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Channel Integration Approach in the Metropolitan University Libraries in India

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Abstract

The medium which carries out telecommunication is referred to as a channel. In India, the subscriber base of the telecommunication channels is huge, dynamic, and ever-changing. To satisfy the changing channel preferences of the learners of diverse demographics virtually, it is important for the university libraries situated in metropolitan cities in India to integrate multiple channels. The channel integration strategy allows coordinating multiple channels to create and connect different paths for the clients to reach the same organization. The study has featured the channel integration status in the libraries of 46 UGC-listed universities of four metropolitan cities- Chennai, Delhi, Kolkata, and Mumbai. The purposive sampling method has been followed to select the samples for the study and the observation method is used to collect the qualitative data on the channels from the websites of all the selected universities and library web pages. The channel integration features in the website have been emphasized according to Goersch's six elements. The table on the forms and combination of channels have aided to specify the channel-specific capabilities and information management. The presence of telephone and email in all the university library websites has justified the strategy about the types of communication channels, network, and cost; portability; multimedia sharing; audience outreach and connectivity; accuracy of communication; and information overload/ traffic generation. Except for consistency, the elements like branding channel cross-promotion and logistics are not prominently implemented in the libraries.

Keywords

Telecommunication channels, channel integration, metropolitan university libraries

1. Introduction

The advancement of technology has equipped the global population with a number of channels for telecommunications. *Telecommunication* is the exchange of information over significant distances by all types of voice, data, and video transmission; and the medium which carries out the transaction is referred to as *channel* (Goersch, 2002; Kernaghan, 2013). The *channel integration* strategy allows coordinating multiple telecommunication channels to create and connect different paths for the clients to reach the same organization (Kernaghan, 2013). It is conceptualised to capture the audience preferences and provide them seamless experiences regardless of the channels they use (Goersch, 2002). According to Goersch (2002), channel integration retains customer acquisition and retention, which imply attracting clients, convincing them to communicate and keeping them engaged for further assistance.

Channel integration is currently the most profound strategy of the electronic commerce organizations like Flipkart, Amazon, OYO, Goibibo, and many more. These organizations rely on the four pillars of channel integration- reinforcement, synergy, reciprocity, and complementarity (Robey et. al., 2003). Reinforcement allows sharing of information between the channels i.e. presenting an individual with different choices of channels to proceed with the same transaction (Robey et. al., 2003; Chan & Pan, 2005). Synergy denotes using of more than one channel to offer extended services (Robey et. al., 2003; Chan & Pan, 2005). For example, email can synergise with telephone when multimedia sharing is needed. Reciprocity implies that all the channels have equal share to lead to the desired goal of the client (Robey et. al., 2003; Chan & Pan, 2005). The provision of switching of channels controls the cluttering of traffic within one channel. This also signifies that the channels support each other and can be used together for one purpose. All the aforementioned three pillars are dependent upon the fourth and toughest pillar complementarity. It is the idea of combining the channels in such a way so that they cover the weaknesses of each other with their strengths (Robey et. al., 2003; Chan & Pan, 2005). Engagement of multiple channels with a strategy is beneficial for the retailing organizations to maintain online contact with the consumers and extend a loyal customer base with reliable services. The evidence of implementing multiple channels for providing virtual services is also common in the customer service based organizations like libraries. According to Huizing (2014), the academic libraries tend to fail in employing channels in a customer oriented way which leads to the wastage of valuable resources.

In India, the orientation of the customers towards the channels is dynamic. According to TRAI (2021), both the rural (from 526.67 million in November, 2020 to 525.92 million in December, 2020) and urban (from 648.60 million in November, 2020 to 647.91 million in December, 2020) telephone subscribers are decreasing while the internet subscribers (from 742.06 million in November, 2020 to 747.41 million in December, 2020) are growing. This phenomenon is much prominent in the *metropolitan cities* in India as each of them consists of over one million people from rural and urban areas, and satellite cities (Ahrend et. al., 2016). Strategic implementation of the channels is important for the university libraries situated in the metropolitan cities in India to address the changing habits of the learners of diverse demographics. Comparative studies on the channel integration approaches of the university libraries can not only reveal the pattern of combining the channels but will also help to enlighten the channel preferences of the Indian learners. Good channel integration in the libraries is an aid to strengthen the virtual infrastructure, enhance distance learning, increase the utilization of resources, and maximise the take-up of information services (Kasowitz, 2001; Huizing, 2014).

2. Literature review

There are a number of comparative studies which show different channel implementation pattern in the university libraries throughout the world. The reviews have been classified based on the scope of the university libraries to enlighten the differences in channel preferences.

International Context

Several studies confer instant messaging (IM) as a popular channel. Tripathi and Kumar (2010) found that most of the university libraries among 277 university libraries located in Australia, Canada, U.K., and U.S.A. used Meebo, AIM, MSN, Yahoo, etc. for providing virtual services. Harinarayana and Raju (2010) assessed 57 university libraries from the top 100 universities from the world university rankings, published at the Times Higher Education website and found that instant messaging (IM) was popularly accommodated by several libraries while a few also used blogs. Baro et. al. (2013) found that among the 11 university libraries in Nigeria and South Africa, South African university libraries mostly used IM. However, two studies show the opposite of the aforesaid evidences. Linh (2008) found that a very small number of libraries among 47 Australasian universities used instant messaging (IM) during semesters and vacations. Wordofa (2014) also found that

a very small number of university libraries among the 82 top universities in Sub-Saharan used IM for providing information services.

Balaji et.al. (2019) observed the websites of 75 universities out of 200 top universities from the Times Higher Education Asia University Rankings 2016 and found that most of them used web 2.0 tools along with traditional channels like email, web forms, and phones for providing information services to the users. Though WhatsApp and Google Hangout gained popularity, still IM tools were integrated less as live help to address short questions and reference queries. Only two university libraries employed Skype for video calls and chats. Facebook was the most integrated application followed by Twitter, YouTube, blogs, and Instagram. Baro et. al. (2014) found that a large number of the 16 leading university libraries in Africa incorporated Facebook followed by IM, blogs, Twitter, Wikis, YouTube, social bookmarks, Flickr, and podcasts for virtual services. Chu and Du (2012) identified 140 university libraries (70 Asian and 70 Western) from the top 600 universities listed on the Times Higher Education World University Rankings and found that Facebook and Twitter were the most commonly used channels for handling real-time enquiries followed by IM, blogs, wikis, YouTube, Flickr, Slideshare, Issuu, Delicious, and LinkedIn. Twitter took the leading position in terms of popularity. They cited that the reasons behind the adoption of channels are personal experiences, preferences, cost, and accessibility. Besides adoption, some university libraries also abandoned such channels which included Second Life, blog, Facebook, and Twitter because of time issues, low user preference, and lack of training.

The analysis of Benn and McLoughlin (2013) showed that within the world's top 100 universities in the Academic Ranking of World Universities 2012 list, only a few university libraries had social media (Facebook and Twitter) linked to their other traditional contact points (email, phone, and chat) with an information service strategy. The mostly integrated channel for client enquiries and feedback was email followed by chat or IM, Facebook, and Twitter, and text messaging (SMS). They also found that the university libraries abandoned blogs, wikis, and Twitter because of insufficient reference interactions, privacy concerns, and lack of expertise. In their study, they identified that the social media channels were not so active like traditional contact points.

Mu et. al. (2011) revealed that a vast majority of libraries in the 100 North American universities used synchronous channels followed by email/ web form. Bomhold (2014) found that most of the 73 RU/ VH (research universities – very high research activity) ranked

universities listed by the Carnegie Foundations, provided Ask-a-Librarian functions. However, the mode of Ask-a-Librarian varied from simple phone number the most followed by email/ web forms, text messaging (SMS), chat, and IM. Bomhold's study also showed that a large number of libraries provided a variety of combinations of three or more ways to contact the library staff.

In 2013, Anbu and Jetty conducted a case study in the libraries of the University of Swaziland, South Africa and Bundelkhand University, India and found that text messaging (SMS) is a very cost effective means of spreading library services. In Asian countries, use of SMS for providing library information services was not very common despite a large majority of cellular phone subscribers.

USA

Boateng and Liu (2014) found that the majority of the university libraries among the top 100 universities of the US News and World Report's 2013 list extensively used text based chat/ IM to provide quick online reference services. Collins and Quan-Haase (2014) assessed 21 member libraries of the Ontario Council of University Libraries and found that only four libraries had customized their Facebook pages to include functions enabling visitors to engage in either chat reference with a librarian. Liu and Briggs (2015) visited the websites the top 100 universities based on the U.S. News & World Report's National university rankings in 2014 and found that the libraries preferred chat/ IM the most followed by SMS and social media. It is to be specially noted from their study that the university library websites did not always contain the channel information.

Brown et. al. (2007) ranted that the Binghamton University Libraries of New York initially introduced QuestionPoint software in 2003 and then shifted to DocutekVRLPlus software in 2004. In 2005, they implemented Trillian consisting of AOL, Yahoo!, and MSN on the basis of compatibility with Macintosh and Windows, security, convenience, and popularity with university population and availability of useful features.

LeBlanc and Kim (2014) analysed the website of Amelia V. Gallucci-Cirio Library, Fitchburg State University and found that it used blogs connected with Facebook and Twitter; IM widget LibraryH3lp connected with library's accounts on AIM, Yahoo!, MSN, Google, etc.; online video and voice conferencing through Skype and Blackboard's Collaborate tool; and YouTube for information service transactions.

The survey of NELLCO (2020) depicted that most of the university libraries among 122 Law university libraries in USA used phone/ videoconferencing more for virtual services than chat and email during the pandemic.

Japan

Yasui (2006) found that the national universities of Japan preferred email the most, followed by webforms, videoconferencing/ telephone, and chat.

Malayasia

Dollah (2006) identified that the library professionals of Tun Abdul Razak Library, UiTM; University of Malaya Library; Tun Seri Lanang Library, UKM; and Sultan Abdul Samad Library, UPM of Malaysia mostly integrated email followed by web forms and chat for information services.

Ayu and Abrizah (2011) found only a few among the 20 Malaysian public universities and five private universities used Facebook for providing virtual services.

China

Si et. al. (2009) assessed the top 30 university library websites based on the Chinese university ranking released by Research Center for Chinese Science Evaluation in 2009 and found that RSS was the mostly used channel followed by IM, toolbar, blog, Ajax, Tag/Folksonomy, and wiki. They found only three university libraries integrated different combinations of five channels. Han and Liu (2010) analysed the websites of 38 top Chinese universities and found that a very small number of them used IM and social networking sites like Xiaonei, Facebook or MySpace for providing virtual services. Xu et. al. (2014) found that only four academic libraries in China used WeChat accounts for reference services.

Pakistan

In 2009, Mirza and Mahmood observed that out of all the general university libraries under the Higher Education Commission of Pakistan, few used email for providing reference services whereas only one public university used chat for reference service. Ali (2014) observed 42 public and private sector university libraries in Karachi and found that email was the mostly integrated channel followed by IM, Wikis, social media, video sharing, blogs, and image sharing. Ali and Haider (2016) found that all the 36 public and private sector

university libraries under Higher Education Commission in Karachi provided their services through email followed by Ask-a-Librarian, IM, and social Media.

Malik and Mahmood (2013) found that very few from the 38 university libraries in Punjab Province of Pakistan engaged asynchronous channels more than synchronous channels.

Younus (2014) found that most of the 85 university libraries in Pakistan provided reference services through telephone followed by email, fax, chat, and web forms for nearly 2-5 years. The public university libraries were more inclined towards channel implementation than the private ones. The reasons behind not implementing channels were lack of resources. Very few had a policy for carrying on such services. Khan et. al. (2017) less than half of the 50 public and private sector universities in Pakistan used mostly IM for virtual services followed by Skype and web forms. Rafiq et. al. (2020) assessed seven major private and public university libraries in Lahore and Islamabad and found that most of them used phone, WhatsApp, and email for answering queries 24/7 while social media such as Facebook, Twitter, etc. was least used during pandemic.

Turkey

Yilmaz et. al. (2008) investigated 23 university libraries of Ankara, Istanbul, and Izmir and found that email was the most ideal way to provide reference services followed by social networks and chat/ IM (Messenger, Skype, etc.).

Kubat (2017) found that out of 30 random central libraries of both private and state universities across the seven regions of Turkey, only seven provided IM service. Most institutions mainly state universities did not provide SMS reference services. The reasons behind such low use of IM and SMS were budget constraints, knowledge, and training of using software.

Iran

Pirshahid et. al. (2016) assessed 15 private and four state university libraries of East Azerbaijan, Iran and found that a large number of them provided online information services mainly through blogs followed by wikis, social bookmarking, social networks, RSS feeds, and IM.

Nigeria

Baro et. al. (2013) found that more than half of the 49 university libraries in Nigeria integrated Facebook followed by Twitter, IM, YouTube, Wikis, blogs, social bookmarking, Flickr, and Podcasts. Quadri and Idowu (2016) found that in three Federal University Libraries in Southwest Nigeria, Facebook was the mostly integrated social medium followed by Google+, Hi5, My Space, Flickr, LinkedIn, Skype, Academia.edu, Netlog, YouTube, and blogs for providing information services. Amuda and Adeyinka (2017) assessed nearly half of the university libraries in South-Western Nigeria integrated Facebook followed by Twitter, blog, YouTube, LinkedIn, Delicious, MySpace, and Flickr to provide virtual services. Madu et. al. (2017) found that the use of YouTube, IM, Facebook, podcast, blog, and twitter was frequent in the 12 university libraries in Nigeria.

Kenya

Tutu (2016) did a comparative study on the use of channels by 11 public university libraries and eight private university libraries in Kenya. The most popular digital reference channel was Twitter followed by Ask-a-Librarian, Facebook, chat, and SMS. The trend of integrating email and live chat was more prominent in private university libraries than public university libraries. The ease of use was the leading factor behind the choice of channels followed by availability, cost and popularity, software features, functionality, and support.

India

Singh (2012) found that A.C. Joshi Library, Panjab University, Chandigarh only integrated email whereas Delhi University Library integrated email, Ask-a-Librarian, chat, and web form, Central Library of the Jammu University only integrated web form and Allama Iqbal Library, Kashmir University integrated email and web form.

Email was found popular in the Indian university libraries. Among the four agricultural university libraries in the state of Maharashtra studied by Rokade and Rajyalakshmi (2006), only Mahatma Phule Krishi Vidyapeeth, Rahuri; Dr Panjabrao Deshmukh Krishi Vidyapeeth, Akola; and Marathwada Krishi Vidyapeeth, Parbhani rendered information services to the users through email. Madhusudhan and Nagabhushanam (2012) surveyed 20 university library websites in India and found that most of them integrated email, web form, chat, and blog for providing information services to the users. According to Kundu and Mondal (2018), channel integration was not so popular in the state university libraries of

West Bengal. Email and fax were the mostly used conventional channels in the channel domain whereas telephone implementation was slightly lower. Very few libraries used web forms and web 2.0 tools for information transmission.

Chandraprabha et. al. (2014) found that almost all the Engineering and Technology universities/ deemed to be universities in Tamil Nadu provided email and Ask-a-Librarian, and nearly half of them provided chat, IM, VOIP, chatter bot, video conferencing, and web form. Their study also revealed that the older university libraries were keener towards integrating communication channel for information services. Das and Chowdhury (2019) assessed eight universities from Tamil Nadu based on National Institutional Ranking Framework ranking 2019 of the top 100 Universities and found that they mostly integrated telephone followed by webmail, Facebook, Twitter, YouTube, blogs, and chat for providing virtual information services.

In 2012, Hazarika observed the websites of 10 university libraries of North-East India and found that only Tezpur University provided an email link named Ask-a-Librarian to contact with top officials of the university. Neog (2020) found that the sample university libraries of Assam mostly integrated WhatsApp followed by Facebook, Blog, and Twitter for delivering library services during lockdown.

No specific pattern of channel implementation has been found in the university libraries. The studies mainly show the forms and categories of channels preferred by the libraries and the reasons behind selecting those channels. The studies of Si et. al. (2009) and Bomhold (2014) mentioned about different combination of channels. The studies of LeBlanc and Kim (2014) and Collins and Quan-Haase (2014) showed the evidence of linking of channels. But no discussion on the channel integration has been found in these studies except Kundu and Mondal (2018). The studies conducted on the virtual infrastructure in the Indian university libraries does not emphasize on the viability of the channels in satisfying the diverse needs of the learners.

3. Objectives

The objectives of the study are-

- 3.1 to find the status of channel integration in the Indian university libraries;
- 3.2 to identify the number and combination of channels which are used by them; and
- 3.3 to identify the form of channels and features of channel integration which are applied.

4. Methodology

The educational requirements of a metropolitan area depend on its population (Ahrend et. al., 2016). According to the last Urban Agglomerations Census 2011, the top four mostly populated cities in India are Mumbai, Delhi, Kolkata, and Chennai respectively. There are 82 University Grants Commission (UGC) listed university libraries located in these cities. The *University Grants Commission (UGC)* is a statutory organization of the Government of India which coordinates, determines, and maintains the standards of teaching, examination, and research in university education. The purposive sampling method has been followed to select the samples for the study. The websites and library web pages of these universities have been visited within the period from 1st-30th November, 2020 to decide the suitability of the samples. Observation method is used to collect the qualitative data on the channels from the websites of all the selected universities and library web pages within the same period.

Table 4.1: *Placement of the integrated channels*

Placement of the channels		Number of libraries	Percentage
Websites with channel information	Library webpage	34	41.46
	Other university webpage	4	4.87
	Both	17	20.73
Websites without channel information		27	32.92

Note. Table 4.1 shows that 34 (41.46%) university libraries have placed their channel information within the respective library webpage. The contacts of 17 (20.73%) libraries are not only placed in the library webpage but also in other places like university directories and official information. Only four (4.87%) university libraries have provided information only in other university webpage which seems scattered. The websites of 27 (32.92%) university libraries which do not contain any channel information are omitted from the study.

Table 4.2: *Distribution of the metropolitan university libraries based on channel integration*

University libraries	Number	Percentage
Single channel	9	16.36
Multiple channels	46	83.63

Note. Table 4.2 shows that out of 55 university libraries, 46 (83.63%) have integrated multiple channels and nine (16.36%) have integrated single channel. The libraries which have integrated single channel are abandoned from further analysis to focus on the channel integration.

The university libraries have been primarily analysed on the basis of their categories and location. The combination of channels has been classified according to the kinds of channels which are used. To analyse the channel integration status of the university libraries, the collected data have been analysed on the basis of six elements- branding, channel cross promotion, consistency, logistics, information management, and channel specific capabilities (Goersch, 2002). According to Goersch (2002), these elements can reveal the status of channel integration of an organization through customer interface like website. The data have been tabulated based on the uniform applicability of the elements branding, channel cross promotion, consistency, and logistics on the channels. The table on the forms and combination of channels have aided to specify the channel specific capabilities like types of communication channels, network, and cost; portability; multimedia sharing; audience outreach and connectivity; accuracy of communication; information overload/ traffic generation; and information management of the channels.

5. Data tabulation and analysis

5.1 Distribution of the university libraries

There are four types of universities under University Grants Commission (UGC). Central universities are established by an Act of Parliament and are under the purview of the Department of Higher Education in the Ministry of Education, Government of India. State universities are established by a local legislative assembly act and are run by the State Government of each state and territory of India. Deemed/ deemed to be universities are autonomous institutions of high calibre without the right to affiliate colleges. Private universities are non-governmental institutions under UGC.

Table 5.1: Distribution of the university libraries

Metropolitan Cities	Central university libraries		State university libraries		Private university libraries		Deemed/ Deemed to be university libraries		Total	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Chennai	1	2.17	6	13.04	-	-	6	13.04	13	28.26
Delhi	5	10.86	5	10.86	-	-	6	13.04	16	34.78
Kolkata	-	-	5	10.86	1	2.17	1	2.17	7	15.21
Mumbai	-	-	1	2.17	2	4.34	7	15.21	10	21.73
Total	6	13.04	17	36.95	3	6.52	20	43.47	46	100

Note. Multiple channels have been integrated by 20 (43.47%) deemed/ deemed to be university libraries followed by 17 (36.95%) state university libraries, six (13.04%) central university libraries, and three (6.52%) private university libraries. Delhi constitutes a total of 16 (34.78%) university libraries of which six (13.04%) are deemed/ deemed to be university libraries, five (10.86%) are state university libraries, and five (10.86%) are central university libraries. Chennai constitutes a total of 13 (28.26%) university libraries of which six (13.04%) are deemed/ deemed to be university libraries, six (13.04%) are state university libraries, and one (2.17%) is central university library. Mumbai constitutes a total of 10 (21.73%) university libraries of which seven (15.21%) are deemed/ deemed to be university libraries, two are (4.34%) private university libraries, and one (2.17%) is state university library. Kolkata constitutes a total of seven (15.21%) university libraries of which five (10.86%) are state university libraries, one (2.17%) is deemed/ deemed to be university library, and one (2.17%) is private university library.

5.2 Combination of channels

The channel integration approach of every university is different. They use various combinations of channels. The following table depicts the combinations of channels integrated by the sample university libraries of this study.

Table 5.2: *Combination of channels used in the university libraries*

Total no. of channels	Combination	Number of libraries	Percentage	Total number of libraries	Percentage
7	Combination 1: Telephone, mobile, email, Facebook, Twitter, YouTube, Google plus	1	2.17	1	2.17
5	Combination 2: Telephone, mobile, email, fax, web form	2	4.34	3	6.52
	Combination 3: Telephone, email, web form, fax, Facebook	1	2.17		
4	Combination 4: Telephone, email, web form, mobile	4	8.69	9	19.56
	Combination 5: Telephone, email, fax, web form	1	2.17		
	Combination 6: Telephone, mobile, email, blog	1	2.17		
	Combination 7: Telephone, email, Facebook, Twitter	1	2.17		
	Combination 8: Telephone, email, web form, Facebook	2	4.34		
3	Combination 9: Telephone, email, YouTube	1	2.17	15	32.60
	Combination 10: Telephone, email, fax	7	15.21		
	Combination 11: Telephone, email, mobile	2	4.34		
	Combination 12: Telephone, email, Facebook	1	2.17		
	Combination 13: Telephone, email, web form	4	8.69		
2	Combination 14: Telephone, email	18	39.13	18	39.13

Note. Fourteen combinations of channels have been noticed in different university libraries. 18 (39.13%) university libraries have integrated two channels (Telephone and email). Fifteen (32.60%) university libraries have integrated three channels of five different combinations. Telephone, email, and fax are integrated by seven (15.21%) university libraries. Telephone, email, and web form are integrated by four (8.69%) university libraries. Telephone, email, and mobile are integrated by two (4.34%) university libraries. Telephone, email, and YouTube are integrated by one (2.17%) university library. Telephone, email, and Facebook are integrated by one (2.17%) university library. Nine (19.56%) university libraries have integrated four channels of five different combinations. Telephone, email, web form, and mobile are integrated by four (8.69%) university libraries. Two (4.34%) university libraries have integrated Telephone, email, web form, and Facebook. Three (6.52%) university libraries have integrated Telephone, email, fax, and web form; Telephone, email, Facebook, and Twitter; and Telephone, mobile, email, and blog respectively. Three (6.52%) university libraries have integrated five channels of two different combinations. Telephone, mobile, email, fax, and web form are integrated by two (4.34%) university libraries. Telephone, email, web form, fax, and Facebook are integrated by one (2.17%) university library. One (2.17%) university library has integrated seven channels (Telephone, mobile, email, Facebook, Twitter, YouTube, and Google plus).

- The South Asian University Library has integrated seven types of channels which is not only the highest in Delhi but also among all in terms of channel integration. The libraries of Somaiya Vidyavihar University, MGM Institute of Health Sciences, and Tata Institute of Social Sciences have integrated four types of channels each which are the highest in Mumbai. The libraries of University of Madras, B.S. Abdur Rahman Institute of Science and Technology, and Academy of Maritime Education and Training have also integrated four types of channels each which are the highest in Chennai. Jadavpur University has integrated three types of channels which is the highest in Kolkata. The channel integration of Delhi University Library has changed if compared to the study of Singh (2012).

5.3 Channel integration analysis

The following two tables show the channel integration status of the university library websites on the basis of the elements presented by Goersch (2002).

Table 5.3.1: *Forms of channels which are used in the university libraries*

Channels	Number of libraries	Percentage
Email	46	100
Telephone	46	100
Web form	13	30.43
Fax	11	23.91
Mobile	10	21.73
Facebook	6	13.04
Twitter	2	4.34
YouTube	2	4.34
Google plus	1	2.17
Blog	1	2.17

Note. The data presented in Table 5.3.1 about the forms of channels used in the university libraries is interpreted on the basis of the elements channel specific capabilities and information management.

5.3.1 Channel-specific capabilities

Each and every channel has certain advantages and disadvantages. The channel integration approach helps to cover the limitation of one channel with the strengths of the other (Goersch, 2002). The channel specific capabilities are discussed vividly in the context of libraries.

5.3.1.1 Types of communication channels, network, and cost: Based on the time of response, there are three kinds of communication channels. *Synchronous channels* like telephone and mobile allow real-time interaction with an immediate/ live response to a query (Singh, 2004). *Near-synchronous channels* like SMS and IM recreate the immediacy of real-time interaction as well as serve the provision to thoughtfully compose and edit a message before sending it (Kasowitz, 2001). *Asynchronous channels* like email, web form, voice mail, social networking, and fax allow thoughtfully composing and editing a message, and sharing documents without time pressure (Straw, 2000; Moeller, 2003). Users do not have a definite idea of when to expect a response in these channels. Although asynchronous, the social networking channels allow live chatting publicly (Kenchakkanavar, 2015).

Based on the sensory mode of communication, the communication channels are divided into two basic types. The *verbal communication channels* like telephone, mobile, voice mail, fax, and video calling primarily allow communication through speaking while they can also employ visual aids and non-verbal elements (Velentzas & Broni, 2014). The presence of physical cue helps to strengthen the relationship of the library professional and the patrons. The *written communication channels* like SMS, IM, email, web form, voice mail, and social networking allow communication by writing words or sending symbols (Sharma, 2015). The benefit of such communication is that anyone can ask any question and also remain anonymous (Straw, 2000; Moeller, 2003). The verbal channels are appropriate for those who prefer physical cue and the written channels are appropriate for those who are shy to communicate orally (Chandwani, 2009).

As shown in Table 5.3.1, the synchronous verbal channels like telephone and mobile are preferred by 100% and 21.73% university libraries respectively. These channels depend on telephone (voice calling) network. Email (100%) is the most popular asynchronous written channel followed by web form (30.43%), Facebook (13.04%), Twitter (4.34%), YouTube (4.34%), and blog (2.17%). Only one (2.17%) university library has listed an out dated channel Google plus. The aforementioned channels depend on internet for transmission of information (Baro et. al., 2013). The internet based channels are cheap as they only need timely broadband subscription while voice calling channels charge local call rates for every call (Saxena & Yadav, 2013). As depicted in the Table 5.3.2, the presence of telephone (100%) and email (100%) in every combination implies that all the libraries prefer to combine telephone network and internet in forms of synchronous verbal and asynchronous written channels respectively. However, the inclination towards written asynchronous channels seems more because 13 out of 14 combinations have integrated more than one written asynchronous channel whereas only five combinations (combinations 1, 2, 4, 6, and 11) constitute mobile other than telephone to ensure synchronous verbal transaction. No official near synchronous channel was found in any of the university libraries. The integration of IM or SMS is not seen in any of the university libraries which prove the observation of Anbu and Jetty (2013) as true. From Table 5.3.1, it can be seen that the university libraries (13.04%) who have integrated Facebook are benefitted by the Facebook's Messenger which mainly provides the facility of chatting along with voice calling and video calling. These channels are not tabulated because they are bi-products of Facebook and are not officially enlisted in the university or library website.

5.3.1.2 Portability: The landline telephone device is fixed and may not ensure 24*7 services due to stipulated office hours. The mobile device and internet based channels are portable which assure service irrespective of time and place. From Table 5.3.1, it can be seen that all the libraries have combined a portable channel in the form of email (100%) and a fixed channel in the form of telephone (100%). The presence of mobile in 21.73% university libraries has alleviated the limitations of voice calling through telephone. However, though portable, the availability strictly depends on the schedule and library policy.

5.3.1.3 Multimedia sharing: Telephone and mobile is limited to voice calling; fax only allows sharing of scanned images and YouTube is a video sharing site that also allows texting. Though web form and blog allow the library professionals to share multimedia, they do not allow the learners to share anything other than text. As shown in Table in 5.2, the use of email (100%) in every combination terminates the limitations of the channels that are unable to transact multimedia. The channels like Facebook, Twitter, and Google plus also support the same (Baro et. al., 2013).

5.3.1.4 Audience outreach and connectivity: From Table 5.3.1, it can be seen that the university libraries that have integrated Facebook (13.04%), Twitter (4.34%), YouTube (4.34%), Google plus (2.17%), and blog (2.17%) ensure to connect large number of audiences at a time. These channels allow promoting and articulating the activities of the libraries within like-minded people/ community/ group which increases their awareness and engagement (Baro et. al., 2013; Kenchakkanavar, 2015). The learners can comment or post any query in the public forum. Serving the learners in a public platform increases trust and reliability. Table 5.2 enlightens that the combinations 1, 3, 6, 7, 8, 9, and 12 have complemented such channel specific ability with the channels incompetent of it.

5.3.1.5 Accuracy of communication and information overload/ traffic generation: Direct conversation through telephone and mobile allow immediate understanding of information mutually (Nalluri & Gaddam, 2016). In voice calling, an ongoing call steers other calls to waiting and generates traffic. On the other hand, email, web form, Facebook, Twitter, YouTube, Google plus, and blog allow many persons to contact at a time. But irregular checking of messages may lead to information overload, juggling, and missing messages. However, the subject line of email allows the receiver to prioritize whom to respond (Chavan & Aute, 2011). Responding in email is mainly based on assumptions and thus may often lack accurate determination and dissemination of users' needs, run the risk of

extending the transaction, and delaying the final resolution (Straw, 2000; Granfield & Robertson, 2008; Chavan & Aute, 2011; Fishman, 1998). Table 5.2 shows that all the combinations maintain the balance of information overload, traffic generation, and accuracy of messages through telephone (100%) and email (100%) while the combinations containing other channels strengthens the same.

5.3.2 Information management

Acquiring clients' information helps to anticipate their actual needs and provide them customized information (Goersch, 2002). The written communication channels capture and record transactions, and store question-answer pairs which can be reused. Table 5.3.1 shows that managing such information in the written communication channels is a major concern of all the university libraries (100%) to prevent invasion of privacy of the patrons. Moreover internet based channels are prone towards hacking and malware, and thus it important to care about patrons' security (Parabhoi & Pathy, 2016). As shown in Table 5.3.1, 13 (28.26%) university libraries who have integrated web form pre acquire personal information like name, address, email id, phone number, library, library membership number, department, course, subject, experience, and message for query, feedback, suggestions, and grievance. Three university libraries use Google form. The university libraries that use social networking sites like Facebook (13.04%), Twitter (4.34%), YouTube (4.34%), Google plus (2.17%), and blog (2.17%) also share the same concern as any activity on them is public. The positive feedback in such platform helps to attract more audiences while the negative feedback does the opposite (Parabhoi & Pathy, 2016). On the other hand, the university libraries that use email (100%) and fax (23.91%) have lesser concern as these transactions are limited between the library professional and the patron. Combining voice calling through telephone (100%) is a skilful step for the patrons who prioritize privacy and security.

Table 5.3.2: *University library websites showing branding, channel cross promotions, consistency, and logistics*

Elements	Fully uniform		Partially uniform		Not applied	
	Number	percentage	Number	percentage	Number	percentage
Branding	5	10.86	8	17.39	33	71.73
Channel cross promotions	-	-	6	13.04	40	86.65
Consistency						
Types of service	-	-	11	23.91	35	76.08
Details of library professional/contact location	13	28.26	26	56.52	7	15.21
Turnaround time	-	-	3	6.52	43	93.47
Schedule of availability	-	-	2	4.34	44	95.65
Policies	-	-	1	2.17	45	97.82
Logistics	-	-	1	2.17	45	97.82

Note. The table 5.3.2 depicts five elements- branding, channel cross promotions, consistency, logistics, and information management.

5.3.3 Branding

In channel integration, integrated branding means presentation of the channels either with a definite colour or logo or image uniformly through the website (Goersch, 2002). Branding is important because it conveys the significance of an organization and builds trust. Table 5.3.2 depicts that only five (10.86%) university libraries show uniform branding of the channels whereas eight (17.39%) university libraries have partially branded their channels. The majority of the university libraries (71.73%) do not show any instance of branding.

5.3.4 Channel cross-promotions

Promotion and linking of channels integrated by an organization with another channel helps to redirect the clients to other channels, control traffic, and improve awareness (Goersch, 2002). Table 5.3.2 shows that channel cross promotions is only visible in six (13.04%) university libraries who have implemented Facebook and Twitter. No other channels carry information on other channels. Facebook provides the provision to add official telephone number. Moreover, the chatting, voice calling, and video calling features of Facebook Messenger ideally promotes channels. It has also been observed that the university libraries redirect their patrons to YouTube through the posts of Facebook and Twitter. Forty (86.65%) do not show any signs of cross promotion through the channels.

5.3.5 Consistency

Information on the products/ services available through a channel, the professionals involved, policies, and timing enhances consistency (Goersch, 2002). This helps to clear the doubts of the clients and strengthens their association with the organization. Table 5.3.2 shows that only 11 (23.91%) university libraries have specified the types of service in selected channels. The types of service also depend on the specialization of the professional designated for the channel. Thirteen (28.26%) of the university libraries have uniformly provided full details of the contact person and location of the channel whereas 26 (56.52%) university libraries have provided such details in selected channels. The details of the library professional consist of his/ her name, designation, qualification, experience, and specialization. The location of the channels specifies the library/ department/ section/ offices/ residence. Three (6.52%) university libraries show 24 hours turnaround time in channels like email and web form. Only two (4.34%) university libraries have provided information on the schedule of availability and one (2.17%) university library provides policy information in selected channels. The policy claims no responsibility if any transaction is instanced for public. Majority of the libraries are not consistent in providing information about types of service (76.08%), turnaround time (93.47%), schedule of availability (95.65%), policies (97.82%) except the details of library professional/ contact location (15.21%).

5.3.6 Logistics

Presenting the logistics i.e. the stages of preparation of the service within a channel helps the patrons to stay in loop with the library (Goersch, 2002). Table 5.3.2 shows that only

one (2.17%) university library has such feature. The library of Tata Institute of Social Sciences of Mumbai presents the date and time of receiving, assimilating, and closing a query in web form along with the patron's name.

6. Concluding remarks

Channel integration is an idea of enhancing the transparency, uniformity, and organization of telecommunication channels so that the learners regardless of any demographic and physical nature get their preferable way to communicate with the library. The websites of metropolitan university libraries show their gradual inclination towards using more than one channel for virtual assistance. But they do not certainly follow the features of channel integration. Maintaining the channels is important to prevent scattering of channel information and uphold the goodwill of the organization. It is important to note that the features of channel integration are not uncommon. But the reason behind its low systematic implementation is may be due to the unawareness of the library professional about the concept. The study is limited to the websites of the university libraries which can be further extended to explore the perception of the library professionals. With the growing importance of virtual services, channel integration in the university libraries will open different paths for the patrons to reach to the same destination without the feeling of being helpless or ignored.

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