future Research

The findings from this research are useful in advancing knowledge on patrons' attitudes towards TMRS in libraries especially from a developing country's perspective. However, there were limitations to this research. First, the research used a convenience sample and secondly the sample size was small. Nevertheless, the empirical evidence can form the basis for future research. In carrying out further research, some questions that could be considered include:

- What patrons use text messaging for?
- How comfortable would patrons be in using a text-messaging reference service given the limitation of the size of messages?
- Would patrons be willing to use the service if it took more than one message to get their query across to the librarian?
- Would there be repeat users if the service is offered?

It is also recommended that since this research focused mainly on text messaging, a broader research should be carried out looking at other aspects of mobile technology use in libraries. In addition, since the sample size of this research was small, a wider cross section of the population which includes the Western Jamaica Campus, could be considered in order to obtain a more generalized view.

References

Batool, Syeda Hina and Amna Asghar. 2012. "Mobile Phone Text Messaging Use Among University Librarians of Lahore City." *The International Information and Library Review* 44 (3): 164-170.

Berry, Leonard, Kathleen Seiders and Dhrov Grewal. 2002. "Understanding Service Convenience." *Journal of Marketing* 66 (3): 1-7.

Breitbach, William and Adolfo G. Prieto. 2012. "Text Reference Via Google Voice: A Pilot Study." *Library Review* 61(3): 188-198.

Chang, Chi-Cheng, Chi-Fang Yan and Ju-Shih Tseng. 2012. "Perceived Convenience in an Extended Technology Acceptance Model: Mobile Technology and English Learning for College Students." *Australasian Journal of Educational Technology* 28 (5): 809-826. Accessed April 10, 2013.
<http://www.ascilite.org.au/ajet/ajet.html>.

Chow, Anthony A., and Rebecca A. Croxton. 2012. "Information-Seeking Behavior and Reference Medium Preferences: Differences Between Faculty, Staff, and Students." *Reference & User Services Quarterly* 51 (3): 246-62. Accessed April 10, 2013.
http://libres.uncg.edu/ir/uncg/f/A_Chow_Information_2012.pdf.

Cummings, Joel, Lara Cummings and Linda Frederiksen. 2007. "User Preferences in Reference Services: Virtual Reference and Academic Libraries." *Portal: Libraries and the Academy* 7 (1): 81-96. Accessed April 10, 2013.
<http://search.proquest.com/docview/216174179?accountid=42530>.

Davis, Fred. 1989. "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology." *MIS Quarterly* 13 (3): 319-340.

Digicel Jamaica. 2012. *Messaging*. Accessed September 6, 2012.
<http://www.digiceljamaica.com/en/services/messaging>.

Dunn, Hopeton. 2007. "Mobile Opportunities: Poverty and Telephony Access in Latin America and the Caribbean - The Case of Jamaica." *DIRSI - Regional Dialogue on the Information Society*. Accessed September 6, 2012. http://dirsi.net/files/jamaica_final.pdf.

Encyclopedia Britannica. 2012. Accessed September 2012.
<http://www.britannica.com/EBchecked/topic/1099476/text-messaging>.

Fair Trading Commission And Office of Utilities Regulation. 2007. "A Review of Jamaican Telecommunication Sector." Accessed September 6, 2012.

http://www.jftc.com/Libraries/Industry_Studies/Telecommunications_Liberalization_Impact_Assessment.sflb.ashx.

The Gleaner. 2012. "Jamaica Ranks Among the Rich in Mobile Access." Accessed September 6, 2012.

<http://jamaica-gleaner.com/gleaner/20120907/business/business7.html>.

Goh, Tiong T., and Chern Li Liew. 2009. "SMS-based Library Catalogue System: A Preliminary Investigation of User Acceptance." *The Electronic Library* 27 (3): 394 – 408.
doi: 10.1108/02640470910966853.

Gupta, Sumeet, and Hee-Woong Kim. 2007. "The Moderating Effect of Transaction Experience on the Decision Calculus in Online Repurchase." *International Journal of Electronic Commerce* 12 (1): 127-158.

Herman, Sonia. 2007. "SMS Reference: Keeping Up With Your Clients." *The Electronic Library* 25 (4): 401 – 408.

Holtgraves, Thomas. 2011. "Text Messaging, Personality, and the Social Context." *Journal of Research in Personality* 45 (1): 92–99.

Jetty, Sridevi and John Paul Anbu K. 2013. "SMS-based Content Alert System: A Case With Bundelkhand University Library, Jhansi." *New Library World* 114 (1/2): 20-31.

Kohl, Laura, and Maura Keeting. 2009. "A Phone of One's Own: Texting at Bryant University." *College & Research Libraries News* 70 (2):1-4.
<http://crln.acrl.org/content/70/2/104.full.pdf>.

LIME. 2012. "Jamaican SIM Card." *LIME*. Accessed August 8, 2012.
<http://www.mrsimcard.com/s-limejam.html>.

Little, Geoffrey. 2011. "Keeping Moving: Smart Phone and Mobile Technologies in the Academic Library." *The Journal of Academic Librarianship* 37 (3): 267-69.

Luo, Lili. 2011. "Text Reference Service: Delivery, Characteristics, and Best Practices." *Reference Services Review* 39 (2): 482-496. doi: 10.1108/00907321111161449.

- Marsh, Wayne. 2012. "Why are Businesses Ignoring the Mobile Opportunity." *Sunday Observer* July 15, 2012.
- Mosio. 2010. *OCLC's QuestionPoint and Mosio's Text a Librarian Announce Virtual Reference Collaboration*. Accessed September 15, 2012. <http://www.oclc.org/us/en/news/releases/2010/20104.htm>.
- Perez, Marin. 2010. "Pew: 72% of Adults Use Text Messaging." *Intomobile*. Accessed September 15, 2012. <http://www.intomobile.com/2010/09/02/pew-text-messaging-adult>.
- Ruppel, Margie, and Amy Vecchione. 2012. "It's Research Made Easier! SMS and Chat Reference Perceptions." *Reference Services Review* 40 (3): 423 – 448.
- Stahr, Beth. 2009. "SMS Library Service Options." *Library Hi Tech News* 26 (3): 13-15.
- _____. 2011. "Text Message Reference Service." *The Reference Librarian* 52: 9-19.
- Tarcan, Ertugrul, Ergin Sait Avarol, and Boran Toker. 2010. "A Study on the Acceptance of Information Technologies from the Perspectives of the Academicians in Turkey." *Ege Academic Review* 10(3): 791-812.
- University of the West Indies, Mona. 2010. *Departmental Reports 2009/2010*. Accessed September 12, 2012. <http://www.mona.uwi.edu/reports/0910/index.htm>.
- University of the West Indies, Mona. 2012a. *Bursary: Billings and Receivables*. Accessed August 8, 2012. <http://myspot.mona.uwi.edu/bursary/billings>
- University of the West Indies, Mona. 2012b. *The Library*. Accessed September 12, 2012. <http://myspot.mona.uwi.edu/library>.
- Venkatesh, Viswanath, Susan A. Brown, Likoebe M. Maruping, and Hillol Bala. 2008. "Predicting Different Conceptualizations of System Use: The Competing Roles of Behavioral Intention, Facilitating Conditions, and Behavioral Expectation." *Management Information System Quarterly* 32(3): 483-502.
- World Bank. 2012. *Information and Communications for Development 2012: Maximizing Mobile*. The World Bank. Accessed September 12, 2012.

<http://go.worldbank.org/0J2CTQTYPO>.

- Yong, Liu, Hongxiu Li, and Christer Carrison. 2010. "Factors Driving the Adoption of M-learning: An Empirical Study." *Computers & Education* 55 (3): 1211-1219.
- Yoon, Cheolho and Sanghoon Kim. 2007. "Convenience and TAM in a Ubiquitous Computing Environment: The Case of Wireless LAN." *Electronic Commerce Research and Applications* 6 (1): 102-112.