MOOCs FOR LIBRARY AND INFORMATION SCIENCE (LIS) ASPIRANTS: PERSPECTIVES AND POSSIBILITIES

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E-learning became a new trend in the education system and Massive Open Online Courses (MOOCs) are being called the pioneers of it. MOOCs are the potential aids for increasing knowledge and skills. This paper aims to analyze how MOOCs can be convenient for Library and Information Science (LIS) aspirants. A web-based survey has been conducted to collect data from different MOOCs providers. Five major MOOCs providers have been picked and a total number of 39 courses related to LIS identified for this particular study. The discussion section of this paper shows the possible outcomes of MOOCs and it also exploreshow LIS aspirants can be able to work in library and information centre efficiently in future.

Keywords: Online education; Life-long learning; MOOCs, Library and Information Science (LIS).

INTRODUCTION

The development and the advancement of Information and Communication Technologies (ICT) have brought drastic changes in primary to higher levels of the education system globally. The mode of education system is categorized into two groups, one is the regular education system and other is the distance education system. Both the education systems are based on a classroom environment. But the recent developments and prolongation of ICT and web 2.0 tools prospered the concern for e-learning circumstances. The arrival of MOOCs (Massive Open Online Courses) has revitalized formal and distance learning. The concept of MOOCs eventually originated from the Open Educational Resources (OER) movement. MOOCs are free online courses available for everyone. Further, MOOCs are classified by two types, the first one is connectivist MOOCs (cMOOCs) that connect learners through blogging, social networks, and educational communities etc. and the other one is extended MOOCs (xMOOCs) that are

based on traditional courses offered by universities (e.g., MIT, Stanford, and Harvard etc.) with specific aims for obtaining knowledge with certificates (Massive open online course, 2020). MOOCs differ from traditional online courses that provide restricted institutional access, scheduled term-end modules' content, live classes, linear learning path, and limited number of students, whereas MOOCs provide 24x7 open access, short recorded video lectures, and shareable contents etc. MOOCs can help learners in various ways, it's like a discovery which actually creates interests for specializing in their area of activity. It cannot be revealed that all the enrollers are seeking for their relevant degrees, rather it can be said that they are looking for life-long learning and skill development prospects. Coursera, edX, Udacity, SWAYAM, and NPTEL are such major initiatives that provide different self-paced and self-regulated online courses.

The general features of such as MOOCs are video lectures, downloadable resource material, self-assessment, weekly assignments, group discussion, and proctored examination etc. LIS aspirants may wish to have experience of MOOCs to earn skill sets. Sometimes, it can be seen that they often do not understand the lessons properly or a gap of knowledge has been created during their degree course, as a result, they may fall behind from their goal in future or they may face numerous challenges in their professional career. To prevail over these things and to develop various skills involved in communication, managerial activities, and use of technologies etc., LIS aspirants can pursue online courses based on knowledge society, ICT applications, public library management, research skill and many more (see Table-2) through renowned MOOCs providers. Noting these aspects, firstly, this paper explores the major MOOCs providers and their available courses related to LIS domain; and secondly, it analyzes how the courses can help the LIS aspirants to develop skills for their professional career.

LIFE-LONG LEARNING THROUGH MOOCs

The teaching and learning process was associated with the formal education system at school, college, and even university etc. But right at the moment formal schooling is not the last lap of education, knowledge can be gained through non-formal and informal ways. The concept 'Lifelong Learning' denotes ongoing and self-regulated learning process in any context without limitation. Personal and professional development are the two key factors of life-long learning(Lifelong learning, 2020). Now, ICT revolutionized the way of learning as learners are using it with great enthusiasm in addition to traditional education. Learners are able to augment their knowledge by having various online courses via MOOCs platforms with supportive aids i.e., internet connectivity, laptops, tabs, and smartphones. Lifelong learning helps to gain personal interest and to reach professional ambitions. Certainly, lifelong learning is becoming a promising agenda for keeping pace with the current social, economic, and educational aspects.

FROM THE PERSPECTIVE OF LIBRARY AND INFORMATION SCIENCE

A library or an information centre is effective when it delivers all the diverse wants of

users, if it fails to serve then it may lose its user. In the present situation, the trending requirements of library professionals are to accumulate skills and knowledge of managing library systems and workflows with Integrated Library Systems (ILS); Institutional Repository; Web-scale Discovery Systems; Open Source Software (OSS) packages, reproduction of bibliographic data, research and ethical adeptness, etc. Keeping these factors in mind, LIS schools and libraries are experiencing internal and external training programs; and workshops for skill development but that might not be good enough to attain the proper knowledge and skills. It also can't be asserted that an individual can have all the specific skills and specializations for neoteric library services. From this particular perspective, LIS aspirants need to become experts and catalysts in serving the user community, so those who have such skills and knowledge only can cope with the changing dimension of library services and expand the viability of their future professional career. MOOCs open the door for exploring a wide range of skill assets. LIS professionals, students, researchers, and even teachers can pursue their occupation MOOCs along with simultaneously. MOOCs offer the potential for LIS aspirants to learn new emerging technologies and play an effective role in the library.

LITERATURE REVIEW

There are numerous studies conducted by different researchers on MOOCs. Kaushik and Kumar (2016), defined Massive Open Online Course (MOOC) as an online learning model where anyone can participate virtually in any course through computer and internet connection.

Sibbu (2018) has discussed the characteristics and advantages of MOOCs. Many research studies have addressed the issue of how MOOCs can improve the quality of LIS education. Stephens (2013) has adapted Hyperlinked Library, at San Jose State University's School of Library and Information Science (SJSU SLIS) in order to explore how LIS professionals can use emerging technologies and participatory practices to serve their communities. The study revealed that MOOCs provide a transformative learning environment for LIS professional development. Borrego (2019) explained the impact of MOOCs on Library and Information Science (LIS) education, and discussed the characteristics, types and disruptive nature of MOOCs. According to Pujar and Bansode (2014) MOOCs are revolutionizing higher education. It provides a new learning opportunity for aspiring students, faculties in many disciplines including LIS education.

Kaushik (2016) asserts MOOCs became a hot topic and spread over all subject domains. The researcher expresses that MOOCs explore: the basic ideas; features for online learning; and endeavor to solve all the education related problems. The researcher adds MOOCs also can play a vital role in LIS education for knowledge acquisition. Pujar and Tadasad (2016) listed some potential areas where MOOCs can collaborate with LIS education. This collaboration would bring greater diversity to courses taught at LIS schools universally and prepare both the faculty and students to meet the challenges posed by the knowledge society. Another study on MOOCs as LIS professional development platforms was

carried out by Stephens and Jones (2014) where they empirically addressed that learners use the MOOCs platform for professional development, learners expanded their knowledge through MOOCs and there is a significant opportunity for LIS programs to serve their profession on a large-scale professional development learning environment.

Hasan and Naskar (2020) highlighted the importance of Annual Refresher Programmesin Teaching (ARPIT) for professional development in LIS by using MOOCs platform called SWAYAM of the Government of India. ARPIT helps LIS professionals to upgrade their knowledge skills and help in career progression. Bansode (2019) mentioned some potential issues and challenges of MOOCs in LIS education from an Indian perspective. Kanjilal and Kaul (2016) revealed that India is grappling with the problem of low Gross Enrolment Ratio (GER) in higher education and lack of quality educational infrastructure. MOOCs can meet the challenges and revolutionize the education system in India. As the Ministry of Human Resource Development (MHRD), Government of India introduced 'Study Webs of Active Learning for Young Aspiring Minds' (SWAYAM) to provide an integrated platform for online courses. Sawant (2016) explored the benefits and challenges of adoption of MOOCs for continuing professional development of Indian LIS educators.

OBJECTIVES OF THE STUDY

The objectives of the study are as follows:

- 1. To know the concept of MOOCs;
- 2. To find out the major MOOCs providers in the LIS domain;

- 3. To explore the courses offered by MOOCs provider in LIS and related topics;
- 4. To analyze how MOOCs can help LIS aspirants for their professional development.

METHODOLOGY

A web-based survey of the websites of MOOCs providers was conducted to collect different data. Google was employed to browse the web resources of the websites. A variety of MOOCs providers have been found who offer LIS related courses, but most adequately, five major MOOCs providers were taken for this study. The collected courses are analyzed on the basis of the curriculum of LIS and present eight major sections such as knowledge society, managerial perspectives, public library management and community information services, information retrieval, application of ICT, research, technical writing and data science. The authors found a total number of 39 courses related to LIS from the respective websites of MOOCs providers. Finally, the outcomes of the courses were interpreted in the discussion section.

MOOCS ON LIBRARY AND INFORMATION SCIENCE DOMAIN: SWAYAM and NPTEL

Study Webs of Active-Learning for Young Aspiring Minds (SWAYAM) is a project of the MHRD, Government of India (GOI). It is associated with 9 national coordinating institutes including 203 partnering institutes. It offers free enrollments to various diploma and certificate courses under different disciplines. Till date, more than 500 courses are available and total 1,25,41,992 enrollments found on their website.

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Name	Website URL	Country	Found in	Access fee
SWAYAM	https://swayam.gov.in	India	2017	No
NPTEL	https://nptel.ac.in	India	1999	No
edX	https://www.edx.org/	US	2012	Partial
Coursera	rsera https://www.coursera.org/		2012	Partial
Udacity	https://www.udacity.com	US	2011	Partial

Table1: Major MOOCs providers

The National Programme on Technology Enhanced Learning (NPTEL) is also a project of MHRD, GOI. It started functioning from 2003 with Seven Indian Institutes of Technology (IITs) and started offering open online courses under different courses from 2014 with verified certificates. It also became one of the most subscribed YouTube educational channels with 1.5 million subscribers. In 2019, SWAYAM and NPTEL were integrated together. Presently it is also known as SWAYAM-NPTEL course. In terms of credit transfer, universities and colleges are approving it for academic record if the students complete the course successfully(NPTEL. 2020), (SWAYAM, 2020).

edX

Harvard University and Massachusetts Institute of Technology (MIT) found a classy free online learning platform named edX in 2012 through Open edX (an open-source learning platform). It certifies all the successful learners for completing courses. Presently, edX has quite 20 million learners with 2500 plus accessible courses coordinated by 140 institutions and approximately 87 million enrolments.

Coursera

Coursera was founded by two Stanford professors Daphne Koller and Andrew Ng in 2012. Learners can pursue several courses (more than 2700 active courses) for specializations, professional certificates, and master track certificates. It offers more than 4100 courses from various subject domains by partnering with Yale, University of Pennsylvania, Google, and IBM, etc. (Coursera, 2020).

Udacity

Udacity was an experimental approach at Stanford University where Sebastian Throne and Peter Norvig offered an online course i.e., "Introduction to Artificial Intelligence" for everyone at free of cost. Udacity offers nanodegree programs in data science, artificial intelligence, programming, autonomous systems, and cloud computing etc. It has more than 160,000 enrolments from 190 countries (Learn the Latest Tech Skills, 2020).

Table 2: List of courses offered by the respective MOOCs providers

Sections	Sl. No.	Name of the MOOCs providers	Name of the courses	Name of the Institutes	Duration (in Weeks)
	1	Coursera	Introduction to intellectual property	University of Pennsylvania	4
Section-A	2	NPTEL	NOC: Intellectual Property	IIT Madras	11
Knowledge Society	3	SWAYAM	Information sources and library services	IGNOU	12
	4	SWAYAM	Digital Library	INFLIBNET	15
	5	NPTEL	Total Quality Management - I	IIT Kanpur	8
Section-B Managerial Perspectives	6	SWAYAM	Operations Management	IIT, Roorkee	12
rerspectives	7	edX	Introduction to Management Information Systems (MIS)	UC3Mx	6
	8	edX	Public Library Marketing and Public Relations	The University of Michigan	4
	9	edX	Strategic Planning for Public Libraries	MichiganX	4
Section-C Public Library Management and	10	edX	Infrastructure Management for Public Libraries	MichiganX	4
Community Information Service	11	edX	Budgeting and Finance for Public Libraries	MichiganX	4
	12	edX	Personnel Management for Public Libraries	MichiganX	4
	13	edX	Grant Writing and Crowdfunding for Public Libraries	MichiganX	4
Section-D Information	14	Coursera	Text Retrieval and Search Engines	University of Illinois	6
Retrieval	15	SWAYAM	Database and Content Organisation	IGNOU	15
	16	SWAYAM	Course in Information Technology	Pune University	8
–	17	SWAYAM	Computer Networks	Devi AhilyaViswavidy alaya	12
Section-E Application of ICT	18	edX	Introduction to Networking	NYUx	7
	19	Udacity	Learn to Code	Udacity Company	16
	20	SWAYAM	Art of C Programming	University of Calicut.	12

	21	SWAYAM	Content Development	IGNOU	12
	22	SWAYAM	Library Automation and Digitization	IGNOU	12
	23	SWAYAM	Emerging Trends & Technologies in Library & Information Services	IIT, Delhi, India	16
	24	SWAYAM	Koha library management system	IIT, Delhi, India	12
	25	Coursera	Cloud Computing	University of Illinois	24
	26	edX	AI for everyone	IBM	4
	27	NPTEL	Introduction To Research	IIT Madras	8
Section-F Research	28	NPTEL	Qualitative Research Methods And Research Writing	IIT Kharagpur	12
	29	SWAYAM	Research Methodology	National Law University	15
	30	SWAYAM	Academic Writing	HNB Garhwal University	15
	31	edX	Academic Writing Made Easy	TUMx	6
	32	SWAYAM	Communication	IGNOU	12
	33	edX	Basic Spanish 1: Getting Started	UPValenciaX	7
Section-G Technical writing	34	NPTEL	NOC: German-I	IIT, Madras	12
	35	Coursera	Technical Writing	MIPT, Moscow	5
	36	Coursera	Creative Writing	Wesleyan University	7
Section-H Data Science	37	Coursera	Statistics with R	Duke University	5
	38	edX	Analyzing and Visualizing Data with Excel	Microsoft	6
	39	Udacity	Data Visualization	Udacity Company	16

(Selected courses: January-April, 2020)

The Table2 is the representation of the feasible courses of the five MOOCs providers. The table has been columned into 8 different parts portraying sectional divisions of subject areas, name of the MOOCs providers, course title, and duration of the particular course. There is a complete list of 39 different online courses that LIS aspirants can pursue. Therefore, this table

shows that IITs tops among the institutions by coordinating 8 courses followed by the University of Michigan that coordinates 6 courses, and IGNOU (Indira Gandhi National Open University) coordinates 5 courses. Courses are selected according to the January-April session and more courses can be found in future.

Table 3: Total number of courses under MOOCs providers and Subject area

I. No of courses covered by the MOOCs providers			II. No. of courses under each section			
Sl. No.	MOOCs Providers	No. of courses	Duration (Avg. Weeks)	Sl. No.	Section	No. of Courses
1	SWAYAM	14	11	1	Application of ICT	11
2	edX	12	4	2	Public Library Management and Community Information Service	6
3	Coursera	6	5	3	Research	5
4	NPTEL	5	10	4	Technical writing	5
5	Udacity	2	16	5	Knowledge Society	4
Total		39		6	Managerial Perspectives	3
				7	Data Science	3
				8	Information Retrieval	2
					Total	39

The Table3 describes course coverage by the MOOCs providers and the courses under the mentioned sections (*See* Table2) jointly. SWAYAM provides the highest number of

courses(14), followed by edX(12), Coursera(6), NPTEL(5), and Udacity(2). The average number of weeks(duration of the course) of each course has been shown, it comprehends approximately:

Swayam(11weeks), edX(4weeks), Coursera(5weeks), NPTEL(10weeks), and Udacity(16weeks). As per this particular research, it has been found that most of the courses belong to ICT and followed by other subject areas.

DISCUSSION

This part discusses the functional areas of library and information centres and where the outcomes of having MOOCs can be applied and evaluates how LIS aspirants can be benefited. The analysis is based on Table-2 (different 'Sections' according to LIS domain).

Section - A

'Knowledge Society (KS)' works as a core resource for societal development, employment, production, and innovation. Libraries and information centresare the primary pillars of KS which consist of the knowledge industry, information sources, Intellectual Property Rights (IPR). Some courses based on the components of KS have been shown. It starts with IPR (see Section-A:1-2) which is one of the most important areas in KS. In terms of library and information centres, insights relating to the provision of copies (for derivative works), use of creative commons for sharing and remixing any work, transfer of copyright, copyright permission for photographs, access of online database, websites design, and digitization activities can be useful for handling IPR issues. After pursuing these courses, LIS aspirants not only will be able to handle the copyright issues of the traditional or e-resources within a library but also will be competent to literate academic communities for avoiding infringement of copyright in the purpose

of scholarly publication. Thereafter, Section-A(3) shows a course on 'Information Sources and Library Services 'and it help in increasing knowledge about various information sources and services. As per example, if a researcher comes to the library to access resources regarding his/ her research topic, the researcher might not remember what sorts of resources can relevantly help the research topic. Here the role of LIS professionals is very impactful, having proper knowledge of information sources they not only can help the researcher by converging with adequate information resources but also can guide for further study. This section concludes with a course on 'Digital Library' (see Section-A:4) which is a repository of borne digital and digitized collections. Every information seeker does not only depend upon traditional collections but also looks for a digital collection. Libraries are also busy in the digitization process to meet the users' needs. To provide digital library services, skills in the implementation of digital library software, collection organization, collection development, right management, cyber infrastructure, metadata harvesting, and curation are exceptionally imperative This course definitely can give assistance to gain skills for maintaining a digital library.

Section - B and C

Efficient management is the reason for higher success levels of an organization and libraries are not any exception thereto. In that case, libraries need to have skilled professionals to realize the users' satisfaction. It's possible when the management carries the entire quality of products and services; organized information system; effective operational techniques; proper financial planning; strategic vision; and adequate marketing policy, etc. Section-B shows the best practices for decision-making, performance assessment, risk assessment, budgetary control, work breakdown, scheduling projects, and critical path analysis or network analysis. While Section-C draws some programs on managerial functions with special reference to the Public Library. As we all know the Public Library is a social institution and its continuous improvement equals social development. A study based on Public Libraries in America resulted "95% agree that public library materials and resources play an important role in giving everyone a chance to succeed" (How Americans Value Public Libraries in their Communities (Rep., 2013). It proves how important a public library is in every context. Not only future and but also current library professionals also can have lessons on community information needs, professional diversity, leadership, decision-making agendas on library infrastructure, innovative services, crowdfunding techniques, and public relations, human resource management for flourishing their services, because each component (mentioned as 'lessons') is vital for a public library's success.

Section-D

Library and information centres not only build, organize, preserve, and disseminate the traditional collections but also manage eresources (e-books, e-journals, audio-visual materials, and research data etc.). Users will be able to retrieve impeccable information when the information is processed and organized well. In the digital era, libraries and information centres

are possessing different types of databases (bibliographic, full-text, statistical, metadata, and local data etc.) to meet the user's requirements. To store, manage, and retrieve data, some skills involved in database modelling, query optimization, normalizing, indexing, controlling concurrency, recovering data, discovering subsets of large data, and examining the raw data became essential tasks for professionals. So, knowledge of database management, IR, and information filtering are very crucial. Two identical online courses have been shown in *Section-D* which can lead to acquiring the earlier above-mentioned skills in this section.

Section - E

Some of the important ICT components were discussed and differentiated with their area in Section - A (4) and D. As it can be assessed how ICT took the leading role to form flexibilities within the library services. A question may arise how an individual related to the library and information centre can deal with emerging technologies and their applications? The solution is, they need to have the elemental knowledge of computers, networking, data security, and programming languages. Some courses mentioned in Section- E(16-18) can reinforce professional competencies for managing modern libraries and information centers where Housekeeping software, Content Management System, and therefore the use of Web 2.0 or 3.0 skills is essential to provide world-class services and cultivating quality research. ICT takes inhouse operations, knowledge organization, and processing to the subsequent level and makes all the tasks of any library very flexible. SectionE(21-24) shows some courses regarding Automation, Content development, and trending technologies that deal with Koha, Joomla, Drupal, e-resource management, and OERs, etc. (SWAYAM, 2020). Aspirants will understand better regarding automation implementation strategies; standards and protocol; automated housekeeping activities; automatic identification technologies; and use of OSS for web content development etc. if they pursue those courses. Cloud computing is the other emerging technology and it is featuring now in many service-oriented activities of libraries like union catalogs, ILS, and e-resource databases, etc. Without proper knowledge of cloud computing architecture, no professionals can anticipate cloud-enabled services efficiently. So, pursuing cloud computing courses, one mentioned in Section-E(25) can help to increase expertise in working with cloud platforms (e.g., Google cloud, Amazon, Gear Host, and Microsoft Azure etc.). This section finishes off with Artificial Intelligence (AI), one of the biggest stories in digital epoch. An articlepublished in the American Library Association (ALA) website shows why AI matters for libraries' workforce developmental activities(Mfigueroa, 2019). Future professionals need to understand the applications of AI and it can be an indispensable instrument if they adapt it for organizing and creating gigantic library collections searchable. Many MOOCs are providing courses on AI, here one course has been included to learn forward.

Section-F

Research skill is as important as other skills mentioned earlier. Research skills are conducting

for problem-solving aspects for skill development (by Action Research), Metric studies (includes Bibliometrics, Webometrics, and Altmetrics), Case studies(investigating reallife phenomena), Content Analysis(investigating the pattern of any publication), Ethnographic research (based on societal surveys), and Historical research (collecting data of the past events and making hypotheses of the future trends). By noticing these factors, some courses on research skills have been stated in Section-F(27-29). Such courses can boost learners to understand more about quantitative and qualitative data analysis; data curation; web-based presentation and visualization of the research outputs. But this might not be the end of it, the writing style of research reports or communication plays an important role for any research developmental activity and utilization. So, Academic Writing (AW) is a kind of activity that constructs a scientific production (e.g., scholarly literature and OERs.) of any institution or an intellectual knowledge domain. Section-E(30-31) shows a couple of AW courses that can be useful for systematic writing which includes completeness, logical, technicality, unambiguousness, ethical traits, creditability, and reader friendliness of the communication. AW is also beneficial within the perspectives of students' critical thinking, researchers' global research sharing and institution' functional indices.

Section-G

Technical writing (TW) embraces skills in communication and writing. In the near future, LIS aspirants may face a variety of writing circumstances within the academic place or in the professional workplace (including management and information services). So, Section-G (32-34) shows a course on 'Communication' which propagates to interact with the target group of users in both verbal and written form. Further, two foreign language courses have been added into the list, now one may ask what would learners do by learning foreign languages? It is quite simple to elucidate that learning a far-off language might help to deal with translation service, organization and curation information efficiently. In addition, TW courses (see Section-G: 35-36) have also been drawn along with 'Communication' and 'Foreign Language' courses. In terms of library and information centres. TW is useful for preparing condensed, consolidated, repackaged products i.e., abstracts, digests, inhouse journals, newsletters, reviews, bulletins, research reports, summaries, trend reports, state-of-art reports, library brochure, pamphlet, and even writing in blogs. It can be ascertained that these two courses are good enough to exalt the writing skills for any technical products.

Section-H

The Revolution of data is now a trending prospect within the modern era. Modern libraries are becoming witnessed of retaining large datasets of bibliographic records, circulation transaction records, users' records, and other official records. Learning Statistical and Data visualization software mentioned in Section-E (37-39) might help to understand and explore, analyze, execute, and manipulate large datasets for finer decision-making, forecasting, and determining user groups. R is undoubtedly a

powerful programming language for statistical analysis and reading big data. Microsoft Excel is one of the most popular statistical packages which has been used for a long time and most of us have used it as the primary quantitative and qualitative data analysis tool for education purposes. Microsoft Corporation instructs an intermediate level course on Excel through edX. Finally, a course of Data visualization is shown. Some benefits of learning this course are data story creation with data sets, making adequate data creation to literate users, and effective data presentation.

CONCLUSION

In earlier days, library professionals were engaged only in traditional activities such as cataloging, documentation, classification, acquisition, and other official work. But now the nature of these works has changed due to the influence of technology. LIS professionals are being called now as Information Scientists, Data Scientists or Analysts, Research Experts, and Information Literacy Educators. So those who are aspirants need to think about something beyond traditional management of Library and Information Centres. They need to keep abreast of the current trends of Library and Information Centres and what else could change in the future. MOOCs are the extensions of the traditional education system. LIS aspirants have the opportunity to enhance their skills through MOOCs by exploring the amalgamation of short videos, comprehension tests and lively participation in the online forum of MOOCs. This paper tried to demonstrate some online courses related to Library and Information Science and

their advantages. It can be assumed that MOOCs will certainly be an effective prospect in the coming days.

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