Towards better information services: A framework for immigrant information needs and library services

Chunying Wang[a,b], Ruhua Huang[a], Jiyuan Li[b], Jiangping Chen[b,*]

[a] *School of Information Management, Wuhan University, 299 Bayi Road, Wuhan, Hubei Province 430072, China*
[b] *Department of Information Science, University of North Texas, 1155 Union Circle #311068, Denton, TX 76203, USA*

A B S T R A C T

Immigrants are among the populations in modern society that libraries are striving to serve. This study aims to develop a framework on immigrants, their information needs, and library services. Using a systematic literature review based on the grounded theory approach, 28 related articles were reviewed to identify the causes, characteristics, and the content of the information needs of immigrants. Also explored were the possible sources to satisfy these information needs and the barriers to accessing needed information. Findings indicate that personal social networks, the Internet, media sources, and institutions are the main information sources for immigrants; language, cultural differences, the digital divide, unfamiliar information systems, and psychological factors are the five major challenges for immigrants obtaining information. Based on the findings, a unified framework about immigrants, their information needs, sources to satisfy those needs, and library information services is, therefore, proposed. This framework may provide guidance for libraries and other information service agencies to better develop services and information systems for immigrants.

1. Introduction

Between 1990 and 2017, the number of international migrants, or immigrants, worldwide rose by over 105 million with an estimated total of 258 million international migrants in 2017 (United Nations, 2017). Immigrants have become a significant faction in modern society and cannot be ignored by information service providers, such as governments and libraries (Shields, Drolet, & Valenzuela, 2016).

Immigrants have different types of information needs when they arrive in a new country, such as housing, health, jobs, and education. If their information needs are not met, the process of integrating immigrants into a new society will become more difficult and frustrating (Caidi & Allard, 2005; Sirikul & Dorner, 2016), which may lead to further social exclusion. Warschauer (2002) discussed the harm of social exclusion to those who are excluded and the broader impact on society as well as the economy. Immigrant information needs tend to be personal and also evolve with the changing lives of immigrants. These require that information agencies or organizations, such as libraries, provide customized assistance and services that could satisfy those information needs, as indicated by Wang (2012), Berger (2002), and others.

According to Buckland, libraries are "social and cultural institutions with specific processes, practices, and interaction with information and its users" (Buckland, 1988, 1992). Libraries have a long history of serving immigrants. Library collections and active services in the past

100 years have been part of nationwide efforts to address the needs of immigrants (Cuban, 2007). For example, many public libraries offer services on acculturation, citizenship, and practical information evaluation and selection (Pokorny, 2003; Shepherd, Petrillo, & Wilson, 2018). American Library Association (ALA) Public Programs Office published "The New Americans Library Project," which explored how the public libraries serve more than 43 million immigrants, who make up 13% of the United States" population. ALA also published "Library Programs and New Americans: A White Paper" to help public libraries provide services for immigrants in June 2019. The White Paper provides nine recommendations for library staff to help libraries improve library services to meet immigration needs (Flinner, Norlander, Nock, Brucker, & Welch, 2019). The development of library services specifically for immigrants has often reflected the changing practices of librarians to meet the needs of these newcomers trying to adjust to their new lives in their new country.

2. Problem statement

Although extensive studies have emphasized the importance of understanding information needs and barriers for immigrants migrating from different countries and regions, no such understanding has been achieved. Consequently, immigrants often may not receive information services and other services that could have been provided to them. Also, a lack of such understanding may negatively impact the directions and

quality of services provided to immigrants. Even though libraries have long provided services for immigrants, they need guidance in evaluating their existing services and to develop new services that better fit immigrant needs, because library and information services organizations are serving a multi-ethnic immigrant group. There is a gap between the studies on immigrant information needs and the actual services that libraries can provide to address these needs in practice.

A theoretical framework that identifies the information needs of immigrants and corresponding information services of libraries to meet these needs may fill this gap. Furthermore, this framework could specify the relationships among the information needs of immigrants, information sources, information access barriers, and services the information providers, such as a library, can offer.

This study aims to develop a unified framework on immigrants, their information needs, and library services based on a systematic understanding and organizing aspects as related to immigrants. It includes an analysis of the obstacles encountered by information service providers, such as libraries, in providing information services to immigrants and what services libraries have historically provided to immigrants. Combining a systematic literature review and the grounded theory approach, this study would like to answer the following research questions:

RQ1: What are the information needs of immigrants identified in the literature?

RQ2: What are the sources and challenges for immigrants to obtain information?

RQ3: What services have libraries historically provided to meet the information needs of immigrants?

RQ4: What are the obstacles for libraries to provide services to immigrants?

3. Literature review

A number of studies have been conducted to understand the needs of immigration information (Atiso, Kammer, & Adkins, 2018; Caidi & Allard, 2005; Khoir, Du, & Koronios, 2015; Shoham & Strauss, 2007). Most of the research used questionnaires, interviews, case studies, and other methods to investigate the information needs of immigrants. These studies not only help researchers obtain first-hand data, but also provide a basis for the research in this paper. Most of these studies, however, focused on the immigrant information needs and barriers of a particular country and/or region. Most of the research only lists the results of interviews, experiments, and so on. Although these studies are very meaningful, it is difficult for readers and researchers to have a holistic and systematic understanding of the information needs of all immigrants. The literature review conducted by Caidi, Allard, and Quirke (2010) focused on the information practices of immigrants, which summarized how immigrants' experiences affect their information behavior, such as needs, sources, uses, and barriers. The services that libraries could provide to immigrants were described when the authors discussed the formal sources where immigrants could obtain needed information, but library services were not the focus of the article by Caidi and her collaborators. Fifteen out of the 28 papers examined in this study were published after 2010 when the review was conducted by Caidi and her collaborators. Another literature review conducted by Beretta, Abdi, and Bruce (2018) reviewed research related to immigrants' information experience, and summarized main characteristics of immigrants' engagement with information.

This study used a systematic review approach. A systematic review or overview has been defined as: "a review of a clearly formulated question that uses systematic and explicit methods to identify, select and critically appraise relevant research, and to collect and analyze data from the studies that are included in the review" (Gough & Thomas, 2016). Systematic review is widely used in various disciplines, such as health informatics, sociology, and information science. However, there is no clear, one-fits-all definition for 'systematic review.'

And there is no one template that all reviews have followed, although there are common terminologies (Cooper, Hedges, & Valentine, 2009; Gough & Thomas, 2016) one can apply. Many descriptions of systematic reviews begin by outlining the 'stages' a review should include, from identifying an answerable question, developing inclusion criteria and search strategies, to methods of quality assessment and synthesis. Khan, Kunz, Kleijnen, and Antes (2003) provided a five-step procedure for conducting a systematic review, including: 1. *Framing research questions for a review, 2. Searching for relevant studies, 3. Determining studies to be reviewed by quality assessment, 4: Synthesizing evidences, and, 5: Understanding and interpreting findings.* A systematic review approach is considered appropriate and applied in this study because it applies rigor to its procedures in searching, filtering, and synthesis to develop the evidence for specific research questions (Petticrew & Roberts, 2006).

Furthermore, there is a trend to combine other methods with the literature review, such as inductive content analysis (Moreno-Conde et al., 2015) and meta-analysis (Laranjo et al., 2014), to explore different research problems. The grounded theory (GT) methodology, as a qualitative research method, has been widely used in social science research (Charmaz, 2011; Glaser, 1978; Urquhart, 2002). GT methodology facilitates the discovery of theories that buried in data. It allows "the researcher to develop a theoretical account of the general features of a topic while simultaneously grounding the account in empirical observations or data" (Martin & Turner, 1986, p. 141). Mansourian (2006) thought the procedure of the grounded theory methodology consisted of four stages, including coding the data, memo writing, sorting, and theory generation. She believed that the key issue in applying GT was to develop a theory that grounded in real data. Glaser (1992) stated that GT can be used as a methodology in many disciplines. GT has been used in library and information science (LIS) studies since early 1980s, especially in information seeking behavior studies (Mansourian, 2006). Allan (2003, p. 9) advocated the use of GT in LIS research.

A method integrating systematic literature review and GT methodology in this study enabled the development of a framework that could guide the investigation of practical problems as related to immigrant's information services. Under the same methodology, Senyo, Liu, and Effah (2019) conducted a review and developed a comprehensive framework which provides a holistic direction for digital business ecosystem research.

4. Methodology

A five stage systematic literature review process, as illustrated in Fig. 1, was used to identify appropriate literature for the study and to answer the research questions. The five stages include: 1) the definition of literature inclusion and exclusion criteria; 2) a literature search in academic databases; 3) data screening/data selection; 4) an analysis of the selected articles and, 5) the presentation of findings. These stages are explained in more detail below.

4.1. Literature search and selection of appropriate studies

To increase the value of the literature review, a decision was made to select only those studies that have been published in high quality sources. High quality contributions are usually identifiable from reliable sources, such as academic journals and conferences (Webster & Watson, 2002). Therefore, only peer-reviewed journal articles and conference proceedings were selected and other publications, such as dissertations, book reviews, case studies, and books, were excluded.

4.2. Literature search in academic databases

The terms "immigrant", "information acquisition", and "information need" were used as the keywords to conduct searches in academic databases, including Web of Science, Emerald, and EBSCO. As a result,
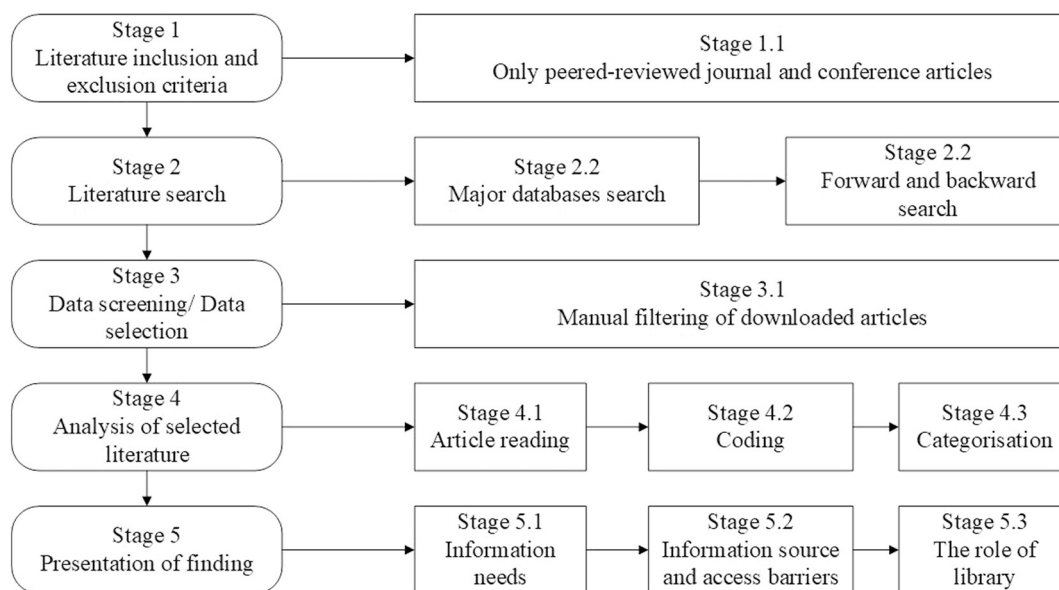
Fig. 1. A five-stage systematic literature review process.

the database searches returned a total of 404 peer-reviewed journal and conference articles.

4.3. Data screening/data selection

The retrieved articles were carefully vetted by the research team following a screening process with three steps. Firstly, after reading the title and abstract of the article, retain only the literature related to immigrant information needs. Secondly, read the full text of the retained articles and identify those that are related to libraries meeting immigrant information needs. The third step was to assess the quality of the study and check the reference list of the articles. Articles without a clear focus on immigrant information needs and library services were removed. For example, although the study by Walsh and Horenczyk (2001) addressed the difficulties encountered in the immigration process, the main purpose of this paper was to discuss the relationship between immigration process and gender, rather than the information needs of immigrants, so this paper was not selected.

After this screening process, 28 articles were identified as the basis for deeper analysis. Appendix A lists all 28 articles, the research methods, and focus areas.

4.4. Analysis of the selected literature

Researchers used a variety of research methods to study the information needs of immigrants. Sixteen articles applied qualitative research methods, such as interviews, case study, historical overview, holistic approach, focus group, observations, and ethnographic approach. Among these qualitative studies, the most frequent methods are interview. Six papers applied quantitative methods, mainly surveys with questionnaires. Seven papers applied the mixed or multi-methods approach. Two major research methods for researchers to investigate the information needs of immigrants are interview and questionnaire.

Different research methods brought diverse research results and conclusions. Under the guidance of grounded theory, this study used Nvivo11 software to code and analyze the selected studies. Two of the authors separately coded the original content of the selected papers, such as user interview results, questionnaire results, and research conclusions. Results that are expressed differently in the original papers but with the same meaning were given the same codes.

The data analysis went through several iterations. The individual papers were read and open codes were developed in the first iteration. Thirty-five open codes were identified. Next, axial codes out of these open codes were created by analyzing their conceptual similarities. As a result, seven axial codes were developed. Finally, after more iterative analysis, mapping, integrating, and revision of the axial codes, similar

Table 1
Coding schemes.

Selective codes	Axial codes	Number of open codes	Open codes
Information needs	Cause for information needs	3	Institutionalization, acculturation, personal adjustment
	Characteristics of information needs	3	Diverse, dynamic, overlapping
	Content of information needs	12	Consumer affairs, education/literacy, employment, family planning, health, home/housing, legal information, political processes, recreation, transportation, welfare/social services information, geographic information
Information sources and access barriers	Main sources of information acquisition	5	Personal networks, the Internet, institutions, media, others
	Barriers to information acquisition	5	Language, culture, the digital divide, unfamiliar information systems, psychological factors
Role of the library	Library services for immigrants	5	Information sources for immigrants, free computers and Internet access, training and education, collaborative services, social relationship building
	Barriers for the library in providing services	2	Institutional barriers, personal/social barriers

to those described by Corbin and Strauss (1990), three selective codes were developed. Table 1 presents the final coding scheme. It contains 35 open codes, seven axial codes, and three selective codes. These codes are part of the results of this study. The next section describes the findings around these codes.

5. Results

This section presents in detail the results of the analysis of the 28 studies on immigrant information needs and library services for immigrants. Specifically, the codes are listed in Table 1.

5.1. Information needs

Information needs are broadly defined as the individual's or a group's desire to locate and obtain information to satisfy a conscious or unconscious need (Taylor, 1962). The article analysis found that the literature studied the causes for immigrant information needs, the characteristics of their needs, and the actual content of the needs.

5.1.1. Causes of information needs

Immigrants have a strong need to feel competent and want to belong when integrating into a new society. But due to dissimilarities in culture, language, and social axioms, immigrants need a lot of information to understand and overcome these differences. The satisfaction of these information needs helps the immigrant to adapt to their new life and society (Shoham & Strauss, 2007, 2008). Information service providers need to understand where immigrant information needs come from in order to deliver services more effectively (Caidi & MacDonald, 2008; Machet & Govender, 2012).

Many factors can generate the information needs of immigrants, depending on their educational background and ethnic groups. Institutionalization, acculturation, and personal adjustment are considered the three "main interdependent indices of adaptation and assimilation of immigrants within their new country" (Eisenstadt, 1953). *Institutionalization*, or institutional integration, refers to processes through which an immigrant is integrated into the new country. *Acculturation* addresses the immigrant's ability to acquire the norms, customs, and social axioms of the new environment (Kurman & Ronen-Eilon, 2004). *Personal adjustment* refers to the degree to which a person is integrated into the new environment while still being able to cope with the difficulties of transplantation and adjustment (Eisenstadt, 1953). Shoham and Strauss (2008) suggested that these changes would lead to immigrant information needs.

Walsh and Horenczyk (2001) conducted semi-structured interviews with 12 immigrants; they found that the need to feel competent and the need to feel a sense of belonging are two significant patterns affecting the immigration process. Becoming part of a community and getting a satisfactory job could help them acclimate to their new life. Information needs are generated in this process. Access to information, as well as the ability to evaluate it and apply it in daily life, were considered fundamental for people in a new environment (Lloyd, Kennan, Thompson, & Qayyum, 2013).

5.1.2. Characteristics of information needs

Immigrant information needs have the following three characteristics.

5.1.2.1. Diverse.
Immigrants are a special group and their information needs have a heterogeneous nature. Immigrants come from different backgrounds. They engage in various industries, and their educational attainment level and information literacy are also varied. For example, skilled workers or business class immigrants may have information needs and practices that differ from those of sponsored family members or refugees. For international students, finance, health, local news, housing, and entertainment information are more important to them

(Sin & Kim, 2013). People of different ages tend to obtain different information. Young people pay more attention to educational information, including vocational education and adult education (Silvio, 2006), while elderly people are more concerned about news, especially news from their homelands (Su & Conaway, 1995). Immigrants from different countries also have different information. The Korean immigrants are most concerned with educational information, followed by health information and legal information (Suh & Hsieh, 2019). Machet and Govender (2012) found that Chinese immigrants needed more information about education, English, and employment while work, family ties, and parenting were the three main information needs of Ghanaian immigrants.

5.1.2.2. Dynamic.
The immigration process has a dynamic nature. Immigrants need different kinds of information consistently to integrate into a new society and adapt to a new life (Silvio, 2006). The information needs of immigrants change as they continue to integrate into new communities. Their information needs will change over time. Shortly after arrival, individuals need to solve similar problems, such as how to use the public transportation system and where to find food markets. Later, their information needs become more diverse (Shepherd et al., 2018). Papillon (2002) found that when immigrants arrived in a new country, they were more likely to get information about survival. With the constant adaptation and habituation to the customs in their new society, immigrants then need more information about social welfare and social status. Furthermore, immigrants may need information about political participation, civic duties, and cultural celebrations to gain a sense of belonging and to become citizens of their new country. Caidi and Allard (2005) used five years as a point of reference and divided the immigrant experience into newcomers (< 5 years) and longer established immigrants (> 5 years). They compared the difference in their information needs: newcomers need a more extensive range of information, and longer-term immigrants are more likely to obtain information related to the pursuit of personal interests.

Mwarigha (2002) deemed that the resettlement process for new immigrants is divided into three stages. In the first stage, the needs of new immigrants include urgent matters, such as food, shelter, orienting themselves in new cities, language interpretation, and language learning. In the mid-term, the needs of immigrants revolve around visits to various systems and institutions in their newly adopted country, including municipal services, legal services, long-term housing, medical services, and language-oriented learning. Finally, longer term immigrants strive to be equal participants in their new country's economic, cultural, social, and political life.

5.1.2.3. Overlapping.
Shoham and Strauss (2008) believed that information needs were divided into general information needs, such as housing, health, and law. At the same time, there are also needs that are dependent on the individual, or personal needs, such as updating their medical license. There is often an overlap between general and personal information needs.

Different information needs are related. One information need may be embedded in other needs. For example, housing is the most urgent information need after immigrants enter a new society. When considering housing problems, immigrants who are parents also need to consider their children's educational issues, and education problems also overlap with language solutions. At the same time, when looking for housing information, there will be information misunderstandings due to language problems. The more information they can obtain in one category, the more smoothly will the immigrant be able to solve some related problems.

5.1.3. Content of information needs

Immigrants need a variety of information related to many areas to integrate into a new society. Researchers have conducted surveys of

immigrant groups through questionnaires, interviews, and so on to understand their actual information needs. These information needs have many aspects, including: consumer affairs, educational/literacy, employment, family planning, health, home/ housing, legal information, political processes, recreation, transportation, welfare/social services, and geographic information (Barefoot, 2018; Fisher, Marcoux, Miller, Sánchez, & Cunningham, 2004; Mugwisi, Jiyane, & Fombad, 2018; Shoham & Strauss, 2008).

Through an in-depth reading and analysis of the literature, it was ascertained that housing, education, health, and banking are the most common information needs. Shoham and Strauss (2008) considered the above information as being critical for the daily life of immigrants. The survey data of Silvio (2006) showed that 40% of immigrant information needs are for daily information needs, while work information needs account for 20%. Immigrant demand for health information can also be intensive; Shoham and Strauss (2007) suggested immigrants focus a lot of their attention on health and health insurance, especially for families with children.

The information needs of immigrants are diverse and involve a wide range of fields. This study found that many researchers have carried out different types of classification on this topic. Shoham and Strauss (2008) divided immigrant information needs into general needs and personal needs, Kennan, Lloyd, Qayyum, and Thompson (2011) grouped information needs into two categories: compliance information (rule-based knowledge needed to function in a society) and everyday information (knowledge that is often taken for granted within a society). Rho (2002) summarized 12 fields from which immigrants need information, including housing, health, legal aid, educational opportunities for career development, and others.

These classification approaches are valuable, however, they provided limited guidance for information services organizations to provide services. Shields et al. (2016) believed the settlement process includes adjustment, adaptation, and integration. And, although the expressions used are slightly different, the meaning of each stage is similar to those in Mwarigha (2002). This study's review and analysis found that the three stages of settlement proposed by Mwarigha (2002) provided a better way to organize the content of immigrant information needs.

The three stages of settlement are flexible and dynamic, and it is a useful tool to help understand and address the information needs and barriers at different stages of immigration (Caidi, Allard, & Quirke, 2010; Sirikul & Dorner, 2016). Moreover, this research combines the predecessors' research to complement the information needs of each stage. Table 2 presents the three stages and their information needs.

Mwarigha (2002) pointed out that although the third stage is vital to the successful integration of immigrants into the new society, the first and second phases of information provision from formal service providers have the most impact. At present, most immigration services are limited to meeting the information needs of the first phase of immigration. The obstacles to solving the second phase of information needs are the most prominent.

5.2. Information sources and access barriers

The second selective code is "Information sources and access barriers" which contains two axial codes in Table 1.

5.2.1. Main sources of information

This study identified and classified the sources of information that are needed by immigrants into four categories: personal network, the Internet, media sources, and institutional. Table 3 lists the main sources of information.

5.2.1.1. Personal network.
Personal networks refer to private connections of immigrants, which are considered primary information sources for immigrants when seeking information (Fisher et al., 2004; Silvio, 2006). They rely heavily on personal networks especially when it comes to information about personal needs (Atiso et al., 2018). Khoir et al. (2015) discovered that immigrants relied more on private systems (71%) than other sources of information. This phenomenon is especially prevalent among the first generation of immigrants; they may be more inclined to get information and build friendships with people from their own home country (Papillon, 2002). Additionally, Caidi and Allard (2005) proposed that social networks are the main source of information for vulnerable and marginal groups.

In personal networks, family and friends are the main sources. Newcomers are reliant on family and friends to obtain their needed information (Chui, 2003; Khoir et al., 2015; Mylopoulos, 2000; Quirke, 2012; Silvio, 2006; Su & Conaway, 1995). Caidi et al. (2010) considered that this is because many new immigrants do not have extensive social networks. Khoir et al. (2015) found that personal social networks were often used to obtain most needed information, especially on housing, health care, education, or employment (Chui, 2003; Lamba, 2003). In addition to the physical community, virtual communities are also critical. Especially for job hunting, child growth, and other settlement needs, Asian immigrants often use Facebook, Twitter, and LinkedIn to get help (Khoir et al., 2015).

5.2.1.2. The Internet.
The Internet is another essential information source (Artinger & Rothbauer, 2013; Caidi & MacDonald, 2008; Khoir et al., 2015; Yoo-Lee, Rhodes, & Peterson, 2016), Khoir, Du, and Koronios (2014) indicated that the proportion of Asian immigrants using the Internet to obtain information is very high, about 87.5%. Shepherd et al. (2018) considered younger and more educated immigrants tend to use electronic sources, such as websites and mailing lists, to access information. Mason and Lamain (2007) and Shoham and Strauss (2007) found that the Internet was the main source for information when preparing for immigration. Immigrants can obtain the information they need through the official website of government agencies or other immigrant websites. There are also many email services for different themes or communities where immigrants can find specific information about housing, health, finance, food, and more (Shoham & Strauss, 2007).

Table 2
Information needs based on the three stages of settlement.

Stage	Description	Content of information needs
Immediate stage	In this stage, the information needs are immediate and essential	Shelter, food, clothing, employment, traffic, banking, education, health, orientation
Middle or intermediate stage	In this stage, immigrants need more timely, rich, and equitable information to seek a better life (such as advanced housing, education, employment, etc.), integrate into the community, and learn about the local culture, policies, and laws	Driving, health services, legal services, housing, service of local systems/ institutions, improved employment, education opportunities for career development, advanced or employment-specific language instruction
Long term	During the final stage, immigrants need more diverse information to increase their equal participation in a new society. At the same time, information needs tend to become more personalized	Economic, political, civic participation, cultural and social information, social connection, wages, legal, entertainment, fixed assets, history

Table 3

Main sources of acquiring information for immigrants.

Type	Sources
Personal networks	The personal social network in general; Family; Friends; Relatives Settlement workers; Neighbors; Their colleagues, elders, teachers, counselors, neighbors, and clergy
The Internet	Internet/web sites; Mailing lists; Other immigrants' blogs
Institutions	Libraries; Archives; Museums; Places of worship (churches/mosques/temples); Schools; Social services agencies; Workplaces; Community centers; Employment resources centers; University extension departments; Government organizations/immigration offices
Media	TV; Radio; Magazines; Newspapers
Others	Women's groups; Latin American grocery stores

5.2.1.3. Institutions. Institutions are the most diverse source for immigrant information and they include libraries, archives, museums, places of worship (churches/mosques/temples), schools, social services agencies, workplaces, community centers, employment resources centers, university extension departments, and government organizations/immigration offices.

Public libraries, schools, and places of employment are the most important institutions for immigrants to obtain information (Fisher et al., 2004) as 54% of immigrants used them to obtain information during respondents' settlement. However, compared to other ways of obtaining information, public libraries and places of worship are less formal and more approachable (Khoir, Du, Davison, & Koronios, 2017). When the support of relatives is not available, immigrants often use these sources to obtain the information they need (Shepherd et al., 2018).

Most public libraries offer free computers and networks; immigrants often use public libraries to find both general and leisure information, such as news updates, cooking, cultural, and other activities. Public institutions can also expand their knowledge base and immigrant networks through these interactions (Audunson, Essmat, & Aabø, 2011). Simultaneously, these institutions tend to be considered safe spaces. They provide valuable support for immigrants to integrate into a new society (Khoir et al., 2017).

5.2.1.4. Media. Media, such as television, radio, and newspapers, is an important source for immigrants to obtain information. According to Petr's (2004) survey, TV and radio are the most frequently used information channels for immigrants, accounting for 72.1% and 58.1%, respectively, ranking as the top two in the survey results. Meanwhile, newspapers and magazines are also commonly used by immigrants to obtain information. Like the Internet, media is also an important way for immigrants to keep pace with current events. Immigrants with satellite television like to watch television to hear national and international news (Adkins, Sandy, & Derpic, 2017).

5.2.2. Barriers to information acquisition

The obstacles that prevent immigrants from obtaining needed information are multifaceted, including language, cultural differences, the digital divide, psychological factors, and unfamiliar information systems. Table 4 lists these barriers. Among them, language barriers and cultural differences are the two most discussed obstacles.

Due to language and cultural barriers, immigrants cannot communicate with others smoothly. They have difficulty in understanding English materials and using English networks to obtain information. Ono and Zavodny (2008) found that information and communication technology skills were critical to success in the workplace and at schools. They also play a vital role in citizenship and political participation. Unfortunately, Fairlie (2007) found that Spanish-speaking Hispanics had very low computer ownership and home Internet access rates.

In addition to the lack of computers and Internet access, immigrants face many obstacles in using local information systems, due to language and cultural differences (Sirikul & Dorner, 2016). It is worth noting that, although 57% of the Internet uses English, only 28% of Internet

Table 4

Barriers to information acquisition.

Barriers	Content/description
Language	Low English language proficiency
	Language differences
	No information available in languages other than English
Culture	Cultural differences
The digital divide	Lack of access to the Internet
Unfamiliar information systems	The real estate system is very different
	Barriers to using local information systems
	Level of education
	Live in specific neighborhoods
	Have lower incomes
	Children at higher risks of schooling problems
	Less likely to be familiar with local institutions and practices relating to the flow of useful information
Psychological factors	Lack of confidence
	May not feel comfortable sharing sensitive information

users use English as their native language. As stated in Fairlie's research, "even after controlling for education, family income, and immigration status, the language was found to be an important determinant of home computer and Internet access" (Fairlie, 2007, p. 225). Ono and Zavodny (2008, p. 1145) also found that the English proficiency of immigrants was "positively related to IT access and use." When discussing the widespread adoption of mobile phones as compared to computers, Leonardi (2003) pointed out that almost all mobiles phones were available in multiple languages, making them easy to use by non-English speakers.

In addition to the above factors, psychological barriers, economic problems, and levels of educational attainment also prevent immigrants from obtaining needed information.

5.3. The role of public libraries

5.3.1. Library services for immigrants

A crucial role for public libraries is to support the community as an information center to promote lifelong learning and improve people's quality of life (Häggström, 2004). The library should meet the various information needs of users through providing quality information sources and other assistance. Dancs (2018) believed that libraries could strengthen cultural identity and resolve cultural conflicts. Immigrants often use a broader and more balanced range of services than other public library users (Berger, 2002). Fisher et al. (2004) identified four cornerstones for immigrants in their process of using public libraries: (1) discovering public libraries as free, safe, and comfortable environments; (2) understanding available library resources and gaining the skills necessary to access them; (3) spreading the message on the benefits of libraries to family and friends; and (4) learning to trust library staff. Drawing on Fisher's four cornerstone theories and based on summarizing previous studies, libraries can provide the following different services or roles for immigrants.

5.3.1.1. Information sources for immigrants. Many immigrants identify the library as a useful information resource center. Banks (2000) found that Wellington's Asia Pacific immigrants were generally comfortable with public libraries; they believed that public libraries were one of their essential information sources. Shepherd et al. (2018) indicated that immigrants can access information through the use of collection resources and digital resources on the library's website.

One of the main purposes of immigrant visits to libraries is to use collections (Khoir et al., 2017). These include printed and online materials, DVDs, and toys. Some immigrants improve their English literacy by using library books and movies (Khoir et al., 2017). Due to language barriers, many immigrants still tend to use native language materials to obtain information after they have moved to a new country. To facilitate new immigrants accessing information, many libraries offer multilingual collections. For example, the Sheffield Central Library provides a separate language collection to their large local Polish immigrant community (Listwon & Sen, 2009). In addition, most libraries also offer multilingual library brochures and information to help users use collections (Burke, 2008).

Public institutions and welfare organizations have many information resources related to immigrant information needs. Public libraries can integrate the information resources to create an annotated bibliography and provide social services for immigrants, such as office locations, optional service forms, and learning materials for citizenship testing (Burke, 2008). Wang (2012) organized the resources according to the information needs of immigrants to include: laws and handbooks, social services, statistics, immigration history, immigration from individual countries or regions, immigrant records and naturalization records, and special library collections.

5.3.1.2. Free computers and Internet access. In the age of the Internet, more and more users access information by visiting websites. However, access to the Internet is an obstacle to accessing information for many immigrants. Public libraries provide users with free computers and Internet access. A national telephone and online survey in 2011 found that 28 million people used public library computers or the Internet to find health information or perform health and health-related tasks (Becker et al., 2011). Khoir et al. (2017) found that 54% of immigrants have used the public library website to browse the library catalog, check library updates, and find other information.

Shepherd et al. (2018) believed using a computer is a common motivation to visit libraries. Berger (2002) reported that immigrant teenagers often visited libraries to use computers and the Internet to socialize with others and to improve their language skills. Van der Linden, Bartlett, and Beheshti (2014) concluded that when immigrating to a new country, computers and the Internet are necessary facilities. They found that immigrants mainly used the library to retrieve educational information, read the news, check bank information, and check emails.

Due to language barriers, many immigrants are still unable to access information effectively even if they are able to access the Internet. To this end, many libraries build multilingual websites providing a multilanguage computer interface, computer courses, and skills training (Burke, 2008). State and territory libraries collaborated to create the MyLanguage project to support the cultural diversity of the Australian society (Steed et al., 2011). This project provides a web portal which supports more than 60 different languages with resources, and immigrants can use their first language to find information and get services through access to search engines, the online catalog, government websites, and read up-to-date news headlines.

In addition to language, culture is also an essential factor affecting the use of computers by immigrants (Caidi & Allard, 2005). Duncker (2002) studied digital libraries and computing metaphors among the Maori in New Zealand and suggested that metaphors were deeply rooted in cultural practices and it should be an essential part of the information systems design. The study conducted by Lenhart et al. (2003) indicated that a people's perception of the Internet affects their use or departure from the Internet.

5.3.1.3. Training and education. Training and education are an integral part of the information needs of immigrants, including teaching children, learning English, and information literacy education.

Libraries have provided newcomers with a place to study, read, and relax (Shepherd et al., 2018). Immigrant families like to use the library more "for a school or class assignment" than for job-related pursuits (Burke, 2008).

Public libraries play a crucial and key role in creating a cultural environment and increasing literacy. They provide useful and diverse reading materials for all ages and literacy levels, and offer many literacy courses and programs (Krolak, 2005). The training provided can improve an immigrant's ability to talk, read, and write in a second language.

Libraries have the responsibility to help immigrants gain access to information resources and provide them with community access. When conducting services, libraries should consider the special needs of immigrants, such as language skills, cultural backgrounds, daily experiences, and technology preferences, to promote a supportive settlement process (Audunson et al., 2011; Komito, 2011).

5.3.1.4. Collaborative services. Libraries often collaborate with immigration agencies and other organizations (churches, charities, and social service agencies) to provide services related to immigrants' living needs and human rights (Atiso et al., 2018). These include work, housing, legal, health care, and others. Some libraries work with immigration lawyers and social service agencies to host seminars or provide additional assistance (Frederiksen, 2015).

In addition to social organizations, libraries in the US have worked intensively with government agencies, especially the United States Citizenship and Immigration Services (USCIS). In 2013, the Institute of Museum and Library Services signed a memorandum of understanding with the USCIS. The USCIS and public libraries cooperated to provide accurate and useful information related to citizenship benefits, policies and services, and to handle related matters. Public libraries in Canada often work with the immigration service to offer civic education programs and educational activities to undocumented immigrants (Frederiksen, 2015).

Furthermore, public libraries could cooperate with academic or medical libraries. For instance, many immigrants need to access educational resources, such as databases, to support academic learning (Khoir et al., 2017). Academic libraries can provide academic resources to help public libraries serve immigrants (Flaherty, 2013; Hughes-Hassell, Hanson-Baldauf, & Burke, 2008).

5.3.1.5. Social relationship building. Libraries play an essential role in assisting immigrants to build relationships with local communities. In libraries, immigrants meet their friends or make new friends. They are also helped to obtain identity papers in order to enjoy the benefits of the welfare system. Furthermore, public libraries often organize various cultural activities to help immigrants preserve their culture and traditions, and to acquire survival skills (Petr, 2004).

According to the survey conducted by Shepherd and others in 2018, the library is where immigrants make new friends and connect with the community. Immigrants said they met other people in the library (28%), while 50% of the immigrants said the library helped them build their confidence (Shepherd et al., 2018). Wang (2011) found that libraries play an essential role for Chinese immigrants. For example, the Auckland Library helps Chinese immigrants integrate into New Zealand. Queens Borough Public Library (Fisher et al., 2004) and the Swedish public library (Johnston, 2016) provided English conversation classes to immigrants. Libraries offer comfortable environments where newcomers can freely exchange information and that stimulate informal conversations about local society and new friendships.

5.3.2. Barriers preventing libraries from providing services to immigrants

The literature also discusses barriers that prevent libraries from providing services to immigrants. Table 5 summarizes these barriers

Table 5
Barriers for libraries in providing services to immigrants.

Type	Factors	Examples/descriptions
Institutional	Resources	Limited/lack of funding/resources/materials/staff, hours open, poor infrastructure, shortage of staff, security systems, excessive noise levels in public areas, poor wireless coverage (especially on lower floors)
	Attitudes	Staff attitudes, rules and regulations, sense of ownership, staff's learning capabilities
	Physical conditions	Inconvenient library locations, insufficient space, insufficient parking
Personal/social barriers	Personal conditions	Limited English, not eligible for a library card, low literacy skills, low income, live in remote areas/no transportation, low self-esteem, no transportation
	Perceptions	Sense of isolation, educational disadvantages, the relevance of libraries to one's needs, lack of knowledge about existing facilities and services

found from the literature.

The obstacles to immigrants accessing services at libraries can be divided into two major parts: institutional barriers (those related to libraries), or personal/social barriers. Institutional barriers include the library's Resources Obstacles, Attitudes of the Librarian, and Physical Conditions. Table 5 lists examples under each category. It is noted that the Resources Obstacles, Attitudes of the Librarian, and Physical Conditions are inextricably linked, and that the resources of a library are the basis for librarians to provide services. Because of the lack of funds to purchase and maintain resources, or even recruit and retain human resources necessary to provide library services and efforts essential to facilitate access, information services were compromised.

Immigrants' personal conditions and perceptions also create obstacles for them to obtain information from libraries. Because of the lack of English proficiency and informed inquiry, immigrants do not use library resources well even when they enter the library. For example, online library catalogs require patrons to use both language and technology skills that they may not have. For those immigrants with limited language and insufficient information acquisition capabilities, the library can carry out proper guidance and training to help immigrants use the library effectively. Inadequate understanding of library services by immigrants has also created barriers to access information. Many immigrants are not familiar with the concept of public libraries. This lack of understanding makes them not even consider using the library, or they may not know where the library is, nor do they understand what they need in order to use the library, and they often do not understand the library's usage procedures and services. Libraries can cooperate with immigration authorities, government language training schools, churches, and other institutions to help educate immigrants so they understand the concept of the public library and the library's information services.

6. Immigrant information needs framework

6.1. Answers to the research questions

The first question, *what are the information needs of immigrants identified in the literature?* has been well studied in the literature with different classification approaches. The information needs of immigrants could be better understood by integration with the immigration process. In other words, immigrants have different types of needs at different stages. In the immediate stage, immigrants urgently need to obtain information related to survival, such as shelter, food, clothing, work, traffic, banking, education, health, and orientation. In the middle or intermediate stage, after experiencing the adaptation period of the settlement phase, immigrants want to pursue a better development of their life and career. Correspondingly, their information needs also change from the basic level into a more professional and developmental direction, such as housing, educational opportunities for career development, and advanced or employment-specific language instruction. In the long term, immigrants need more political, cultural, wages, and other information to truly integrate into their new society and enjoy the benefits of the new country on an equal footing. In addition, immigrant information needs have the characteristics of differential, dynamic, and overlapping.

The second question was, *what are the sources and challenges for immigrants to obtain information?* The analysis found that the main information sources included: 1) personal networks (general personal social network, family, friends, relatives, settlement workers, neighbors, colleagues, elders, teachers, counselors, neighbors, clergy); 2) the Internet (websites, mailing lists, other immigrants' blogs); 3) institutions (libraries, archives, museums, place of worship, schools, social services agencies, workplaces, community centers, employment resources centers, university extension departments, government organizations/immigration offices); 4) media (TV, radio, magazines, newspapers); and 5) others (women's groups, Latin American grocery stores). While immigrants' personal networks were considered the major source, the importance of libraries has been realized by immigrants. However, libraries should work with other institutions to advocate their information services for immigrants.

There are five major challenges for immigrants to obtain information: 1) language (low English language proficiency, language differences, no information available in languages other than English); 2) cultural differences; 3) the digital divide (lack of access to the Internet); 4) unfamiliar information systems (the real estate system is very different, barriers to using local information systems, level of educational attainment, live in specific neighborhoods, have lower incomes, children at higher risks of schooling problems, less likely to be familiar with local institutions and practices relating to the flow of useful information); and 5) psychological factors.

The third question asked, *what services have libraries provided to meet the information needs of immigrants?* The review and analysis revealed that libraries are a useful information resource center for immigrants; immigrants are able to gain access to rich, diverse collections and digital resources from their local public library. Immigrants can use computers and the Internet for free in the library. Thirdly, the library offers a variety of training courses specifically for immigrants, including language courses, information literacy courses, and so forth. Fourthly, libraries often collaborate with immigration agencies and other organizations to provide information about employment, housing, legal, health care, and other services to immigrants. Lastly, libraries assist immigrants in building their relationships with their local communities. In libraries, immigrants often meet their friends or make new friends, get help in obtaining identity papers in order to enjoy the benefits of the welfare system, and can take part in various cultural activities provided by the library.

For the fourth question, *what are the obstacles for libraries to provide services for immigrants?* Two types of obstacles were identified by the literature analysis and they are: institutional barriers on the part of the library and the immigrant's own personal barriers, as described in Table 5. The obstacles from the institution include the library's Resources Obstacles, Attitudes of the Librarian, and Physical Conditions. The obstacles for immigrants to obtain information services can be divided into personal conditions and perceptions.

6.2. A framework for immigrant information needs and library services

A framework for immigrant information needs and library services is proposed based on the answers to the four research questions. Fig. 2
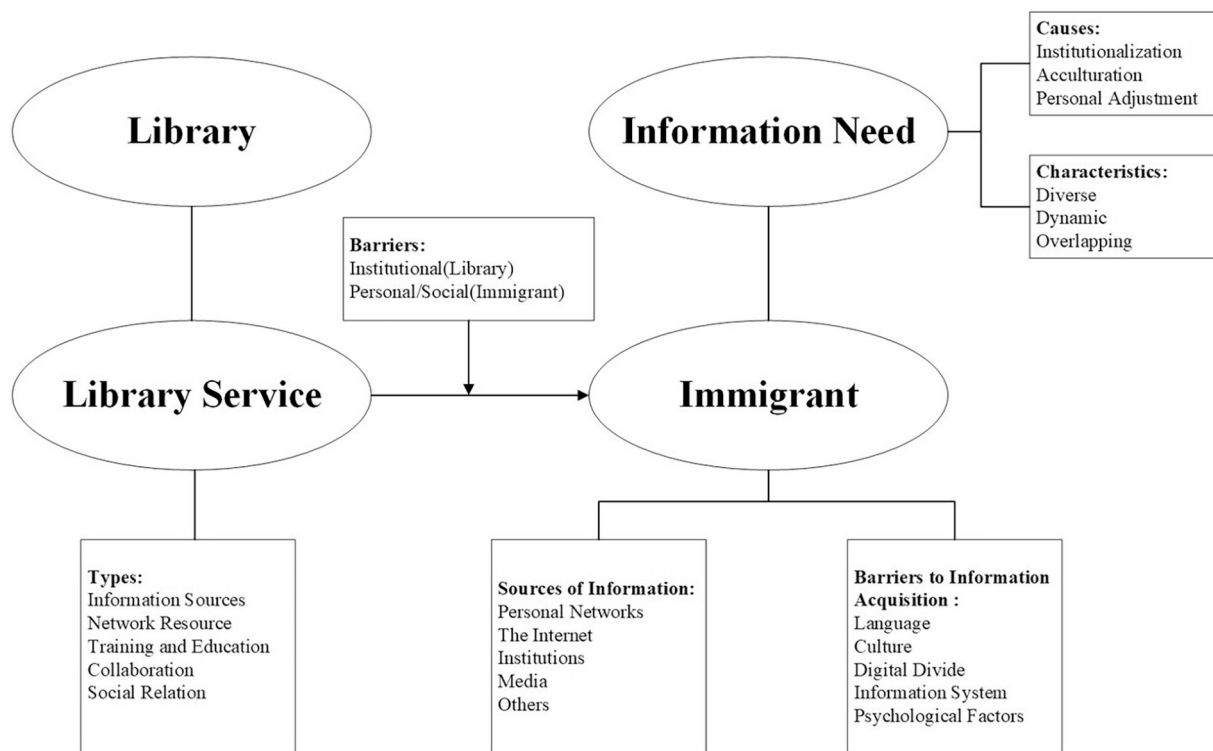
Fig. 2. A framework for immigrant information needs and library services.

is a presentation of the framework. As highlighted in the four ovals in Fig. 2, this framework concerns four key concepts: *Immigrant, Information Need, Library*, and *Library Service. Library* in the figure mainly refers to a public library that is accessible to the general public and is usually funded from public sources, such as taxes (Wikipedia, 2019).

Immigrant is one of the key concepts of this framework. There are different types of immigrants each with their own purposes looking for new ways of living in a brand new environment (Sin & Kim, 2013; Su & Conaway, 1995). Under this concept, the framework addresses the most important aspects as related to immigrants: their information needs, sources of information, and barriers to acquire information. The framework specifies the information sources for immigrants. Immigrants usually obtain information from personal sources, the Internet, the institutions, and the media (Fisher et al., 2004; Silvio, 2006; Artinger & Rothbauer, 2013; Caidi & MacDonald, 2008; Khoir et al., 2015; Shepherd et al., 2018), but due to the barriers of language proficiency, cultural differences, the digital divide, unfamiliar information systems, and other factors, such as psychological issues (Sirikul & Dorner, 2016; Ono & Zavodny, 2008; Leonardi, 2003), immigrants are not always able to obtain the information they need.

Information Need is treated as a separate concept due to its importance in understanding immigrants. The framework illustrates the characteristics of, the causes for, and the actual content of immigrant information needs. Specifically, the information needs of immigrants can be characterized as diverse, dynamic, and overlapping (Silvio, 2006; Caidi & Allard, 2005; Mwarigha, 2002; Shoham & Strauss, 2008; Boamah, 2018). The needs can be triggered by different motivations, or initiated from different sources, including institutionalization, acculturations, and personal adjustments to new environments (Caidi et al., 2010; Lloyd et al., 2013; Machet & Govender, 2012; Shoham & Strauss, 2007). The actual information needs are many, and can be categorized using different approaches, one of which is Mwarigha's (2002) three stages of settlement as presented in Table 2. Immigration information needs could include many aspects, such as education/literacy, employment, housing, and/or legal related services. A better understanding of immigrants would definitely improve comprehending their information needs.

The third key concept of this framework is *Library*. As a free public

information provider, a local public library is an important information source for all users and citizens including immigrants (Fisher et al., 2004; Koontz & Gubbin, 2010; Puente, Gray, & Agnew, 2009). The library provides many services, some of which aim to help immigrants access information and meet their information needs (Khoir et al., 2017). Libraries are facing many challenges on how to accommodate the changing nature of its users and their information needs, how to better serve its users, how to effectively and efficiently use its limited resources, and how to gain support, funding, and the necessary resources to sustain its services. One of the purposes of this study is to explore gaps between library services and its users.

The fourth key concept is *Library Service,* which is derived from the concept of library. The framework specifically identifies different types of services provided by libraries to immigrants, such as information resources, education, networked resources, collaboration, social relations, and a sense of security, as explained in the previous section (Khoir et al., 2017; Listwon & Sen, 2009; Shepherd et al., 2018; Wang, 2012).

This proposed framework illustrates the relationship between immigrant and the library through library services. On one hand, immigrants use libraries in multiple ways. They find needed information, use free computers, obtain access to the Internet, meet friends, and receive help from other agencies within libraries (Artinger & Rothbauer, 2013; Chui, 2003; Khoir et al., 2015; Mylopoulos, 2000; Quirke, 2012; Silvio, 2006; Su & Conaway, 1995). On the other hand, there are barriers for libraries in providing services to immigrants. These barriers are not limited to resources and library locations, but also the attitude of library staff towards serving immigrants, as well as their knowledge of the public library system and their skills using the services offered (Leonardi, 2003; Ono & Zavodny, 2008; Sirikul & Dorner, 2016). The lack of capabilities and understanding on the part of the immigrants can prevent them from using library services.

6.3. Significance of the framework

The significance of the proposed framework can be demonstrated in the following aspects:

(1) It presents a systematic understanding of immigrant information needs including the characteristics, the causes, and the content of the needs. Such understanding is achieved through a grounded theory approach. The framework can help researchers and librarians develop the whole process of immigrant information needs. This study does not focus on any specific immigrant information need as did previous studies, which emphasized a particular nation or a region.

(2) It provides guidelines for libraries to develop and improve their services to immigrants. Applying this framework as a guideline, libraries can develop surveys to understand the immigrants in their areas. And based on the understanding, they can choose to develop one or more affordable services that fits the needs of their patrons. Furthermore, libraries can train the librarians in order to increase their knowledge and skills to serve immigrants.

(3) It clearly specifies the multiple roles the library can assume for immigrants. Libraries are not only a place for immigrants to access information and to make friends, but also a hub for them to connect with other information sources, institutions, and services. This clarification provides immigrants with a better way to view libraries and helps them to better understand the importance of libraries.

In summary, this framework fills the gap of systematically understanding immigrant information needs and library services. It provides a useful reference for libraries and other information services that aim to serve immigrants and their specific needs. It can also guide immigrants to understand their own information needs and to better understand and use libraries.

6.4. Limitations

There are some limitations in this study. The framework is developed solely from the literature, which needs to be further verified and assessed. Some of the latest practices in libraries may be overlooked as the literature on new implementations may not yet be published.

7. Summary and conclusion

This paper reviews the related literature on immigrant information needs and library services combining a systematic literature review with the grounded theory approach. Twenty-eight papers have been identified and analyzed to determine the information needs and barriers to immigrant use of libraries, and how information providers, such as libraries, can meet the information needs of immigrants. Based on the results of the analysis, this study proposed a framework that can address immigrant information needs and services provided by libraries. This framework is expected to guide libraries to develop much needed services for immigrants. The unified framework derived through this integrated use of systematic review and grounded theory could be more reliable and useful.

The biggest contribution of this study is the unified framework for immigrants, which provides systematic understanding of immigrant information needs and libraries' services to immigrants. Future research will be conducted around this framework. Specifically, the following studies are planned: 1) perform an empirical examination of immigrant information services in various state public libraries in the United States. This examination will help to verify and refine the framework proposed in this study; 2) investigate factors affecting immigrant use of libraries, especially how the educational attainment levels, knowledge, and personality of the librarians affect the satisfaction of immigrants using the libraries; and, 3) evaluate and design information access systems and/or applications to help immigrants obtain information more easily.

Acknowledgments

Appendix A

Table A1
The 28 articles reviewed in this study

Author	Methods	Research Area
Adkins et al. (2017)	Interview	Information Sources, library service
Atiso et al. (2018)	Ethnographic approach	Immigration resources, information needs, challenges
Barefoot (2018)	Case study	Information need, information access or use issues
Beretta et al. (2018)	Review	Information sources, information needs, information engagement obstacles, libraries service
Berger (2002)	Survey	Library services
Boamah (2018)	Questionnaire and interview	Types of information, information seeking behavior, library service
Caidi and Allard (2005)	Holistic approach	Information practices, information, seeking behavior, information service
Caidi et al. (2010)	Review	Information needs, information pathways and sources, information sharing and expressive information activities, barriers and challenges to information practices
Fisher et al. (2004)	Field observations and in-depth interview	Information needs, information source and barriers
Johnston (2016)	Participant observation, interview, focus group, questionnaire	Library service
Kennan et al. (2011)	Socio-cultural approach	Information needs, information source, Barriers in the information landscape
Khoir et al. (2015)	Pilot study, interview	Information needs, information seeking, information grounds and information sharing, library services
Khoir et al. (2017)	Surveys and extended interview	Immigrants use public library services
Listwon and Sen (2009)	Case study	information needs, Users' perspective on the library services, library services
Machet and Govender (2012)	Questionnaire	Information behavior, library services, information needs and the sources
Mugwisi et al. (2018)	Interview	Information needs, information services
Petr (2004)	Pilot study, questionnaire	Information need, library services
Puente et al. (2009)	Survey	Library service
Shepherd et al. (2018)	Questionnaire	Information needs, newcomer perceptions of libraries, library service
Shoham and Strauss (2007)	Qualitative interview, the grounded theory	Information needs, channels of information
Shoham and Strauss (2008)	Qualitative Interview, the grounded theory	Information needs, factors which help towards absorption and information needs that are hard to satisfy
Silvio (2006)	Focus group supported with semi-structured interview	Information needs, information sources, information seeking behavior, library service
Sin and Kim (2013)	Interview	Information needs, information source
Sirikul and Dorner (2016)	Semi-structured interview	Information need, information sources, main barriers in accessing services

Table A1 (*continued*)

Author	Methods	Research Area
Su and Conaway (1995)	Survey	Information needs, information seeking, information sources
Suh and Hsieh (2019)	Interviews	Information needs
Wang (2012)	Historical overview, literature review	Library services, information resources
Yoo-Lee et al. (2016)	Questionnaire	Information needs, information source use and source preference, use of the library, library services

References

Adkins, D., Sandy, H. M., & Derpic, J. (2017). Information sources of Latin American immigrants in the rural midwest in the Trump era. *Library Quarterly, 87*, 243–256. https://doi.org/10.1086/692301.

Allan, G. (2003). A critique of using grounded theory as a research method. *Electronic Journal of Business Research Methods, 2*(1), 1–10. Retrieved from http://www.ejbrm.com/main.html.

Artinger, J., & Rothbauer, P. M. (2013). Immigrant youth's perceptions of the library: A pilot study involving youth ages 14–18 years of African and Caribbean origin. *Proceedings of the Annual Conference of CAIS/Actes Du Congrès Annuel de l'ACSI, (Fredericks 2005), 2008–2010*https://doi.org/10.29173/cais346.

Atiso, K., Kammer, J., & Adkins, D. (2018). The information needs of the Ghanaian immigrant. *Information and Learning Science, 119*, 317–329. https://doi.org/10.1108/ILS-02-2018-0013.

Audunson, R., Essmat, S., & Aabø, S. (2011). Public libraries: A meeting place for immigrant women? *Library and Information Science Research, 33*, 220–227. https://doi.org/10.1016/j.lisr.2011.01.003.

Banks, E. I. (2000). *"Are you being served?": An investigation into the ways public libraries encourage the information seeking behaviour and meet the information needs of Asian and Pacific immigrants to New Zealand* (Unpublished research paper in partial fulfilment of the requirements of the Master of Library and Information Studies)Wellington, New Zealand: Victoria University of Wellington.

Barefoot, M. R. (2018). Identifying information need through storytelling. *Reference Services Review, 46*(2), 251–263.

Becker, S., Crandall, M. D., Fisher, K. E., Blakewood, R., Kinney, B., & Russell-Sauvee, C. (2011). *Opportunity for all: How library policies and practices impact public Internet access.* Washington, DC: Institute of Museum and Library Services.

Beretta, P., Abdi, E. S., & Bruce, C. (2018). Immigrants information experiences: An informed social inclusion framework. *Journal of the Australian Library and Information Association, 67*, 373–393. https://doi.org/10.1080/24750158.2018.1531677.

Berger, Å. (2002). Recent trends in library services for ethnic minorities – The Danish experience. *Library Management, 23*(1), 79–87. https://doi.org/10.1108/01435120210413878.

Boamah, E. (2018). Information culture of Ghanaian immigrants living in New Zealand. *Global Knowledge, Memory and Communication, 67*(8/9), 585–606.

Buckland, M. K. (1988). *Library services in theory and context* (2nd ed.). Oxford; New York: Pergamon Press.

Buckland, M. K. (1992). *Redesigning library services: A manifesto.* Chicago, IL: American Library Association.

Burke, S. K. (2008). Use of public libraries by immigrants. *Reference & User Services Quarterly, 48*, 164–174.

Caidi, N., & Allard, D. (2005). Social inclusion of newcomers to Canada: An information problem? *Library and Information Science Research, 27*, 302–324. https://doi.org/10.1016/j.lisr.2005.04.003.

Caidi, N., Allard, D., & Quirke, L. (2010). Information practices of immigrants. *Annual Review of Information Science and Technology, 44*, 493–531. https://doi.org/10.1002/aris.2010.1440440118.

Caidi, N., & MacDonald, S. (2008). Information practices of Canadian Muslims post 9/11. *Government Information Quarterly, 25*, 348–378. https://doi.org/10.1016/j.giq.2007.10.007.

Charmaz, K. (2011). Grounded theory methods in social justice research. In N. K. Denzin, & Y. Lincoln (Eds.). *The SAGE handbook of qualitative research* (pp. 359–380). Thousand Oaks, CA: Sage.

Chui, T. (2003). Longitudinal survey of immigrants to Canada: Process, progress and prospects. *Statistics Canada, 89*. Catalogue. Retrieved from http://publications.gc.ca/Collection/Statcan/89-611-X/89-611-XIE2003001.pdf.

Cooper, H., Hedges, L. V., & Valentine, J. C. (Eds.). (2009). *The handbook of research synthesis and meta-analysis.* New York: Russell Sage Foundation.

Corbin, J. M., & Strauss, A. (1990). Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative Sociology, 13*(1), 3–21.

Cuban, S. (2007). *Serving new immigrant communities in the library.* Westport, CT: Libraries Unlimited.

Dancs, S. (2018). Information seeking and/or identity seeking: Libraries as sources of cultural identity. *Library Management, 39*(1–2), 12–20. https://doi.org/10.1108/LM-03-2017-0034.

Duncker, E. (2002). Cross-cultural usability of the library metaphor. *Proceedings of the ACM International Conference on Digital Libraries, January 2002* (pp. 223–230). . https://doi.org/10.1145/544220.544269.

Eisenstadt, S. N. (1953). Analysis of patterns of immigration and absorption of immigrants. *Population Investigation Committee, 7*(2), 167–180.

Fairlie, R. W. (2007). Explaining differences in access to home computers and the internet: A comparison of Latino groups to other ethnic and racial groups. *Electronic*

Commerce Research, 7(3–4), 265–291. https://doi.org/10.1007/s10660-007-9006-5.

Fisher, K. E., Marcoux, E., Miller, L. S., Sánchez, A., & Cunningham, E. R. (2004). Information behavior of migrant Hispanic farm workers and their families in the Pacific Northwest. *Information Research, 10*(1), Paper 199. Retrieved from http://informationr.net/ir/.

Flaherty, M. G. (2013). Consumer health information provision in rural public libraries: A comparison of two library systems. *The Library Quarterly, 83*, 155–165. https://doi.org/10.1086/669548.

Flinner, K., Norlander, R. J., Nock, K., Brucker, J. L., & Welch, L. (2019). *Library programs & new Americans: A white paper. New Knowledge Publication #NPO.074.518.03.* Chicago, IL: American Library Association & New Knowledge Organization Ltd.

Frederiksen, L. (2015). "Our public library": Social reproduction and urban public space in Toronto. *Women's Studies International Forum, 48*, 141–153. https://doi.org/10.1016/j.wsif.2014.11.009.

Glaser, B. G. (1978). *Advances in the methodology of grounded theory: Theoretical sensitivity.* Mill Valley, CA: Sociology Press.

Glaser, B. G. (1992). *Basics of grounded theory analysis: Emergence vs. forcing.* Mill Valley, CA: Sociology Press.

Gough, D., & Thomas, J. (2016). Systematic reviews of research in education: Aims, myths and multiple methods. *Review of Education, 4*(1), 84–102. https://doi.org/10.1002/rev3.3068.

Häggström, B. M. (2004). *The Role of Libraries in Lifelong Learning. Final Report of the IFLA Project under the Section for Public Libraries.* International Federation of Library Associations and Institutions (NJ1). Retrieved from https://www.ifla.org/node/1025.

Hughes-Hassell, S., Hanson-Baldauf, D., & Burke, J. E. (2008). Urban teenagers, health information, and public library web sites. *Young Adult Library Services, 6*(4), 35–43. Retrieved from http://www.ala.org/yalsa/.

Johnston, J. (2016). Conversation-based programming and newcomer integration: A case study of the Språkhörnan program at Malmö City Library. *Library & Information Science Research, 38*, 10–17. https://doi.org/10.1016/j.lisr.2016.02.001.

Kennan, M. A., Lloyd, A., Qayyum, A., & Thompson, K. (2011). Settling in: The relationship between information and social inclusion. *Australian Academic and Research Libraries, 42*, 191–210. https://doi.org/10.1080/00048623.2011.10722232.

Khan, K. S., Kunz, R., Kleijnen, J., & Antes, G. (2003). Five steps to conducting a systematic review. *Journal of the Royal Society of Medicine, 96*, 118–121.

Khoir, S., Du, J. T., Davison, R. M., & Koronios, A. (2017). Contributing to social capital: An investigation of Asian immigrants' use of public library services. *Library and Information Science Research, 39*, 34–45. https://doi.org/10.1016/j.lisr.2017.01.005.

Khoir, S., Du, J. T., & Koronios, A. (2014). *Study of Asian immigrants' information behavior in South Australia: Preliminary results. In iConference 2014 Proceedings. Berlin, Germany, 4–7 March 2014.* 682–689. https://doi.org/10.9776/14316.

Khoir, S., Du, J. T., & Koronios, A. (2015). Linking everyday information behaviour and Asian immigrant settlement processes: Towards a conceptual framework. *Australian Academic and Research Libraries, 46*, 86–100. https://doi.org/10.1080/00048623.2015.1024303.

Komito, L. (2011). Social media and migration: Virtual community 2.0. *Journal of the American Society for Information Science and Technology, 62*(6), 1075–1086. https://doi.org/10.1002/asi.21517.

Koontz, C., & Gubbin, B. (Vol. Eds.), (2010). *IFLA public library service guidelines. Vol. 147.* Berlin, Germany: Walter de Gruyter.

Krolak, L. (2005). *The role of libraries in the creation of literary environments.* Hamburg: UNESCO Institute for Education. Retrieved from www.ifla.org/VII/s33/pub/s33_Krolak%20L.pdf.

Kurman, J., & Ronen-Eilon, C. (2004). Lack of knowledge of a culture's social axioms and adaptation difficulties among immigrants. *Journal of Cross-Cultural Psychology, 35*(2), 192–208. https://doi.org/10.1177/0022022103262244.

Lamba, N. K. (2003). The employment experiences of Canadian refugees: Measuring the impact of human and social capital on quality of employment. *Canadian Review of Sociology/Revue canadienne de sociologie, 40*(1), 45–64.

Laranjo, L., Arguel, A., Neves, A. L., Gallagher, A. M., Kaplan, R., Mortimer, N., ... Lau, A. Y. S. (2014). The influence of social networking sites on health behavior change: A systematic review and meta-analysis. *Journal of the American Medical Informatics Association, 22*, 243–256. https://doi.org/10.1136/amiajnl-2014-002841.

Lenhart, A., Horrigan, J., Rainie, L., Allen, K., Boyce, A., Madden, M., & OGrady, E. (2003). *The ever-shifting internet population–A new look at internet access and the digital divide.* Washington, D.C.: Pew Internet & American Life Project Report. Retrieved from http://www.pewresearch.org/internet/.

Leonardi, P. M. (2003). Problematizing "new media": Culturally based perceptions of cell phones, computers, and the internet among United States Latinos. *Critical Studies in Media Communication, 20*, 160–179. https://doi.org/10.1080/07393180302778.

Listwon, A., & Sen, B. (2009). Public library services and the polish community in England: Case study. *Library Review, 58*, 290–300. https://doi.org/10.1108/

...

00242530910952837.

Lloyd, A., Kennan, A. M., Thompson, K. M., & Qayyum, A. (2013). Connecting with new information landscapes: Information literacy practices of refugees. *Journal of Documentation, 69*, 121–144.

Machet, M., & Govender, K. S. (2012). Information behaviour of recent Chinese immigrants in Auckland, New Zealand. *South African Journal of Libraries and Information Science, 78*, 25–33. https://doi.org/10.7553/78-1-44.

Mansourian, Y. (2006). Adoption of grounded theory in LIS research. *New Library World, 107*, 386–402. https://doi.org/10.1108/03074800610702589.

Martin, P. Y., & Turner, B. A. (1986). Grounded theory and organizational research. *The Journal of Applied Behavioral Science, 22*, 141–157. https://doi.org/10.1177/00218863860200207.

Mason, D., & Lamain, C. (2007). Information seeking behaviour of New Zealand immigrants. *The Centre for Applied Cross-Cultural Research.* Wellington, NZ: Victoria University of Wellington.

Moreno-Conde, A., Moner, D., Da Cruz, W. D., Santos, M. R., Maldonado, J. A., Robles, M., & Kalra, D. (2015). Clinical information modeling processes for semantic interoperability of electronic health records: Systematic review and inductive analysis. *Journal of the American Medical Informatics Association, 22*, 925–934. https://doi.org/10.1093/jamia/ocv008.

Mugwisi, T., Jiyane, G. V., & Fombad, M. C. (2018). Public libraries as facilitators of information services: A case study of selected libraries in KwaZulu-Natal. *Information Development, 34*, 31–43. https://doi.org/10.1177/0266666916672718.

Mwarigha, M. S. (2002). *Towards a framework for local responsibility.* Toronto, Canada: Maytree Foundation.

Mylopoulos, C. (2000). Tending to the city's needs, serving newcomer immigrants: The value of community information. *MultiCultural Review, 9*(1), 24–59. Retrieved from https://www.tandfonline.com/toc/rmer20/current.

Ono, H., & Zavodny, M. (2008). Immigrants, English ability and the digital divide. *Social Forces, 86*, 1455–1479. https://doi.org/10.1353/sof.0.0052.

Papillon, M. (2002). *Immigration, diversity and social inclusion in Canada's cities.* Ottawa: Canadian Policy Research Networks. Retrieved from http://www.urbancenter.utoronto.ca/pdfs/home/debates/CPRNImmigration.pdf.

Petr, K. (2004). Information needs of the Romany minority in Eastern Croatia: Pilot-study. *New Library World, 105*(9/10), 357–369. https://doi.org/10.1108/03074800410557312.

Petticrew, M., & Roberts, H. (2006). *Systematic reviews in the social sciences: A practical guide.* New York, NY: John Wiley & Sons.

Pokorny, R. E. (2003). Library services to immigrants and non-native speakers of English: From our past to our present. *Bookmobile and Outreach Services, 6*(2), 21–34.

Puente, M. A., Gray, L., & Agnew, S. (2009). The expanding library wall: Outreach to the University of Tennessee's multicultural/international student population. *Reference Services Review, 37*, 30–43.

Quirke, L. (2012). Information practices in newcomer settlement: A study of Afghan immigrant and refugee youth in Toronto. *Proceedings of the 2012 iConference, Toronto, Canada, Dec 2011* (pp. 535–537). . https://doi.org/10.1353/ils.2011.0025.

Rho, J. J. (2002). *An investigation of the perceived information needs, information-seeking behaviors, and the use of community public libraries among first-generation adult Korean immigrants living in the Dallas, Texas, area.* (Doctoral dissertation). Denton, Texas: Texas Woman's University. Retrieved from https://twu-ir.tdl.org/handle/11274/11217.

Senyo, P. K., Liu, K., & Effah, J. (2019). Digital business ecosystem: Literature review and a framework for future research. *International Journal of Information Management, 47*, 52–64. https://doi.org/10.1016/j.ijinfomgt.2019.01.002.

Shepherd, J., Petrillo, L., & Wilson, A. (2018). Settling in: How newcomers use a public library. *Library Management, 39*, 583–596. https://doi.org/10.1108/LM-01-2018-0001.

Shields, J., Drolet, J., & Valenzuela, K. (2016). Immigrant settlement and integration services and the role of nonprofit providers: A cross-national perspective on trends, issues and evidence. RCIS Working Paper, No. 2016/1. Retrieved from https://www.ryerson.ca/content/dam/rcis/documents/RCIS%20WP%202016_01%20Shields%20et%20al%20final.pdf.

Shoham, S., & Strauss, S. K. (2007). Information needs of North American immigrants to Israel. *Journal of Information, Communication, and Ethics in Society, 5*, 185–205. https://doi.org/10.1108/14779960710837641.

Shoham, S., & Strauss, S. K. (2008). Immigrant's information needs: Their role in the absorption process. *Information Research, 13*(4)http://informationr.net/ir/13-4/paper359.html.

Silvio, D. H. (2006). The information needs and information seeking behaviour of immigrant southern Sudanese youth in the city of London, Ontario: An exploratory study. *Library Review, 55*, 259–266. https://doi.org/10.1108/00242530610660807.

Sin, S. C. J., & Kim, K. S. (2013). International students' everyday life information seeking: The informational value of social networking sites. *Library and Information Science Research, 35*, 107–116. https://doi.org/10.1016/j.lisr.2012.11.006.

Sirikul, P., & Dorner, D. (2016). Thai immigrants' information seeking behaviour and perception of the public library's role during the settlement process. *Library Review, 65*, 535–548. https://doi.org/10.1108/LR-01-2016-0008.

Steed, S., Acevedo, O., Hilder, C., Thompson, L., Brook, T., Zystra, A., Cunningham, A., ... Atanasoff, P. (2011). Public libraries serving multicultural communities across Australia: Best practice examples. *Australasian Public Libraries and Information Services, 24*, 116–124.

Su, S. S., & Conaway, C. W. (1995). Information and a forgotten minority: Elderly Chinese immigrants. *Library & Information Science Research, 17*, 69–86. https://doi.org/10.1016/0740-8188(95)90006-3.

Suh, M., & Hsieh, G. (2019). The "had mores": Exploring Korean immigrants' information behavior and ICT usage when settling in the United States. *Journal of the Association for Information Science and Technology, 70*, 38–48. https://doi.org/10.1002/asi.24078.

Taylor, R. S. (1962). The process of asking questions. *American Documentation, 13*, 391–396.

United Nations (2017). *International migration reports 2017.* Department of Economic and Social Affairs, Population Division.

Urquhart, C. (2002). Regrounding grounded theory – Or reinforcing old prejudices? A brief reply to Bryant. *The Journal of Information Technology Theory and Application, 4*, 43–54.

Van der Linden, K., Bartlett, J., & Beheshti, J. (2014). New immigrants' perceptions and awareness of public library services/L'opinion des nouveaux immigrants et leur sensibilisation aux services des bibliothèques publiques. *Canadian Journal of Information and Library Science, 38*, 65–79. Retrieved April 16, 2019, from https://www.utpjournals.press/loi/cjils.

Walsh, S. D., & Horenczyk, G. (2001). Gendered patterns of experience in social and cultural transition: The case of English-speaking immigrants in Israel. *Sex Roles, 45*, 501–528. https://doi.org/10.1023/A:1014810730763.

Wang, J. (2011). *What roles do Auckland libraries play in the lives of Chinese immigrants?* (Unpublished research paper in partial fulfilment of the requirements of the Master of Library and Information Studies)Wellington, New Zealand: Victoria University of Wellington.

Wang, H. (2012). Immigration in America: Library services and information resources. *Reference Services Review, 40*, 480–511. https://doi.org/10.1108/00907321211254715.

Warschauer, M. (2002). Reconceptualizing the digital divide. *First Monday, 7*(7), https://doi.org/10.5210/fm.v7i7.967.

Webster, J., & Watson, R. T. (2002). Analyzing the past to prepare for the future: Writing a literature review. *MIS Quarterly, 26*, 8–23 10.1.1.104.6570.

Wikipedia (2019). Public libraries in North America. Retrieved Dec. 23, 2019 from https://en.wikipedia.org/wiki/Public_libraries_in_North_America.

Yoo-Lee, E., Rhodes, T., & Peterson, G. M. (2016). Hispanics and public libraries: Assessing their health information seeking behaviors in the e-health environment. *Reference Services Review, 44*, 85–99.

Chunying Wang is a doctoral student at the School of Information Management, Wuhan University, China. She was also a visiting scholar at the University of North Texas in 2019. Her research interests are information access, information services, and open data. Her research has been published in *The Electronic Library, Proceedings of the iConference,* and the *Proceedings of the Association for Information Science & Technology*.

Ruhua Huang is a professor and the Associate Dean at the School of Information Management, Wuhan University, China. She holds a Ph.D. in library and information sciences from Wuhan University. Her research focuses on information organization and retrieval, information services, open access, and information literacy instruction. She has published in *The Electronic Library, Library Hi Tech, The Journal of Academic Librarianship, Journal of Library Science in China, Journal of the China Society for Scientific and Technical Information*, and other journals.

Jiyuan Li is a master's student in the Department of Information Science at the University of North Texas. His research interests include data science, information services, and information management.

Jiangping Chen is a professor and Chair of the Department of Information Science at the University of North Texas. She earned a Ph.D. in information transfer from Syracuse University. Her research interests include digital libraries, information retrieval and access, data science, and information systems design. Her research has been published in the *Journal of the Association for Information Science and Technology, Information Sciences, ASLIB Journal of Information Management, The Electronic Library*, and other journals.