An analysis of interlibrary loan services: a case study of a university in South Africa

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Abstract

Purpose – The landscape of teaching, learning and research has changed requiring the need for diverse information resources. Given the current budgetary constraints and financial conditions prevailing in many universities, sharing of information resources has become a necessity. The Interlibrary Loan (ILL) services have thus become an important service to meet the immediate needs of library users. The aim of this paper is to analyse the ILL services of the North-West University in South Africa from 2006 to 2016. Using statistical data, the paper shows the emerging pattern in borrowing and lending between institutions as well as determines the existence of correlations between borrowing and lending libraries. The results of this study show that ILL amongst libraries has decreased in the past 11 years. A need exists for increased awareness of ILL and there is need for technological innovations that will ensure that library users are able to request for information resources seamlessly.

Design/methodology/approach – This is a quantitative study that uses ILL data from the North-West University. Data were downloaded from the SABINET ILL system using the three NWU JC codes. They were then collated and uploaded on excel spreadsheets. In the main, the excel spreadsheets were used to interpret the data. Further, the Statistical Package for Social Sciences (SPSS) software, in particular Spearman's Correlation Analysis, was used to test correlations between data from libraries that requested information resources from NWU and data from libraries that supplied information resources to NWU during this period using Rumsey's guidelines to interpret the correlations.

Findings – The findings of the study reveal that ILL among libraries in South Africa had generally declined owing mostly to the proliferation of online resources resulting to changes in user information-seeking behaviour. The decline is despite the challenges of low budgets received by most libraries for the acquisition of information resources. It can also be concluded that public university libraries still value ILL as demonstrated by the high number of items requested from other libraries. The findings also reveal that most ILL activities were conducted by public universities.

Research limitations/implications – It was not possible to obtain the list of titles that have been requested and also to obtain the user's details. This would have enabled the authors to determine the type of titles that are being requested, and the users that request them.

Practical implications – ILL should continue to be enhanced in view of the challenge of dwindling library budgets against the escalating prices of information resources. There is also a need for user education so that they become aware of the ILL service. From experience, library users normally give up once they realize that what they wanted is not available through the local catalogue and this calls for librarians to create an awareness to users that ILL could help solve their frustrations.

Social implications – These results show that ILL can play a significant role to level the playing field between the well-resourced libraries in urbanized regions or provinces and the poorly resourced ones in rural regions or provinces. This social justice aspect of ILL is probably the reason why better resourced libraries in South Africa have decided to remain in the scheme unlike other countries where better resourced libraries opted out of reciprocal arrangements with small and medium-sized institutions.

Originality/value – The study adds to a very limited number of studies emanating from Africa. A study of this nature has never been conducted in Africa, as previous studies were nationwide studies. As far as the authors know, this is the first study that uses ILL data to research the impact of the global financial crisis on libraries in Africa.

Keywords Universities, Document delivery, Interlending, Document supply, Resource sharing, Interlibrary

Paper type Research paper

1. Introduction

Libraries have long realized that "no library is an island" meaning that no matter how big the size or budget or amount of resources a library may have, it cannot meet all the possible needs of its users independently. To that effect, libraries through forming consortiums or partnerships decided to pull their resources together for the benefit of the users. The practice of sharing resources between libraries has a long history. According to Ellingson and Morris (2011), Inter Library Loans (ILL) trace their origin from 3400 and 3000 BC during the times when scribes were used to transcribe content from clay tablets to enable delivery of the information elsewhere. There is evidence that some form of catalogue of books was created as early as the 800's as a small list of books was found in a copy of St. Augustine's De Trinitate in the Bodleian Library (Miguel, 2007). It was not until 1876, that the issue of a formal ILL would be raised in a journal article by Samuel Green (Miguel, 2007; Ellingson and Morris, 2011).

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Information Discovery and Delivery
46/1 (2018) 26–37
 [ISSN 2398-6247]
[DOI 10.1108/IDD-08-2017-0059]

Received 4 August 2017
Revised 14 November 2017
Accepted 14 November 2017

Green's second suggestion for an ILL was published in 1898 (Ellingson and Morris, 2011). However, it was not until 1917, that the first request for a formal ILL service was tabled at the American Library Association which was later approved in 1919 (Ellingson and Morris, 2011). Despite this long history, there is a dearth of studies that cover ILL services in the African context. This is because ILL services in most African countries are handicapped by lack of infrastructure and resources (Iroaganachi *et al.*, 2015; Kasalu and Ojiambo, 2015). As a result, most institutions in some African countries chose not to participate in ILL related activities at all (Iroaganachi *et al.*, 2015; Kasalu and Ojiambo, 2015). This, in turn, contributes to the scarcity of studies from Africa in this area. Buchanan (2008) points out that in the case of South Africa, some form of ILL existed by 1938, as it is mentioned in the librarian's year report of the former University of Natal during that time. Though not by any means comprehensive, a number of studies have been conducted in South Africa around the area of ILL and document delivery and supply. The majority of those studies, however, are old with one exception being a study by Raubenheimer and Van Niekerk published in 2015.

This paper aims to analyse ILL at university libraries in South Africa, with North West University (NWU) used as a case study. The rationale for this study is to establish the extent of usage of this service during a challenging period for public university libraries in South Africa, and to determine if correlations exist between lending and borrowing libraries. This study adds to the growing body of knowledge on ILL trends globally but particularly in the African context.

2. Context

2.1 The South African public university landscape

The South African public university environment has always been a mirror of the political environment within which it operates. During apartheid, the country had four categories of universities, divided along racial lines. Those were universities for Blacks, Whites, Indians, and Coloureds (The New Encyclopaedia Britannica, 2003, p. 79; Salawu *et al.*, 2016). Among the Black universities, there were further sub-divisions along ethnic lines, such as the University of Bophuthatswana that was almost exclusively a BaTswana university. White universities were also divided into English universities and Afrikaans universities. Among the Afrikaans universities was the Potchefstroom University for Christian Higher Education (CHE). In the case of libraries, there were certain libraries whose material could not be loaned out to users of other races through ILL (Buchanan, 2008). Though 1993/94 saw some changes in the higher education landscape (Buchanan, 2008) it was not until 2002 that huge structural changes were announced that would see the number of universities decrease from 36 to 23 and their racial and ethnic categorisation reversed. The universities were now categorised into: comprehensive universities, traditional universities and universities of technology (UoTs). Between 2014 and 2015, three more universities were established, which are: University of Mpumalanga University, Sol Plaatje University and the Sefako Makgatho University for Health Sciences. The later came about as a result of the de-merger with the University of Limpopo. Table I is a list of universities in South Africa.

Table I List of public universities in South Africa by type

Traditional universities	Comprehensive universities	Universities of technology
University of Cape Town (UCT)	University of Johannesburg (UJ)	Cape Peninsula University of Technology (CPUT)
University of Fort Hare (UFH)	Nelson Mandela Metropolitan University (NMMU)	Central University of Technology (CUT)
University of the Free State (UFS)	University of South Africa (UNISA)	Durban University of Technology (DUT)
University of Kwazulu-Natal (UKZN)	University of Venda (Univen)	Mangosuthu University of Technology (MUT)
University of Limpopo (UL)	Walter Sisulu University (WSU)	University of Mpumalanga* (UM)
Sefako Makgatho Health Sciences University (SMU)*	University of Zululand (UniZulu)	Sol Plaatje University (SPU)*
North-West University (NWU)		Tshwane University of Technology (TUT)
University of Pretoria (UP)		Vaal University of Technology (VUT)
Rhodes University (RU)		
University of Stellenbosch (SU)		
University of the Western Cape (UWC)		
University of the Witwatersrand (Wits)		
Total 12	6	8

Note: *Newly established university

Of the 26 public universities, 24 are registered for interlibrary loans with Southern African Interlending Schemes while the other two, Mpumalanga and Sol Plaatje are not yet registered.

2.2 The North-west university (NWU)

NWU is a product of an imposed merger between the then CHE, and the University of North-West (formerly University of Bophuthatswana), with students and staff from the Sebokeng campus of the former Vista University incorporated into the new university (South Africa, 2002). Among the reasons given by the then Department of Education for the mergers was the need to share resources between universities. This means that NWU has footprints in two provinces of South Africa, the Gauteng and North-West Provinces. The distance between Mafikeng and Potchefstroom campus is 174 km which translates to more than two hours of driving, between Vaal and Potchefstroom it is just more than an hour, and between the campuses furthest from each other, Vaal and Mafikeng the distance is 285.7 km which translates to more than 3 h of driving. During the first decade of the merger from 2004 to 2015, the university opted for a federal model of management with each campus operating semi-autonomously from each other with its own complete management structures (South Africa, 2005). It was only in 2015

that a process towards full integration as a unitary university started and the results could be seen in the unitary structures of 2017 where each faculty has one dean irrespective of its spread across the university (South Africa, 2017).

The libraries operated in a semi-autonomous manner while operating under the old management model with two directors overseeing the Potchefstroom campus and Mafikeng campus, while a senior manager was in charge of Vaal Campus. There were no formal structural relations between different campus libraries with each operating its own structure and budget, until 2014, when a rotational arrangement was put in place in which one director would represent the libraries at University committees and National Events. In 2016, a unitary Library and Information Services structure was approved as part of the NWU strategy. This gave birth to the new positions of Chief Director responsible for NWU LIS, Director: Shared Services and Director: Client Services. In 2017, the library also decided on a unitary structure with a Chief Director in charge of the whole NWU LIS. In terms of interlibrary loans, the campuses could borrow books and articles from each other till around 2015. The three campuses still conduct their ILL services semi-autonomously each with its own separate JC code.

3. Drivers and enablers of interlibrary loan services

Raubenheimer and Van Niekerk (2002), and Ellingson and Morris (2011) point out that interlibrary services are shaped by technological developments, economic developments, political developments and general developments in the library and information science field. These developments can play a major role as both the push (drivers) and pull (enablers) factors for ILL.

3.1 Drivers

It is a well-known adage in academic libraries that faced with financial difficulties; universities always reduce the budgets of the libraries first before any other department's budget. Political developments, budget cuts, rising costs of library materials, addition of taxes on online library materials and depreciation of the local currency have all conspired to cause havoc on university library budgets in South Africa since the 1970s. The problems experienced by libraries in South Africa in the 2000s mirror those of the early years in the 1970s and 1980s.

3.1.1 The decline in government subsidy

Government subsidy to public universities started declining in the 1980s. Buchanan (2008) trace the beginning of the decline from 1984 when the government introduced a new formula to calculate the subsidy but also cut severely on the budgets of universities. South African universities would face huge cuts in subsidies between 1994 and 2014 (Universities South Africa, 2017). Universities South Africa, a body of all university vice-chancellors in South Africa, argues that the budget allocated to universities in South Africa is lower compared to other higher education systems in other countries. Figure 1 is a comparison of university budgets as a percentage of Gross Domestic Product (GDP) in South Africa with 11 other countries.

The problems of declining subsidies threatened the stability of the universities by 2015/16 (Quintal, 2015) with students demanding a free fee quality and "decolonised" education, and

Figure 1 The budget allocation to higher education in South Africa as a percentage of GDP to 11 other countries

Source: Centre of Excellence in Scientometrics and STI Policy, University of Stellenbosch & CHET in Universities South Africa (2017)

libraries and other facilities to extend their hours for 24 h. As a result, universities were requested to freeze fee increments in 2016 which further exacerbated the budget problems for university libraries.

3.1.2 The depreciation of the rand and the addition of VAT on electronic resources

Buchanan (2008) points out that in 1977, government imposed a 15 per cent tax on imported books to libraries. This coincided with the depreciation of the rand which affected the dollar/rand exchange rate. The same happened in 2014 when the South African Revenue Services (SARS) decided to charge 14 per cent VAT on all imported electronic resources (Webster and Moyo, 2016). This new tax regime coincided with the negative global financial outlook, the continued decline of government subsidies and the unfavourable rand/dollar exchange rate to decrease the purchasing power of academic libraries by 40 per cent (Committee of Higher Education Libraries in South Africa, Library and Information Science Association of South Africa, National Commission on Libraries and Information Science & the South African National Library and information Consortium, 2014).

Faced with these challenges, some university libraries had no choice but to cancel some journal subscriptions and databases, and rely on ILL for some of their resources (Webster and Moyo, 2016; Dean, 2017). Unlike other South African universities, NWU was forced to only cancel duplicates of journal titles among the three campuses and the university was able to maintain its database subscriptions. However, the common financial constraint resulted in no new subscriptions from 2015 onwards and a moratorium was placed on new subscriptions.

3.2 Enablers

3.2.1 Technological developments

Information and Communication Technology (ICT) has acted as the greatest enabler of ILL. Technological developments have ensured that the delivery of information is faster and seamless over the years. Lor (1987), Everett (1993), Raubenheimer and Van Niekerk (2002), Raubenheimer and Van Niekerk (2015) and Zopfi-Jordan(2015) point out that

among the major developments in ILL was the introduction of the microfiche form union catalogue in 1974, the introduction of the CD-ROM library catalogues in 1992; the introduction of fax technology in libraries in 1993; the introduction of photocopying machines and scanners; cameras, phones, iPads, computers and the use of the internet. All of these technologies contributed to the faster and effective delivery of library material through ILL. Currently, because of developments in technology, it is possible to satisfy some requests of users based on another campus or university within a few minutes. To that effect, Leon and Kress (2012) highlight that users expect ILL performance to match the ease and speed of electronic access and the emerging standard for delivery turnaround of articles and book chapters is within 48 h of when the user places a request. Social media is reported to play a role in influencing the turnaround period of requests (Gardner and Gardner, 2015).

3.2.2 South African bibliographic and information network (SABINET)

Buchanan (2008) traces the history of SABINET from the 1980s when 40 libraries met and agreed to explore ways of establishing SABINET. SABINET started to operate in 1983. Buchanan (2008) proceeded to point out that the Internet played a pivotal role in transforming the role of SABINET to be a truly national catalogue of resources held in libraries in the country. The Southern African Catalogue do not only list material in South Africa, but also material from several other countries in the Southern African Development Community region.

3.2.3 Library consortia and associations

The IGI Global (2017) defines a consortium as a formal agreement between several academic libraries to share resources between themselves to satisfy their user needs. According to Thomas and Fourie (2006), library consortia played a critical enabling role in facilitating ILL among and between libraries. The model that was followed in South Africa was a closed model based on the geographic proximity of academic institutions. Some of the main objectives of these consortia included: sharing of resources, expertise, costs and training between member libraries (Thomas and Fourie, 2006). Table II depicts library consortia in South Africa.

Table II Academic library consortia in South Africa

Higher education consortium	Geographic coverage in South Africa	Public Universities	Year of establishment
Cape Higher Education Consortium (CHEC)	Western Cape	UCT, UWC, CPUT, SU	1992
Eastern Cape Education Association (ECHEA)	Eastern Cape	MMMU, RU, WSU, UFH	1998
Eastern Seaboard of Tertiary Institutions	Kwazulu-Natal	MUT, UKZN, DUT, UniZulu	1997
Forum of Tertiary Institutions of the Northern Metropolis (FOTIM)	Gauteng, North-West University, and Limpopo	UP, UNISA, VUT, TUT, UJ, Wit, SMU, Univen., UL	1996
Free State Higher Education Consortium	Free State	UFS, CUT	1996/7

Source: Adapted from Thomas and Fourie (2006)

According to Thomas and Fourie (2006), the majority of library consortiums in South Africa were affected by the university mergers of the mid-2000s and some of them have ceased to be active. In addition, most of the work that was originally performed by these regional consortia has now been taken up by the South African National Library and Information Consortium which operates nationally. The Committee of Higher Education Libraries of South Africa (CHELSA) was established to improve library and information services for public higher education and research in South Africa. As part of the CHELSA agreement, postgraduate students and staff members are issued with letters of introduction by their home institutions which they use to access another university library that is part of CHELSA and they are also able to use the ILL service. Even though some consortiums may have ceased to be active, it is the view of the authors that informal ties still exist between the university libraries that fell within the same consortiums. The regional consortia reflected on the table above will be used to determine the origin of academic libraries requesting and supplying material to NWU LIS.

4. Objectives

Previous studies conducted in South Africa (Raubenheimer and Van Niekerk, 2002, Raubenheimer and Van Niekerk, 2015) on ILL have looked at the countrywide trends. This study is unique in the context of South Africa in that it addresses the extent of usage of ILL services at a single public university. The objectives of this study, therefore, are to:

- Determine the extent of usage of ILL services at North-West University. The aim of this objective is to examine the landscape of lending and borrowing in South Africa by determining the fill rates of requests from NWU by other libraries and vice versa.
- Establish the origin of requesting and supplying public university libraries by consortium. The purpose of this objective is to determine the extent to which NWU benefited from the ILL. Further, this objective will assist the current researchers to determine whether NWU is a net-borrower or net-lender.
- Determine the top libraries by number of requests and supplies to North-West University. In this objective, the number of requests and supplies to the NWU will be used to determine the top libraries that supply material to NWU and vice-versa.
- Establish the correlations between requesting and supplying libraries. Studies on correlations between requesting and supplying libraries are few and old as they were mostly completed before the period of ILL automation (Costello and Duffy, 1991; Ponnappa *et al.*, 1996). It is important therefore to understand the correlations between these two ILL activities during the period of ILL automation (Williams and Woolwine, 2011). This objective seeks to address whether there is a direct reciprocal relationship between requesting and supplying libraries. In other words, this objectives seeks to determine whether libraries supply more or less the same number of material that they request from others.

- Determine the impact of VAT, currency depreciation and the global financial crisis to ILL activities. The past five years or so have not been easy for academic libraries in South Africa as they faced several challenges that resulted in their budget spending power decreasing by up to 40 per cent (Committee of Higher Education Libraries in South Africa, Library and Information Science Association of South Africa, National Commission on Libraries and Information Science & the South African National Library and information Consortium, 2014). This objective is set to determine the extent to which these challenges have impacted ILL services at public universities in South Africa generally but specifically at NWU.

5. Literature review

The literature review focuses on the objectives of the study which seeks to determine the usage of ILL, the origin of requesting libraries, the top requesting libraries, the correlations between requests and supplies and the impact of the 40 per cent budget shortfall caused by a convergence of several factors on ILL.

In simple terms, ILL is defined as a complementary service of borrowing and/or lending of library material by one library or branch library to the other (Feather and Sturges, 1997, p. 231). In this kind of transaction, the borrowing library acts as an intermediary between the lending library and the user in that it borrows the material on behalf of the user. When a user ought to return the material, it is the borrowing library that sends a reminder to the user. In the case where the material is lost, the borrowing library pays the lending library. The lending library then recoups the fine from the user. The lending library may not even know who the user is and what his or her relationship is with the borrowing library. The lending library retains most rights on the material/s borrowed such as the right to determine the renewal, loan period, place restrictions on what can be borrowed through ILL and/or recall of material. This means that ILL cannot be regarded as replacement of normal collection development, as the rights of the borrowing library or users from the borrowing library are limited. This service is reciprocal in nature meaning that libraries lend or borrow from other libraries because they would do the same to them. Users of the lending library are given priority at all times.

The purposes of ILL in libraries are, *inter alia*, to:

- Complement the collections of libraries.
- Leverage library resources of different libraries.
- Cushion libraries against the impact of financial constraints.
- Use borrowing data from ILL for collection development purposes.

Even though ILL transactions form very limited part of library transactions in university libraries, they nevertheless form a very critical part of it. Some researches in universities require specialised information from different libraries for it to be complete (Feather and Sturges, 1997, p. 231).

Kelsall and Onyszko (2010) studied usage of ILL in Canadian libraries, the type of requesting libraries and types of material requested. They found that ILL requests were declining every year since the 1990s. Most requests came from Canadian public libraries followed by Canadian academic libraries, Canadian government libraries, US libraries, Canadian special libraries and other non-Canadian libraries. In India, Panda and Mallappa (2015) studied ILL trends, and found that 75 per cent of all requests were from 20 universities while 25 per cent were from 147 universities. Approximately 70 per cent of all requests were filled in India. ILL requests decreased during the period of the study. In Netherlands, Stapel (2016) researched the state of ILL in that country and found that ILL statistics decreased substantially from 2006 to 2015. It was also determined that the majority of ILL requests were filled by larger university libraries, followed by larger public libraries. A similar trend was noticed by Yi (2016) in Korea. The number of requests decreased by close to 76 per cent from 2001 to 2014. Yi (2016) concluded that the decrease was because of the proliferation of open access journals and institutional repositories (IRs) in Korea and globally. Other studies reported decreased use of ILL services (De Jong and Frederiksen, 2015; Foran, 2015a, Chalhoub, 2017). These studies also attributed the decreased demand for ILL services to open access journals and IRs. Foran (2015a) pointed out that though the requests from and by university libraries were on the decrease, they continue to be the most active sector on ILL. Interlibrary Loan users expect a speedy, easy-to-use, free service that provide them results of high quality (Foran, 2015b). The Alma Jordan Library bulked the trend, Fraser *et al.* (2011) reports that ILL statistics between 2007 and 2009 increased by 300 per cent at this library. This is probably because this service was still new in that library.

Very few and old studies exist on correlations between borrowing and lending. Costello and Duffy (1991) used the Spearman's correlation analysis to study the relationship between ILL lending and borrowing, and find it to be strong. Another study by Ponnappa, Phillips, and Huggins (1996) also reported strong correlations between borrowing and lending of material. Duy and Lariviere (2013) sought to determine the level of reciprocity between borrowing and lending among different institutions. They found that the geographic location determines the amount of reciprocity between institutions. This means that the closer the libraries to each other the higher the level of ILL borrowing and lending between and among them. Duy and Lariviere(2014) conducted another study where they sought to determine correlations between ILL and research activities. The authors found significant relationship between borrowing and research activities at universities in Canada. Williams and Woolwine (2011) conducted a comprehensive study of the relationship between ILL and other activities including the size of collections, number of databases and the rank of senior ILL staff. They found positive correlations between ILL borrowing and lending. Further, they determined that libraries whose ILL services are staffed by senior library professionals are likely to receive more requests from other libraries due to the trust placed by others to their ILL services. Williams and Woolwine (2011) also concluded that, contrary to perceptions, the presence of full-text databases does not negatively affect the ILL activities instead it enhances them.

Kilpatrick and Preece (1996) sought to determine the impact of serials cancellation because of budget cuts on ILL and found the impact to be minimal. Five years after the cancellation

of 727 journal titles, it was found that there were 3,143 requests for journal articles through ILL, and only 124 of those articles came from the 727 cancelled journals. Likewise, Calvert and Fleming (2013), and Nash and McElfresh (2016) found that despite the increase in overall ILL requests, very few requests were made from cancelled journals. Knowlton *et al.* (2016) assert that cancelling information resources affects access to information by users irrespective of the availability of ILL services. The authors further point out that ILL data cannot be relied upon as a good indicator of the impact of cancellations, as the inconvenience of making requests through ILL may dissuade users from requesting material that they would otherwise have used if they were available in their local library.

In South Africa, one of the pioneering studies on ILL was by Peter Lor (1987). Among the objectives of this study was to determine the type of requesting libraries and the fill rate of requests. In this study, Lor determined the fill rate of requests as provided by lending libraries as 75 per cent. The following institutions received more requests: University of Pretoria, University of South Africa, University of the Witwatersrand, CSTI, University of Stellenbosch, University of Natal (currently part of UKZN), University of Cape Town, State Library (now part of the National Library of South Africa), Johannesburg Public Library and Potchefstroom University (currently part of NWU). Lor further determined that the majority of requests received and sent came from the present day Gauteng Province followed by Western Cape, Durban, Eastern Cape and Free State. Later on, Raubenheimer and Van Niekerk(2002) found that the status of heavy users of ILL had not changed, as Gauteng and the Western Cape supplied and requested more documents than other provinces of South Africa. Raubenheimer and Van Niekerk (2015) studied ILL services in South Africa from 2006 to 2014, and found that despite the increase in students' numbers in South African public universities, ILL requests and supplies decreased steadily as a result of increase in online resources. These studies are some of the few studies on ILL from South Africa. Generally, ILL has not received much attention in the past few years. The topic around ILL that has received attention is the need to use ILL to meet the demands of serials that have been cancelled. A gap exists in terms of South Africa in the literature that shows the pattern of borrowing and lending between institutions. There is a need to show whether in requesting ILL, institutions have preferences, and also to determine whether there is a relationship between borrowing and lending libraries.

6. Methodology

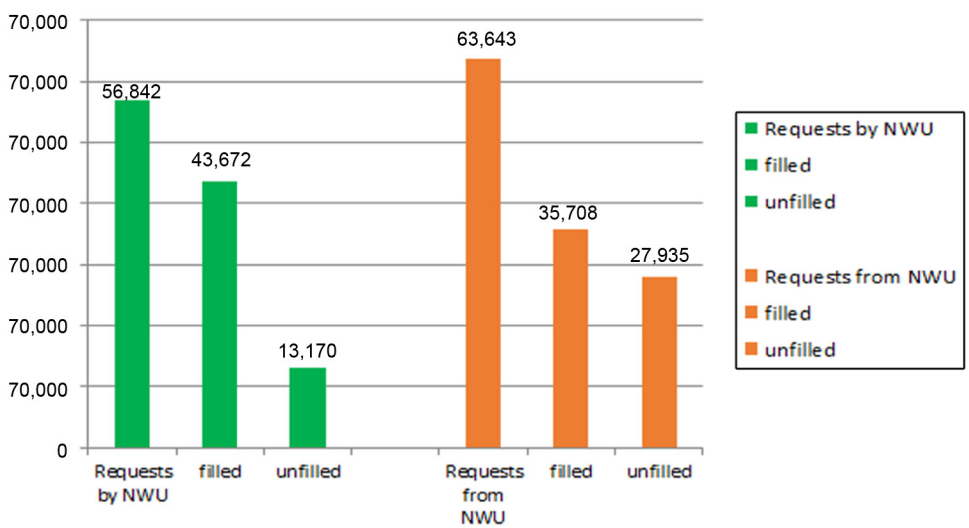
This is a quantitative study that uses ILL data from the North-West University to fulfil its objectives. Data were downloaded from the SABINET ILL system using the three NWU JC codes. The data were then collated and uploaded on excel spreadsheets. In the main, the excel spreadsheets were used to interpret the data. Further, the Statistical Package for Social Sciences (SPSS) software, in particular Spearman's Correlation Analysis, was used to test correlations between the data from libraries that requested information resources from NWU and data from libraries that supplied information resources to NWU during this period using Rumsey's guidelines to interpret the correlations (Rumsey, 2011:284). Rumsey interprets correlations between −1 (which indicates a perfect negative correlation) and 1.0 (which indicates a perfect positive correlation). The closer the correlation is to 0, the weaker it is deemed to be. If it is closer to 1.0, it is deemed to be stronger.

7. Findings and discussions

7.1 Usage of ILL services at NWU

North-West University campuses made 908 ILL requests from each other from 2006 to 2015. This was before the strengthening of intercampus resource sharing services between the three campuses. These were discarded in the final analysis, as they are basically requests by NWU from NWU. There were also 302 requests supplied to NWU by other libraries whose status could not be confirmed. These were also discarded in the final analysis. Figure 2 reflects the usage of ILL services at NWU during this period including the rate of satisfaction of requests from NWU by other libraries and vice versa.

Figure 2 Requests by and from NWU, and their satisfaction (2006-2016)



During the period, NWU made 56,842 requests from 106 different libraries with more than 73.6 per cent of those requests made to academic libraries. The requests translate to an average of 5,167.5 requests per year over the 11-year period. There were more requests for monographs (books, book chapters, theses and dissertations and others) than journal articles. In their study, Kelsall and Onyszko (2010), also found that monographs were a popular type of material requested. More than 76.8 per cent of requests from NWU were satisfied by its partners. NWU received 63,643 requests from the ILL partners, and satisfied 56.2 per cent of those requests. The high number of unfilled requests is at variance with Cornell and Cornell's 2014 observation that a high percentage of requests do not get filled.

7.2 Origin of requesting and supplying public university libraries by consortium

There were 40,378 (71 per cent) requests by NWU from the other 23 South African public universities. NWU received 31,053 requests from the other public university libraries. This means that NWU benefited more, quantitatively, from ILL requests and supplies from the other public university libraries than it provided with 9,325 more NWU requests satisfied than NWU did, meaning that the University is a net-borrower. Figure 3 depicts the percentage of satisfied requests from and to NWU by academic library consortium from 2006 to 2016.

In the current study, the majority of requests came from public university libraries contrary to Kelsall and Onyszko (2010) who found that the majority of requests came from public libraries in their study. These findings are in agreement with Foran (2015a) who also determined that public universities were the more active sector on ILL activities in New Zealand. NWU LIS supplied and requested considerably more information resources from and to the consortium that falls within its immediate environment than any other consortium (Duy and Lariviere, 2013). Admittedly, 39 per cent of public university libraries, excluding NWU, fall under the FOTIM consortium but this consortium supplied 58 per cent information resources of all South African public university requests to NWU, and NWU supplied 56 per cent of all ILL requests from South African public universities to libraries that fall within this consortium. This suggests that ILL librarians consider the geographic location of a library when making ILL requests; therefore, most requests are likely to be made from libraries within the immediate geographic area of the requesting library. Similar findings were made by Duy and Lariviere (2013). The other trend that can be noticed is that the most requesting libraries by consortium are also likely to be the most supplying libraries by consortium. A developed culture of interlibrary loans could be a possible reason why the libraries that supply the most also request the most. This suggests some correlation between supply from and to other libraries. Not much has changed in terms of the geographic origin of most requests and supplies since Lor (1987), and Raubenheimer and Van Niekerk (2002) conducted similar studies. Most requests originate and are satisfied from Gauteng and Western Cape. These two provinces are the most urbanized and resourceful provinces in South Africa. Tables III and IV show the top 10 by type of supplying libraries and the top 10 by type of requesting libraries, respectively.

It is interesting that all the libraries that were in Lor's 1987 top 10 list can still be found in these lists, excluding the Potchefstroom campus of North-West University, which is part of a subject of this study. In sum, 91 per cent of all supplies were from 10 universities while 88 per cent of all ILL requests were from 10 universities. These results are somewhat in agreement with Panda and Mallappa (2015) who found that 75 per cent of all requests in India were from 20 universities while 25 per cent were from the other 147 universities. This suggests that ILL schemes have a core group of active universities that are usually the most research-intensive universities in a country. In total, 56.67 per cent of libraries appear on both tables which suggested a scant relationship between supplying libraries and requesting libraries to and from NWU at this stage of the research.

7.3 Correlations between requesting and supplying libraries

To further determine relationship between the supplying and requesting libraries, SPSS was used to compare the number of information resources supplied by NWU to the number of information resources supplied to NWU. During this period, NWU either made requests and/or supplied information resources to 186 libraries. In total, 50 per cent or 93 of those were one way traffic either with the other libraries supplying NWU or NWU supplying the other libraries. In the first instance, only data for libraries that have both supplied and requested from NWU were compared. In the second instance, all requests and supplies were compared using SPSS meaning that those libraries that have either only requested from NWU or only supplied to NWU with no reciprocal action were given a zero for the corresponding column (Table V).

The data show significant levels of correlations at $r = 0.673$ between the libraries that supplied and requested from NWU. These results are at variance with Costello and Duffy (1991),

Figure 3 Supplying and requesting libraries by consortium

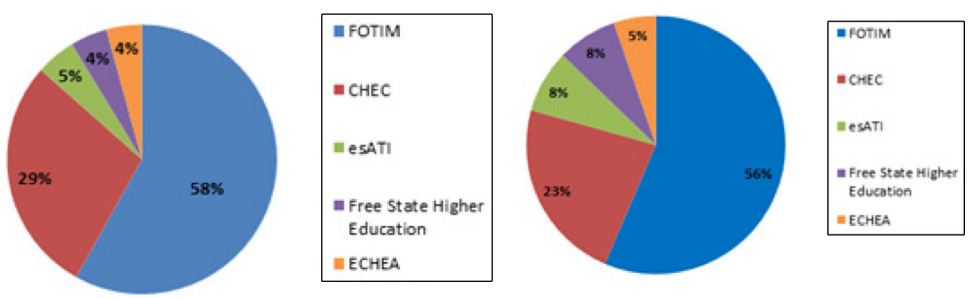


Table III Top 10 by type of supplying libraries to NWU

Universities	No.	National, Departmental, & Parliamentary Libraries	No.	Research entities, Parastatals, Museums and others	No.
University of South Africa*	8,255	National Library of South Africa	448	Council of Scientific and Industrial Research Library*	159
University of Pretoria*	6,423	Western Cape Library & Information Services*	138	Human Science Research Council Library*	119
Stellenbosch University*	5,541	KwaZulu-Natal Department of Arts, Culture & Tourism*	90	NECSA Library*	107
University of Cape Town*	4,678	City of Johannesburg Library Services	77	Eskom Information Centre	88
University of Johannesburg*	4,040	Msunduzi Municipal Library	61	Mintek Library*	43
Wits University*	3,335	Mangaung Public Library	56	Council for Geoscience Library	32
University of KwaZulu-Natal*	1,695	Library of Parliament*	32	Technobib Nelspruit	25
University of the Free State*	1,662	eThekwini Municipal Libraries	21	Agricultural Research Council Library*	24
Nelson Mandela Metropolitan University	8,95	Gauteng Department of Education*	16	Onderstepoort Veterinary Institute Library	24
University of the Western Cape	876	Constitutional Court Library	13	Transvaal Museum Library	20
Others	3,708	Others	807	Others	164
Total	41,108	Total	1759	Total	805

Note: *Appear on the top 10 list by requesting and supplying libraries

Table IV Top 10 by type of requesting libraries from NWU

Universities	No.	National, Departmental & Parliamentary Library	No.	Research entities, parastatals, Museums and others	No.
University of Pretoria*	8,238	Library of Parliament*	164	Human Science Research Council*	308
Stellenbosch University*	3,385	Military Academy	126	Mintek*	219
University of Cape Town*	2,590	Department of Trade and Industry	82	Anglo-Operations Library	211
University of KwaZulu-Natal*	2,227	KwaZulu-Natal Department of Arts, Culture & Tourism*	81	Council for Scientific and Industrial Research*	165
University of the Free State*	2,143	SAPS Library Services	68	Sasol Libraries	232
Wits University*	2,099	Western Cape Library & Information Services*	49	NECSA*	218
Tshwane University of Technology	2,097	Gauteng Department of Education*	44	Protechnik Laboratories Library	136
University of South Africa*	1,836	KwaZulu-Natal Department of Agriculture & Environmental Affairs	41	Exxaro Resource Centre	127
University of Johannesburg*	1685	North-West Provincial Library	32	Ampath Library	116
Vaal University of Technology	1,074	Department of Education Info. Resource Centre	40	Agricultural Research Council Library*	95
Others	3,805	Others	421	Others	1,554
Total	31,179	Total	1,148	Total	3,381

Note: *Appears on the top 10 list by requesting and supplying libraries

Ponnappa *et al.* (1996), Williams and Woolwine (2011), Duy and Lariviere (2013) who found strong correlations between borrowing and lending. Thus "the more a library borrows, the more it loans" (Costello and Duffy, 1991). These correlations however are not as strong as the authors expected suggesting that there are a lot of skewed ILL relationships between NWU and other libraries where NWU supplies more than it borrows and vice versa. The skewed nature of these relationships is best demonstrated by Tables III and IV above. The University of Pretoria, for example, requests more than it supplies while Stellenbosch supplies more than it requests from NWU. The extreme case is that of UNISA which supplied 8,255 documents to NWU, while it only requested 1,836 documents. There are two possible explanations why many ILL librarians prefer to request from the University of South Africa; first, UNISA is a distance learning institution with extensive telecommunications facilities which guarantees faster delivery of material; second, the ILL at UNISA is staffed by a dedicated team of librarians headed by a senior librarian. Williams and Woolwine (2011) found strong correlations between the high usage of ILL and the seniority of staff members at the ILL section. ILL sections staffed by

Table V Correlation of libraries that supplied and requested to and from NWU

Correlations	V1	V2
Spearman's rho		
V1		
Correlation Coefficient	1.000	0.673**
Sig. (2-tailed)	.	0.000
N	93	93
V2		
Correlation Coefficient	0.673**	1.000
Sig. (two-tailed)	0.000	.
N	93	93

Note: **Correlation is significant at the 0.01 level (two-tailed)

senior professional librarians are more likely "to fill requests as lenders" efficiently than those that are staffed by paraprofessionals or junior staff members. Another noticeable aspect is that the majority of top universities by supplies or requests are the top research institutions in the country suggesting a positive correlation between research activities and the extent of involvement in ILL (Duy and Lariviere, 2014) (Table VI).

The number of one-way transactions is relatively high at 50 per cent. This suggests inequality of resources between and among libraries in South Africa meaning that some libraries do not have enough resources to supply and/or request from bigger university libraries such as NWU. Foran (2015a) also noticed a similar trend in New Zealand. However, in the case of South Africa, the well-resourced libraries have not decided to limit the agreements with the smaller and medium-sized libraries like it reportedly happened in New Zealand. These data show moderate correlations between supplying and/or requesting libraries at $r = 0.580$. This means some level of reciprocity between NWU and other libraries exists.

7.4 The impact of VAT, currency depreciation and the global financial crisis to ILL activities

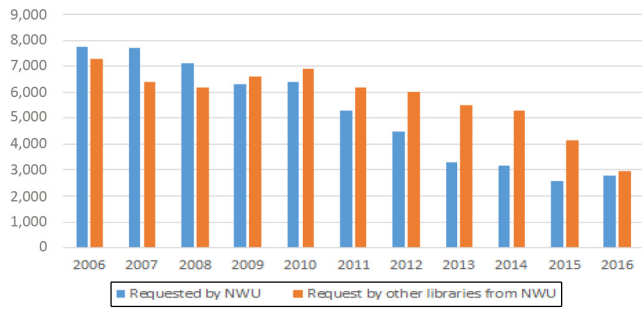
Figure 4 helps to determine whether the above events had an impact on ILL activities at NWU.

Table VI Correlation of libraries that requested and/or supplied from and to NWU

Correlations	V1	V2
Spearman's rho		
V1		
Correlation Coefficient	1.000	0.582**
Sig. (two-tailed)	.	0.000
N	186	186
V2		
Correlation Coefficient	0.582**	1.000
Sig. (two-tailed)	0.000	.
N	186	186

Note: **Correlation is significant at the 0.01 level (two-tailed)

Figure 4 Impact of VAT, currency depreciation and the global financial crisis to ILL activities



Both requests by NWU and requests from NWU decreased steadily since 2006. These results are at odds with Webster and Moyo (2016), and Dean (2017) who suggested that the usage of ILL increased because of the convergence of the three events. However, these results are at variance with Kelsall and Onyszko (2010), Raubenheimer and Van Niekerk (2015), Panda and Mallappa (2015), De Jong and Frederiksen (2015), Foran, (2015a), Stapel (2016), Yi (2016), Chalhoub (2017) who determined that ILL requests in Canada, South Africa, India and Netherlands declined but at odds with Fraser *et al.* (2011) who noticed a substantial increase at a university in the Caribbean. Further, the results are at variance with Kilpatrick and Preece (1996), Calvert and Fleming (2013) and Nash and McElfresh (2016) in that the budget cuts do not seem to have a substantial effect on ILL activities. It is possible that the situation at UCT and other South African research-intensive universities was dealt with before it could have a clear impact on ILL of other institutions. It is the view of the authors that some of the decrease can be attributed to the proliferation of institutional repositories (IRs) in South African. Another possible explanation of the decrease can be attributed to decreased courier budgets. The results may also indicate that ILL data are a poor indicator of the immediate impact of budget cuts and journal cancellations (Knowlton *et al.*, 2016). Assuming that ILL data will immediately show the impact of budget cuts and journal cancellations is a result of underestimating the ability of researchers to adapt by using what is conveniently available in their local libraries.

8. Limitations of the study

It was not possible to obtain the list of titles that have been requested and also to obtain the patron's details because of the failure of the system being used. This would have enabled the authors to determine the type of titles that are being requested and the prevalence of the borrowing of textbooks. This has also resulted to a difficulty in studying turnaround times which the authors were initially interested to study.

9. Conclusion and recommendations

The findings of the study reveal that despite low budgets, ILL among libraries in South Africa had generally declined owing mostly to the proliferation of online resources resulting to changes in user information seeking behaviour. However, it can also be concluded that NWU still relied a lot on ILL as

demonstrated by the high number of items requested from other libraries. The findings also reveal that most ILL activities were conducted by public universities (Panda and Mallappa, 2015) despite the presence of other organisations such as research institutions in the ILL scheme. In total, 91 per cent of all supplies were from 10 universities while 88 per cent of all ILL requests were from 10 universities. This finding suggests that there is a core group of universities involved in ILL activities in South Africa. Another significant finding of this study was that the relationship between requesting and supplying libraries was moderate to strong (Duy and Lariviere, 2013). This means that though most of the ILL requests and supplies are reciprocated, ILL has a social justice aspect that has not been fully researched yet where the well-resourced libraries assist their less resourced counterparts to provide resources to the users without the expectation of direct reciprocity. The results of this study have implications for academic libraries in South Africa, and elsewhere. They show that ILL data alone are not always a reliable measure of the impact of low budgets and cancellations on libraries (Knowlton *et al.*, 2016), as the majority of researchers may simply adapt to the available resources in their local libraries (Wallace and Van Fleet, 2012, p. 259). These results point to a need for marketing of ILL services to the users as a viable option when they cannot find resources in their local libraries. However, libraries and consortiums should try and decrease the amount of time the ILL requests are filled to fulfil the expectations of the impatient "Google generation" that expects to find their resources instantaneously (Raubenheimer and Van Niekerk, 2015, Foran, 2015b). These results also show that ILL can play a significant role to level the playing field between the well-resourced libraries in urbanized regions or provinces and the poorly resourced ones in rural regions or provinces. This social justice aspect of ILL is probably the reason why better resourced libraries in South Africa have decided to remain in the scheme unlike other countries where better resourced libraries opted out of reciprocal arrangements with small- and medium-sized institutions (Foran, 2015a).

Based on the findings, the authors suggest the following recommendations:

- ILL should continue to be enhanced in view of the challenge of dwindling library budgets against the escalating prices of information resources. If Buchanan's (2008) assertions are taken into account that library budgets in South Africa started decreasing in the mid-1980's, then the downward trend seems set to continue. This necessitates that libraries find innovative ways to collaborate and share information resources seamlessly through well-functioning consortiums or national bodies and by enhancing ILL services.
- There is also a need for user education so that they become aware of the ILL service. From experience, library users normally give up once they realize that what they wanted is not available through the local catalogue and this call for librarians to create awareness to users that ILL could help solve their frustrations. The majority of library users in public universities now expect information resources to be provided to them instantaneously (Gardner and Gardner, 2015, Foran, 2015b). Researchers on the other hand prefer the convenience of their local libraries (Wallace and Van Fleet, 2012, p. 259); hence, it is important to conduct user education and awareness campaigns to these two groups for better understanding of ILL services.
- ILL should evolve and embrace new technologies. Libraries need to explore how ILL can be an online service. In its current form, ILL requires that a user should contact the library and request for material. If applications make it seamless to request for material, it may lead to an uptake in the number of requests for ILL.
- SABINET should explore the use of Social Media, such as Twitter and Facebook, to send requests, updates and notifications or alerts from the lending library to the user. That way users will be constantly updated of progress of their requests every step of the way. This will decrease the frustrations emanating from not knowing the status of requests by ILL users.
- Communities of practice with regards to ILL need to be established. It is the argument of this paper that ILL Librarians need to develop new ways of marketing the service and also of delivering material.
- In terms of African libraries, there is a need to examine how ILL between libraries in different countries can be conducted or resources improved (Iroaganachi *et al.*, 2015; Kasalu and Ojiambo, 2015).
- For further studies, the authors recommend a full-scale study on the impact of open access and Institutional Repositories on ILL, given that this study has indicated a decline in physical exchange of theses and dissertations.

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