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A Study of Personal Information Management Skills of University Librarians Using Sconul Pillars of Information Literacy

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Abstract- The purpose of this research was investigating the personal information management skills of university librarians who are a member of librarianship discussion group of Mashhad Ferdowsi University, using Scounl Pillars of Information Literacy.The present research was conducted as an applied research using descriptive survey method. The statistical population included 196 participants from among university librarians who were a member of librarianship discussion group of Mashhad Ferdowsi University. The data collection instrument was a researcher-made electronic questionnaire whose reliability and validity were confirmed by 30 specialist. This questionnaire was drawn up based on Jones' Common Personal Information Management Factors (2012) and Sconul Pillars of Information Literacy (2011).The results of this research showed that the rate of usage of each common personal information management factor by the target librarians and their information literacy was at a decent and satisfactory level. Form the addressees' viewpoint there was a meaningful difference between using common personal information management and information literacy in rating (priority and importance). To improve the information literacy skills of librarians for the purpose of enabling them to identify the informational needs of their users and providing them with effective access to information, it is recommended that Ministry of Science, Research and Technology approve training courses on promotion of information literacy relying on personal information management techniques to be taught in the form of textbooks at various levels of study in the field of Knowledge and Information Sciences, and notifies these programs to higher education centers of the country.

Keywords: Personal Information Management Skills, Sconul Pillars of Information Literacy, university librarians, discussion group of Mashhad Ferdowsi University, Iran.

I. INTRODUCTION

The emergence of the phenomena such as information explosion and information overload havemade people face with massive amounts of information in different forms (Kokabi&Mojaver2014) and dedicatea lot of their time to managethe collected resources. Individuals require to have personal information management and information literacy skills for identifying their own information needs accuratelyand use their personal information effectively and efficiently. Personal information management refers to the study and implementation of the activities performed by an individual to acquire, create, store, organize, maintain, retrieve, use and distribute necessary information in order to complete tasks (work place and non-workplace) and takemany different roles and responsibilities. (Jones 2007). "Information literacy, considered as a set of skills for the ability to identify information resources appropriately, access to them, andalso use them purposefully, is a means for individual empowerment." (Parirokh 2007).Differentscholars haveprovided various definitions forpersonal information managementwhich are generally affected by the traditional definition of information management which includes provision, organization, storage, retrieval, access, and dissemination of information.

II. LITERATURE REVIEW

Lansdale (1988) described personal information management as a general term for providing, storing, organizing and retrieving digital information items like emails, files, reminders, contact lists and bookmarks by an individual in his/her personal information space. Barreau (1995) described personal information management as a system developed for a person for his/ her own personal use in a work environment. Such a system involves the procedures and rules for maintaining the system, its retrieval mechanisms, and different output methods.
Boardman (2004) further defined personal information management based on Barreau's classification. To him, all definitions of personal information management are extracted from its traditional definition.

Teevan, Jones, and Bedeson(2006) referred to the activities related to obtaining, organizing, retrieving and processing information in individuals' personal information space. Jones (2008), inspired by Barreau's framework, studied personal information management and defined it as activities performed by an individual to provide, store, organize, maintain, retrieve, use, and distribute information items required forplaying one's different roles (as a parent, clerk, a member of the society and so on). Personal information management places a specific focus on the organization and maintenance of personal data setswhere information items likepaper documents, digital documents, email messages, web references, manuscripts, and so on are storedfor later use and reuse of information (Jones 2007). The latest view on personal information management was presented by Jones in 2012. He considered six activities of finding and re-finding, keeping, maintaining and organizing, managing privacy and the flow of information, measuring and evaluating, and making sense of things to realize effective personal information management.

Information literacy is a concept arising out of rapid changes in information technology (Marais1992). The term "information literacy" was first introduced by Paul Zukrowskiin 1974 to refer to a set of special skills to access required informationout of a large body ofavailable information. Lee Burchinal (1976 as cited in Asgharnia 2009)defined information literacy as the skill and use of information for solving problems and effective decision making. Life-long learning, critical thinking, problem-solving ability, and information-based decision making in different contexts, cooperation, innovation, and mastery of learning styles are among functions of information literacy(Pourtaqi& Abazari 2008). Inaddition, international organizations have also offered a number ofresearch and announcements on information literacy. For example, the information literacy standards for higher education, developed by the Association for Academic and Research Libraries (ACRL), includes the skills related to the ability of students in identifying, assessing, combining their information needs, and making ethical use of the collected information. In 1999, the Association for Academic, Academic and National Libraries (SCONUL) published an article entitled "Information Skills in Higher Education" on information literacy concerning theseven principles of SCONUL informationskills.Since then,this model has been regarded by librarians and teachers throughout the world as a means of helping them totransfer their information skills to their students. The seven key principlesof SCONUL include: identifying information needs, identifying likely information gaps, locating information strategies, locating and accessing required information, reviewing, comparing and evaluating the research process, organizing information professionally and ethically, presenting research results, synchronizing old and new information to create new knowledge and disseminating it in different ways.

Bronesky (2004) indicated that in the field of information technology, information literacy has had a significant impact on the use of electronic resources. As individuals gain higher information literacy skills, they will prove more successful in using information resources and performing research activities.In a study concerning the necessity of offering information literacy training to post-graduate students of Marketing in Greece, Tilikidouand Korobili (2005) found that a small percentage of students make use of electronic resources. And thata very few number ofteachers encourage students to use library resources in theresearch process. A significant percentage of the statistical populationproposed information literacy training based on students' demand in form of some training in the syllabus. Information literacy training has thus been proposed in the first or second semester of the first academic year. Kennedy et al. (2008) realizedthat freshman have a high level of information technologyaccess and not much restriction regarding access to hardware and the Internet. On the other hand, the great variety ofinformation technology types has affected their use.

Majid, Chang, Foo, Theng, Mokhtar, Zhang (2013) investigated the development of the scope of information literacy training programs through using appropriate personal information management skills to offer comprehensive skills to users.They remarked that smart integration of information literacy skills with personal information management techniques would lead to saving the users' time, money, energy, and efforts. Thus, libraries play an essential role in expanding information literacy training programs, including personal information management techniques, particularlyin themanagement and organization of information.

Due to the significant increase of information in the present era, it is inevitable to use methods, tools and information management systems for the optimal use of information for all individuals in the societyproportionate to their level of social responsibility and activities. This fact gains more prominence for thosehaving more job responsibilities compared againstothers who do not (Azadeh, Jadidi,& Haqani 2017).

Academic librarians are among those who always deal with a large body of information due to the nature of their activities andhence theyare requiredto use personal information management and information literacy skills to accurately identify the information needs of their clients and provide them with their

information as quickly as possible. Familiarity with skills and methods of personal information management helps academic libraries to provide the resources, references, and information related to the research needs of their clients out ofdifferent databases. The main objective of this studywasprovidingsome solutions for reinforcing the personal information management skills of academic librarians at Ferdowsi University of Mashhad using the "Principles of SCONULinformation literacy." In this study, the latest personal information management model, belonging to Jones (2012), was used to derive the components of personal information management. Moreover, the model of "The Seven Principles of SCONUL Information Literacy" was used to extract the components of information literacy and also their definition. What follows is a brief introduction of each component of Jones's personal information management and the SCONUL principles:

Personal Information Management Components

Finding and re-finding: Wilson (2000) equated information search with information access. Jones (2012) was of the idea that people look for, sort, and review information while encountering a need. Capra and Quiñones(2005) believed that re-finding is a focused and targeted process since users have already found the information.Jones (2008, 2012) believed that refinding information is a complementary act for its keeping.When people encounter valuable pieces of information, they decide how to keep them based on their future information needs.

Keeping: Jones (2012) believed that many of the events happeningon a daily basis are formed by the discovery of events. Instead of looking for information, there is an emphasis on information available and the things to be done based on people's information needs.Maintaining and organizing: Jones (2008 & 2012) stated that information maintainingincludes the decisions and actions related to the composition and maintenance of personal datasets.Decision-makings includedetermining sets for new items and determing how to store information in a set (location, format, storage, and backup of information). Organizing the information focuses on how the items are interconnected in a set and how they areseparated from each other by naming and placing them in folders (Jones 2008).

Managing privacy and the flow of information: Considering privacy and the flow of information, Jones (2012) believed that differentapproacheshave been created for providing the right information at the right time, and that there are some obstacles to preventthe operation of malicious software and data corruption.

Measuring and evaluating: In measuring and evaluating, a sample of the organization of the selected items, strategies, policies and procedures is investigated. Questions like: Are supporting tools installed in designated positions? Do periodical or continuous searches lead to a mapping between information and needs? Will theylead toincreased efficiency? will enable individuals to assessthe measurement position in comparison to similar situations (Jones 2008 & 2012).

Making sense of things: Klein, Moon and Hoffman (2006) realized that "making sense of things is a continuous and targeted effort to understand the communications which can be made between people, situations, and events to predictapproaches and their effectiveness".

Jones (2008 & 2012) considered the attempt to make sense of things a high-level activity whose valuation can b achieved through questions such as: What message does the information include? Does it lead to making sense of things?

SCONUL Information Literacy Principles

Identifying information needs: Creating ideas and opportunities throughsearching for information. Ability to identify information gaps: Identifying the types of available information, differentfeatures of information resources, andissues related to the accessibility of information.

LocatingInformation Strategies: Determining the range of current search techniques, identifying controlled vocabularies and taxonomies to help the search process to develop search approaches.

Locating and Accessing Required Information:How to organize information, how to provide access to resources for libraries, how to share information through digital tools, how to store information, and the significance of evaluating search results all reside in this catgory.

Reviewing, Comparing and Evaluating the Research Process: Linking the obtained information to search strategies and issues concerning the quality, accuracy, relevance, and validity of information resources.

OrganizingInformation Professionally and Ethically: Use of bibliographic software for information management, significance of storing and sharing information and archived data are all included in this category.

PresentingResearch Results, Synchronizing Old and New Information to Create New Knowledge and Disseminating it in Different Ways:providing data in different ways, synchronizing complex and new information through different sources and the creation of information by individuals using digital technologies are all included in this category.

The definitions of Jones' components and the principles of information literacy have thus far been completely derived and contrasted, and the related indiceshave all been obtained using comparative analysis, as shown in Table 1.

Table 1
The related components of personal information management and the seven principles of information literacy

Personal Information Management	**Information Literacy principles**
Finding and re-finding	Identifying information need
Finding and re-finding	identifying any information gaps
Finding and re-finding Organizing Managing privacy and the flow of information	locating information strategies
Keeping Maintaining and Organizing Measuring and evaluating	locating and accessing required information
Measuring and evaluating	reviewing, comparing and evaluating the research process
Keeping Maintaining and Organizing	organizing information professionally and ethically
Measuring and evaluating Managing privacy and the flow of information Making sense of things	Presenting research results, synchronizing old and new information to create new knowledge and disseminating it different ways.

III. METHODS

This study was applied in terms of purpose and was conducted using thedescriptive survey design. The target population of this study included all librarians of academic libraries subscribed to the Librarianship Group of Ferdowsi University of Mashhad[1]amounting to 400 at the time of the research. Morgan table was used to determine the sample size and 196 participants were thus selected as the research sample. The data collection tool was a researcher-made questionnaire designed based on the principles of SCONUL information literacy (7 principles) along with the components derived from Jones's theory (6 components). The designed electronic questionnaire (including 47 items) was sent to the designated statistical sample via e-mail.

To account for the reliability of the questionnaire, a preliminary sample of 30 items was piloted. The Cronbach's alpha coefficient was reported 0.899indicatinghigh reliability. The validity of the questionnaire was verified by 10 experts.

The data was analyzed using SPSS-22 software. Kolmogorov-Smirnov test was used to assure normal distribution of variables; one-sample t-test was used to determinethe degree librarians in the academic libraries of Ferdowsi University of Mashhad used the common principles of personal information management and information literacy. Friedman test was used to prioritize the principles of personal information management and information literacy. Independent T-tests and variance analysis were used to investigate and compare the use of the shared principles of personal information management and information literacy in terms of demographic factors.

Research Questions

RQ1: To what extent the librarians of academic libraries in the librarianship group of Ferdowsi University of Mashhad use each of the Common Principles of Personal Information Management and Information Literacy?

[1]The electronic discussion group of Ferdowsi University of Mashhad is the first and at the same time one of the most popular discussion groups in the field of library and information sciences in Iran. The group, known as LIS, was founded in 1998 at Ferdowsi University of Mashhad under the suggestion and responsibility of Dr. Rahmatullah Fattahi. Considering the fact that most Iranian librarians are members of this discussion group which plays a significant role in syllabus design related to librarianship, members of this group were selected as the statistical population of the present study.

RQ2: How is the prioritization of the common principles of personal information management and information literacy from the point of view of the librarians of the academic libraries of the librarianship group of Ferdowsi University of Mashhad?

Research Hypothesis

H1: There is a significant relationship between demographic characteristics (gender, educational level, and age and work experience) of librarians at the academic libraries of Ferdowsi University of Mashhad and their use of the seven principles of personal information management and information literacy.

IV. RESULTS

The data collected from the questionnaires, out of a total of 196 participants, are shown in Table2:

Table 2
Frequency distribution of demographic variables in research sample

Variable	classes	frequency	Percent
Age	Less than 30 years	16	8.2
	30-35 years	63	32.1
	36-40 years	75	38.3
	more than 40 years	42	21.4
education	Master degree	111	56.6
	PhD	85	43.4
Gender	Female	134	68.4
	male	62	31.6
experience	Less than 5 years	24	12.2
	6-10 years	52	26.5
	11-15 years	80	40.8
	16-20 years	31	15.8
	more than 20 years	9	4.6

Kolmogorov-Smirnov test was used to examine the normality of data. Based on Table 3, since the significance level of the research variables washigher than 0.05, the hypothesis of the normal distribution of such variables (principles of personal information management and information literacy) was accepted.

Table 3
Normalization of the distribution of research variables

Common Principles of Personal Information Management and Information Literacy	Test statistic	Significance level	status
Identifying information need, Finding and re-finding	1.168	0.131	Normal
identifying any information gaps, Finding and re-finding	0.965	0.259	Normal
locating information strategies, Finding and re-finding ,Organizing, Managing privacy and the flow of information	0.720	0.679	Normal
locating and accessing required information, Keeping Maintaining and Organizing, Measuring and evaluating	0.821	0.509	Normal
reviewing, comparing and evaluating the research process, Measuring and evaluating	1.285	0.123	Normal
organizing information professionally and ethically, Keeping Maintaining and Organizing	0.743	0.811	Normal
presenting research results, synchronizing old and new information, Measuring and evaluating Managing privacy and the flow of information Making sense of things	0.705	0.705	Normal

RQ1: To what extent the librarians of academic libraries in the librarianship group of Ferdowsi University of Mashhad use each of the Common Principles of Personal Information Management and Information Literacy?

In order toinvestigate the first question, one-samplet-test was used to verify the difference between the mean of the tested sample and anassumed value. Since all of items in the questionnairewere directly designed, the mean obtained in the range of one to three was meant to stand forlow use of any of the seven principles of personal information managementand information literacy.More than three, the mean stood for high and desirable use of the components. Based on the 5-point Likert spectrum used in the questionnaire, the criterion wasconsidered mid-point which was 3.

Table 4

Survey of the status of the seven principles of personal information management and information literacy

Common Principles of Personal Information Management and Information Literacy	**Average mean**	**Standard deviation**	**t-statistics**	**Meaningful level**
Identifying information need, Finding and re-finding	3.689	0.535	18.028	0.000
identifying any information gaps, Finding and re-finding	3.952	0.627	21.251	0.000
locating information strategies, Finding and re-finding ,Organizing, Managing privacy and the flow of information	3.417	0.912	6.397	0.000
locating and accessing required information, Keeping Maintaining and Organizing, Measuring and evaluating	3.143	0.613	3.270	0.001
reviewing, comparing and evaluating the research process, Measuring and evaluating	3.737	0.451	22.870	0.000
organizing information professionally and ethically, Keeping Maintaining and Organizing	3.597	0.621	13.466	0.000
presenting research results, synchronizing old and new information, Measuring and evaluating Managing privacy and the flow of information Making sense of things	3.260	0.815	4.466	0.000

Based on Table 4, the T-test for all common principles of personal information management and information literacy was significant, and since the obtained means were more than 3, the interpretation was that librarians at the libraries of Ferdowsi University of Mashhad used each of the seven principles of personal information management and information literacy at a desirable and acceptable level.

RQ2: How is the prioritization of the common principles of personal information management and information literacy from the point of view of the librarians of the academic libraries of the librarianship group of Ferdowsi University of Mashhad?

Friedman test was used to rank the strategies. This test deals with the ranking of components using mean rank.

Table 5

Average Ranking of Common Principles of Personal Information Management and Information Literacy and Friedman Test Results

Common Principles of Personal Information Management and Information Literacy	**Rates average**
Identifying information need, Finding and re-finding	4.67
identifying any information gaps, Finding and re-finding	5.48
locating information strategies, Finding and re-finding ,Organizing, Managing privacy and the flow of information	3.72

locating and accessing required information, Keeping Maintaining and Organizing, Measuring and evaluating	2.33
reviewing, comparing and evaluating the research process, Measuring and evaluating	4.55
organizing information professionally and ethically, Keeping Maintaining and Organizing	4.27
presenting research results, synchronizing old and new information, Measuring and evaluating Managing privacy and the flow of information Making sense of things	2.98
Result of Freidman test	sig=0.000 χ^2 =293//555

Table 5 depics the mean of the common principles of personal information management and information literacy, the Chi-square statistic and the significance level of the Friedman test. Due to the low significance level, the Friedman test was significant which means that there was a significant difference in terms of ranking (priority and significance) between the principles of shared management of personal information and information literacy from the point of view of the participants. In addition, based on mean ranking, "identifying information gaps, finding and re-finding," "identifying information needs, "reviewing, comparing and evaluating the research process, Measuring and evaluating" were among the first three ranks respectively.

In order to answer the hypothesis whether there was a significant relationship between the demographic characteristics (gender, educational level, age and work record) of the librarians of academic libraries who were the members of the librarianship group of Ferdowsi University of Mashhad and their use of the seven principles of personal information management and information literacy, an Independent T-test and ANOVA were used.

Independent T-test was also used to compare the seven principles of personal information management and information literacy based on gender.

Table 6
Comparison of the Common Principles of Personal Information Management and Information Literacy by Gender

Gender / Common Principles	Female	Male	Result of test
Identifying information need, Finding and re-finding	3.727±0.421	3.607±0.720	t=1.219sig=0.226
identifying any information gaps, Finding and re-finding	3.931±0.638	3.996±0.605	t=0.678sig=0.498
locating information strategies, Finding and re-finding ,Organizing, Managing privacy and the flow of information	3.373±0.956	3.512±0.810	t=0.991sig=0.323
locating and accessing required information, Keeping Maintaining and Organizing, Measuring and evaluating	3.109±0.522	3.217±0.773	t=0.991sig=0.321
reviewing, comparing and evaluating the research process, Measuring and evaluating	3.641±0.407	3.943±0.475	t=4.317sig=0.000
organizing information professionally and ethically, Keeping Maintaining and Organizing	3.658±0.648	3.466±0.541	t=2.032sig=0.043
presenting research results, synchronizing old and new information, Measuring and evaluating Managing privacy and the flow of information Making sense of things	3.251±0.809	3.278±0.836	t=0.210sig=0.834

Based on Table 6 and comparisons ofthe common principles of personal information management and information literacy based on gender, the test for the principles of " reviewing, comparing and evaluating the research process, Measuring and evaluating," and " organizing information professionally and ethically, Keeping Maintaining and Organizing " turned outsignificant.In other words, there was a significant difference between men and women in using these two principles. Based on mean scores, men use the "reviewing, comparing and evaluating the research process, Measuring and evaluating "significantly more than women while women use " organizing information professionally and ethically, Keeping Maintaining and Organizing" significantly more than men. In case of the other five, the test wasnot meaningful, and there was no difference between men and women in their use of these five principles.

Independent T-test was used to compare the common principles of personal information management and information literacy based on educational background.

Table 7

Compare the seven principles of personal information management and information literacy based on education

Education / Common Principles	Master degree	PhD	Result of test
Identifying information need, Finding and re-finding	3.540±0.480	3.884±0.543	t=4.687sig=0.000
identifying any information gaps, Finding and re-finding	3.841±0.512	4.096±0.729	t=2.746sig=0.007
locating information strategies, Finding and re-finding ,Organizing, Managing privacy and the flow of information	3.168±0.955	3.741±0.742	t=4.566sig=0.000
locating and accessing required information, Keeping Maintaining and Organizing, Measuring and evaluating	2.939±0.576	3.709±0.558	t=5.725sig=0.000
reviewing, comparing and evaluating the research process, Measuring and evaluating	3.590±0.331	3.929±0.512	t=5.310sig=0.000
organizing information professionally and ethically, Keeping Maintaining and Organizing	3.524±0.515	3.694±0.729	t=1.827sig=0.070
presenting research results, synchronizing old and new information, Measuring and evaluating Managing privacy and the flow of information Making sense of things	3.058±0.723	3.523±0.857	t=4.113sig=0.000

Based on Table 7 and comparing the common principles of personal information management and information literacy based on educational background, it should be noted that the test was significant for six principles and not significant only for one"organizing information professionally and ethically, Keeping Maintaining and Organizing". In other words, there was a significant difference between Master and Ph.D holders in using the other six principles. People holding PhD degreeuse the 6 principles significantly more than master holders.

In order to compare seven principles of personal information management and information literacy based on age, variance analysis was used.

Table 8

Compare the seven common principles of personal information management and information literacy by age

Age / Common Principles	Less than 30	31-35 years	36-40 years	More than 40 years	Result of test
Identifying information need, Finding and re-finding	±0.781 3.333	±0.528 3.857	±0.514 3.631	±0.376 3.678	F=5.011sig =0.002
identifying any information gaps, Finding and re-finding	±0.665 3.612	±0.754 3.904	±0.538 3.698	±0.501 4.123	F=2.826sig =0.040
locating information	±0.672	±0.790	±1.037	±0.593	F=1.490sig

strategies, Finding and re-finding ,Organizing, Managing privacy and the flow of information	2.545	3.686	3.220	3.696	=0.000
locating and accessing required information, Keeping Maintaining and Organizing, Measuring and evaluating	±0.558 2.466	±0.560 3.413	±0.627 3.022	±0.408 3.210	F=14.079sig=0.000
reviewing, comparing and evaluating the research process, Measuring and evaluating	±0.239 3.656	±0.527 3.869	±0.398 3.596	±0.410 3.821	F=5.190sig=0.002
organizing information professionally and ethically, Keeping Maintaining and Organizing	±0.489 3.488	±0.842 3.780	±0.483 3.480	±0.414 3.575	F=2.986sig=0.032
presenting research results, synchronizing old and new information, Measuring and evaluating Managing privacy and the flow of information Making sense of things	±0.695 2.859	±0.900 3.599	±0.745 3.243	±0.639 2.934	F=7.920sig=0.000

Based on Table 8 and the comparisons of the common principles of personal information management and information literacy based on age, it wasrevealed that the test wassignificant for all seven principles. In other words, there was a significant difference between individualsof different age groups using the seven principles.Regarding the significance of the analysis of variance for the seven principles, Tukey's post hoc test was used to locate the point of difference in subgroups.

Tukey's tests for the principle of "identifying information needs, finding and re-finding" revealed that significance of the analysis of variance was due to the difference between the age groups (less than 30 years vs. 31-35 years). With regard to the principle of "identifying information gaps, finding and re-finding", the significance of the analysis of variance was due to the significant difference between age groups (less than 30 years vs. over 40 years). Concerning the principle of " locating information strategies, Finding and re-finding ,Organizing, Managing privacy and the flow of information ", the significance of the analysis of variance was due to the difference between all the pairs of groups except for the age group (31 to 35 years vs. over 40 years). Regarding the principle of "locating and accessing required information, Keeping Maintaining and Organizing, Measuring and evaluating", the significance of the analysis of variance was due to the difference between all the pairs of groups except the age groups (31 to 35 years vs.above 40 years) and (36 to 40 vs. over 40 years). Regarding the principle of "reviewing, comparing and evaluating the research process, Measuring and evaluating", the significance of the analysis of variance was due to the difference between age groups (31 to 35 years vs. 36 - 40 years) and (36 - 40 years vs. over 40 years). Concerning the principle of "organizing information professionally and ethically, keepingmaintaining and organizing", the significance of the analysis of variance was due to the difference between age groups (31 to 35 years vs. 36 - 40 years). And finally with regard to the principle of "presenting research results, synchronizing old and new information, Measuring and evaluating Managing privacy and the flow of information Making sense of things,the significance of the analysis of variance was due to the difference between the age group of 31 to 35 years and the other three age groups.

In order to compare seven common principles of personal information management and information literacy, variance analysis was usedto investigate the influence of experience.

Table 9
Compare the seven common principles of personal information management and information literacy in terms of experience

Experience / Common Principles	Less than 50 years	6-10 years	11-15 years	16-20 years	More than 20 years	Result of test
Identifying information need, Finding and re-finding	±0.731 3.541	±0.343 3.615	±0.615 3.772	±0.450 3.736	±0.083 3.611	F=1.308 sig=0.269
identifying any information gaps, Finding and re-finding	±0.578 3.775	±0.438 4.303	±0.707 3.727	±0.393 4.141	±0.500 3.733	F=9.537 sig=0.000
locating information strategies, Finding and re-finding ,Organizing, Managing privacy and the flow of information	±0.626 2.718	±0.885 3.663	±1.025 3.375	±0.575 3.725	±0.500 3.166	F=6.144 sig=0.000
presenting research results, synchronizing old and new information, Measuring and evaluating Managing privacy and the flow of information Making sense of things	±0.742 2.875	±0.508 3.244	±0.715 3.118	±0.303 3.220	±0.461 3.230	F=1.727 sig=0.146
reviewing, comparing and evaluating the research process, Measuring and evaluating	±0.204 3.666	±0.638 3.726	±0.444 3.768	±0.227 3.701	±0.250 0.833	F=0.398 sig=0.810
organizing information professionally and ethically, Keeping Maintaining and Organizing	±0.514 3.712	±0.753 3.426	±0.629 3.687	±0.443 3.598	±0.227 3.484	F=1.705 sig=0.151
presenting the results of their research and synthesizing information, Measuring and evaluating Managing privacy and the flow of information Making sense of things	±1.089 3.427	±0.646 2.822	±0.704 3.675	±0.567 2.774	±0.250 3.333	F=15.495sig=0.000

Based on Table 9 and the comparisons of the common principles of personal information management and information literacy based on experience, it wasrevealed that the test was significant for the three principles of "identifying information gaps, finding and re-finding", "locating information strategies, Finding and re-finding ,Organizing, Managing privacy and the flow of information"and" presenting the results of their research and synthesizing information, Measuring and evaluating Managing privacy and the flow of information Making sense of things.

In other words, there was a significant difference between people with various experiences in terms of using these three principles. Considering the significance of variance analysis for the three above-mentioned principles, Tukey's post hoc test was used tolocate the point of difference in the subgroups.

Based on Tukey tests for the principle of "identifying information gaps, finding and retrieving", the significance of the analysis of variance was due to the significant difference between the groups (less than 5 years vs. 6 - 10 years), (6-10 years vs. 11 -15 years), and (11 to 15 years vs. 16 -20 years). The significance of the analysis of variance was due to the difference between the experimental group less than five years old against the three age groups (6 - 10 years, 11 - 15 years and 16 - 20 years)with respect to the principle of "locating information strategies, Finding and re-finding ,Organizing, Managing privacy and the flow of information". Concerning the principle of "presenting the results of their research and synthesizing information, Measuring and evaluating Managing privacy and the flow of information Making

sense of things" the significance of the analysis of variance was due to the significant difference between groups (less than 5 years vs. 6 - 10 years), (less than 5 years vs. 16 - 20 years), (6 - 10 years vs. 11 - 15 years) and (11 - 15 years vs. 16 - 20 years).

V. CONCLUSIONS

In this study, the personal information management skills of university librarians were investigated using the principles of SCONULinformation literacy. ~~The~~ findings of the study indicated that the librarians of academic libraries at Ferdowsi University of Mashhad used each of the seven principles of personal information management and information literacy at an acceptable level.One of the reasons is the need for librarians to be fully aware of users'information needs and direct relationship with users, as well as a complete understanding of the information resources to meet the needs of users.

One of the characteristics of a literate person is the awareness and ability to use the facilities in digital environments to enhance the quantity and quality and relevance of the search results. Comparison of the components of information literacy with those of personal information management shows the overlap between these two categories. As a result, logical integration of information literacy skills and personal information management techniques can lead to finding most relevant information consistent with users' information needs, appropriate organization and accurate retrieval of information for future use.

In the literature, only the study by Majid et al. (2013) wasrelated to and in line with the results of the presentresearch. The findings of thatstudy, as well as the presentone, confirmed that libraries play an essential role in developing information literacy training programs including personal information management techniques.

Based on the results of this study, the followingsuggestions are presented:

1. At the time of the research, some participants stated that they had mastered the components of personal information management skills through experience and that they had not passedany courses related to these topics. Thus, to enhance the information literacy of librarians of academic libraries in using tools, methods, and activities related to personal information management, it is suggested to familiarize them with the capabilities of personal information management tools through appropriate training courses in form of short or long-term in-service training programs and periodic workshops.
2. Due to the lack of standard indicators at international and national level to measure personal information management activities including Finding and re-finding, Keeping, Maintaining and Organizing, Managing privacy and the flow of information, Measuring and evaluating, Making sense of things, it is suggested that experts in the field of personal information management, set out to prepare standards regarding the indigenous information needs of researchers in the field.

The awareness regarding criteria for evaluating information resources in general and information resources in particular is one of the most significant characteristics of a literate person.

3. Establishing specialized committees for offering training information literacy skills and personal information managementcourses for users and patrons in the academic libraries.
4. Developing pedagogic syllabi and curricula by the Iranian Ministry of Science, Research and Technology related to the training of how to use information literacy skills and personal information management techniques for the field of knowledge and Information Science at all levels of education
5. Designing an information literacy education model based on components of personal information management for academic librarians.

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