Library and Information Science Research 41 (2019) 100985

Contents lists available at ScienceDirect

Library and Information Science Research

journal homepage: www.elsevier.com/locate/lisres

Personal factors and personal information activities behaviors of faculty in selected universities in Ghana

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A B S T R A C T

This study examined how demographic characteristics of faculty influence their personal information activities behaviors, namely information creation, information organization, and information storage. Data was collected from a sample of 235 faculty in six universities in Ghana using a questionnaire. Age, gender, rank and university of affiliation predicted personal information activities behaviors in different directions and with different magnitudes. Gender made a difference in information organization and information storage while age made a difference in respect of information creation and information organization only. Faculty ages 4049 years created information the most, followed by those above 50 years. Males stored information more than females. Rank made a difference in information creation, organization and storage, but university of affiliation made a difference in information creation and information storage, and not information organization. It is common among information system designers and managers to implement information management systems without considering the differential influence of personal variables on human information behaviors. This omission denies information users adequate access and maximum use of the information in their information space. Institutional leaders and PIM systems designers should consider demographic and other personal factors of faculty in information literacy programs. Profiling of users' personal characteristics when designing personal information management systems will enhance maximum access and utilisation of personal information.

1. Introduction

Personal information management (PIM) is concerned with the activities and processes individuals employ to acquire, create, maintain, organize, and store personal task-related information for use in the future (Jones, 2008, p. 453; Warraich, Ali, & Yasmeen, 2018; Whittaker, 2011). The kernel of PIM relates to how people find or refind the information they have previously stored (Kearns, Frey, & Tomer, 2014). PIM is an increasingly growing area of research interest because of the human struggle to achieve better use of limited personal resources of time, money and energy as well as to achieve greater workplace efficiency and productivity. The increase in research on PIM can also be explained by the growing role and impact of new technologies on information production and management. Chen and Jones (2008); Warraich et al. (2018); Jones, Phuwanartnurak, Gill, and Bruce (2005), and, Jones, Dumais, and Bruce (2002) are examples of researches that illustrate the significance and challenges of personal information management (PIM).

PIM is entirely a subjective behavior. Individuals seek information that is related to their needs, and human needs differ according to the tasks they perform, their environments, level of knowledge, and other considerations. People have individual information cultures and practices. PIM will therefore relate to personal factors such as age, discipline, and gender, among others. The value added to the information items by the individual in the course of creation, organization, and storage will relate to the individual user's personal needs and circumstances.

University faculty are typical information workers. The nature of their tasks requires that they constantly produce and use information (Otopah & Dadzie, 2013). Faculty have a high level of training, and knowledge and understanding of issues in their areas of expertise, and are often engaged in collecting, creating, organizing, finding, and keeping personal information (Otopah & Dadzie, 2013; Boardman, 2004). They keep information that is of value to them in their personal information spaces (PIS) such as their computers, desks and cabinets, and others, for future use (Boardman, 2004). They use the information they have collected and stored, as well as information from other sources, to meet their teaching, administrative, community development, research, and other needs (Eid, 2014; Gholifar & Gholami, 2014).

1.1. Statement of the problem and objectives

PIM has been investigated in diverse areas such as time and task management, human-computer interaction, and human-information interaction (Friedland, Schulte, & Tapia, 2004). PIM has also been investigated in cognitive psychology and library and information science

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https://doi.org/10.1016/j.lisr.2019.100985
Received 29 May 2019; Received in revised form 6 September 2019; Accepted 30 September 2019
Available online 06 November 2019
0740-8188/

(Otopah & Dadzie, 2013), systems design, organizational management (Bergman, 2013) and information retrieval (Bergman, 2013), among others. These studies focused mainly on information storage, information finding or re-finding, and roles or limitations of human memory.

A persisting and ubiquitous observation and concern is that individuals encounter difficulty in finding or re-finding their personal information, and that the limitations of human memory are majorly accountable. Sravani and Chandu (2014) experimented on how to integrate memory context to facilitate personal information finding or re-finding, exploring the possibility of how human memory features can be applied to improve retrieval of personal information in an online system. Vermette et al. (2015) constructed a cheat sheet of contextual factors called the Interactive Memory Aid for Web Applications to help users track their learning progress and re-find information previously stored. Finding or re-finding personal information were also the major issue in Kajaleker, Batil, and Chandode (2017) study, and they also viewed the challenge from the memory context. Researchers, PIM designers, and information literacy educators have not paid sufficient attention to the roles of personal factors in their efforts to ease the challenges of PIM.

Studies examining demographic characteristics as contextual factors in PIM are very rare (Kearns et al., 2014; Swigon, 2013). Although many studies have addressed context of PIM (Jones, 2008; Kajaleker et al., 2017), these studies were mainly systems designs and they were not intended to allow testing the role of demographic characteristics. These studies focus on finding or re-finding of stored information. Also, there exist many findings that younger persons are savvier in information technology than the older persons (Schradie, 2011). Given the critical role of information technology in PIM behaviors, it will be crucial to examine the effect of age. In the same way, while all the universities in Ghana are engaged in the transformation of their teaching and learning activities using ICT, older universities would have more challenging tasks of incorporating ICT in their tasks than younger institutions. Basically, younger institutions are designed from the outset to incorporate and use ICT.

PIM activities of faculty have been reported in several studies. For example, Douglas (2009) used the interview approach to study how university instructors used Web 2.0 tools to manage digital information for their courses. Kaye, 2006had earlier interviewed 48 scholars in order to understand the archiving practices they adopted for their paper and digital materials. They found that while the purpose of the personal archive includes “to store and retrieve information” (p. 284), it is “… more often … about other important values, such as building a legacy, sharing information, preserving important objects, and constructing identity” (p. 284). They suggested that “it is difficult to make recommendations about standardized personal archiving practices because individuals adopt practices that support their idiosyncratic reasons for establishing the archive” (p. 287).

Yet, understanding how personal factors affect personal information organizing, retrieval, and storage behaviors of faculty in higher education is very necessary for planning and designing efficient PIM systems for better information literacy achievement. Finding and making use of personal information should be considered a key entry point to the overall capability of the faculty to identify and use information productively.

This study examined how personal factors of faculty in selected universities in Ghana relate to their personal information management behaviors. Following this objective, the research is guided by the following research questions. How do age, gender, rank, and institutional affiliation of faculty relate to their personal information management behavior? How does the status of the universities, in respect of whether they are young or old, private or public, resource availability, and others, relate to personal information behavior of their faculty members?Besides developing a better understanding of how academics perform their tasks in their information-saturated worlds and informing further research on academics' PIM behavior, this study provides input for efficient PIM systems and information literacy programs. This study does not aim to develop a model but rather provides a demonstration of how demographic characteristics relate to information creation, information storage, and information organization behaviors of faculty in universities in Ghana.

2. Literature review

2.1. Faculty and PIM

Higher education institution faculty perform academic and non-academic work, and these tasks require that they engage in creation, storage, finding, and re-finding of personal information. In their academic work, they teach, deliver lectures in conferences and seminars, and in various other forums. They also undertake extension and community development services. To achieve these tasks, they consult various information resources and interact with people to develop course materials, write reports, undertake research, and write research papers. Besides academic work, Klausegger, Sinkovics, and Joy (2007) revealed that academics spend a high proportion of their time in meetings, and other activities. Faculty present their information in a variety of linear and nonlinear formats including texts, videos, sound, and graphics (Fayter, 1998).

The personal information of faculty may include “ephemerals, working information and archived information” (Barreau & Nardi, 1995, p. 7). Ephemerals are information that have a short shelf-life, such as to-do lists, note pads, calendars, memos, and news, and others. Working information, on the other hand, refers to the information that is relevant to the individual's current task. They have a shelf-life of weeks or months, or more. A typical example is lecture notes. Archival information does not directly relate to the current work the individual is doing, but it has shelf-life. Archival information includes completed reports, project histories, students' projects, and theses, among others (Barreau & Nardi, 1995). The ability of faculty to create and gather, organize, store, and retrieve this information in a timely manner is critical to their performance, and this ability relates to their personal information management behavior.

Personal information of faculty encompasses the physical information objects such as books, journals, notes and magazines, and digital objects including email messages, web pages, and computer files (Jones et al., 2002). Proper personal information management by faculty cannot be envisaged without reckoning with the inevitable role of information and communication technologies (Binuyo & Brevis-Landsberg, 2014; Larbi-Apau & Moseley, 2012). Whether faculty organize their information in electronic or in manual formats, PIM-specific information literacy that address choice of file and folder names, and locations, and others, will count immensely.

Adequate PIM knowledge and skills will equip the faculty with the attitudes that will support efficient management of their personal information (Binuyo & Brevis-Landsberg, 2014; Otopah & Dadzie, 2013). Donkor (2019) showed that faculty reported saving multiple versions of the same documents in different electronic locations, and with different names. She also observed how faculty clutter their tables with files and documents, alluding that this occurs due to lack of basic personal information management skills, and low awareness about facilities that exist, even in the operating systems of their computers. When not properly managed, personal information collection can become inaccessible and unusable thus affecting the effectiveness, efficiency, productivity, and even the health of faculty(Bawden, 2006).They clog the workspace, belabor the computer memory and tables or file folders, and task the faculty's memory. Therefore, faculty have to deal with managing the abundance of information available to them in order to function efficiently.

2.2. PIM activities

PIM activities are diverse in range. Jones, 2008 and Jones and Teevan (2008) classed PIM activities into three categories, namely finding or re-finding, keeping, and meta-level activities. Razmerita, Kirchner, and Sudzina (2009) identified five groups of activities: (i) knowledge creation, (ii) knowledge codification, (iii) knowledge sharing, (iv) knowledge collaboration, and (v) knowledge organization. Avery, Brooks, Brown, Dorsey, and O'Conner (2001) proposed a framework that consists of seven categories: (a) retrieving information, (b) evaluating information, (c) organizing information, (d) collaborating around information, (e) analyzing information, (g) presenting information, and (h) securing information. Lush (2014) recommended (i) organization, (ii) finding, and (iii) keeping as fundamental PIM activities. Just like in most social science issues, it is difficult to construct a fixed list of PIM activities.

2.3. Information creation, organization, and storage

A definition of information creation is hard to come by (Trace, 2007), but it can be inferred from Bravender, McClure, and Schaub (2015, p. 7) that the concept refers to "…the iterative processes of researching, creating, revising, and disseminating information in order to convey a message that is either shared or stored."It can be inferred further from the work of Trace (2007) that information creation refers to how information is brought into existence through various methods, approaches, and technologies. Consider, for instance, creating a tweet, a Facebook post, downloading a text, recording music, writing and editing a book, telling a story, and typing out a text to your students, among others. Information can be created for personal use or for use by others. It can be created and used, shared, or stored for possible future use. The Framework for Information Literacy in Higher Education (FILHE) viewed information creation as a process. According to FILHE, the information creation process.

> "… refers to the understanding that the purpose, message, and delivery of information are intentional acts of creation. Recognizing the nature of information creation, experts look to the underlying processes of creation as well as the final product to critically evaluate the usefulness of the information"
>
> (Bravender et al., 2015).

Based on the work of Mackey and Trudi (2011), information creation can be articulated into four major categories, namely (i) scholarly, such as journals, research papers, conference proceedings, and other academic resources; (ii) professional, such as trade resources, websites of organizations, among others; (iii) popular, for instance, newspapers, etc.; and (iv) social, for instance music, social networks, blogs, etc. University faculty contribute to these various information categories according to their academic and non-academic roles. Information creation is a crucial element in the personal information management chain; issues affecting personal information management also relate to how the information is created.

Information organization and storage are a very crucial aspects of personal information activities. Information could be organized and stored in various places such as in manual or electronic files, piles on tables or shelves. Electronic files could be stored in the computers, folders and subfolders, flash disks, and other disks (Bergman & Whittaker, 2016; Jones et al., 2005). The subject of how and where people organize and store their files as well as the challenges they encounter have been examined in various PIM research (Koh, Oh, Agarwal, & Belkin, 2015).

2.4. Personal factors and PIM

Personal means "belonging to or affecting a particular person rather than anyone else, or concerning one's private life, relationships, and emotions" (Donkor, 2019, p. 40). Personal relates more to the private life of an individual where the individual has total control and is in charge. Personal factors can be defined as those attributes of an individual that relate specifically to the person, and uniquely describe the individual, particularly in relation to other factors. Typical examples are demographic variables which include age, gender, institutional affiliation, and rank among others. Demographic variables have been considered by Almutairi (2011) as the key elements in personal factors. However, in PIM, 'personal' does not usually connote privacy or confidentiality.

PIM behaviors have been linked with people's demographic characteristics (Binuyo & Brevis-Landsberg, 2014; Otopah & Dadzie, 2013). However, there exist empirical observations that demographic characteristics of people relate to the types of information sources they use and prefer (Lorence & Park, 2007; Palsdottir, 2003; Urquhart & Yeoman, 2009). There are also studies that support generational and educational differences in information source preferences and information use. For instance, evidence abounds that younger people are savvier and more adept using information technologies and are therefore more prone to using such sources than older adults (Almutairi, 2011). Younger scholars may therefore be more inclined towards storing their information in electronic sources than older scholars. Related to this, in a number of studies, it has been shown that people prefer personal and interpersonal sources of information such as personal information collection, and professional and other colleagues, in their efforts to meet their information needs (Egghe, 2010, Egghe, 2010; Oulton & Fisher, 1995). As crucial as electronic and other information sources are, people resort to print sources before they seek assistance from electronic sources (Diekema & Olsen, 2014; Malone, 1983).

In his review on information behavior, Case (2007) has observed the complexity of information behavior. Case based his opinions on the fact that human beings are key elements in the society where personal factors such as age, gender, etc. are critical data. All the theories that are deployed to study behavioral issues in information science such as the technology acceptance model (Ajzen, 1991), diffusion of innovation (Rogers, 1962), social learning theory (Bandura, 2001). Wilson (1999), among others, recognize the significance of the interaction between human behaviors and the society in which they live. Many behavioral studies are guided by the opinions and perceptions, as well as attitudes and norms of individuals, and these are, on their own part, guided by individual encounters, experiences and exposures. Almutairi (2011) thus averred:

> "Consequently, personal variables, such as age, gender, and education, and work-related variables, such as experience, task, and structure can play a vital role in shaping behavior."
>
> (Almutairi, 2011)

> "Furthermore, it is rare that the same information behavior is expressed by two individuals; therefore, information behavior improvement intervention should focus on specific situations and variables that can be controlled, such as factors within organizational boundaries."
>
> (Almutairi, 2011)

Wilson's (1999) synthesis of information behavior consists of three activities that are interrelated,—information seeking, information exchanging, and information using,—which people repeat until they meet their information need. He went further to expatiate and show that information needs arise due to more fundamental needs which are physiological, cognitive, or affective. Evidently, these needs are associated with a person's age, rank, institution of affiliation, among other personal criteria. Wilson (1999) therefore asserted that an information behavior model, "… embodies, implicitly, a set of hypotheses about information behavior that are testable: for example, the proposition that information needs in different work roles will be different, or that

personal traits may inhibit or assist information seeking." (p. 253).

The complexity of people's work relates to the expertise the people have or may need and consult. Palmquist (2006) has linked context of information with information behavior and showed that differences exist by demographic variables, and said that there could be common grounds for different professionals in some situations. For instance, in certain contexts, engineers, legislators, and physicians may share same similarities in their information needs and use.

Nachmias (2011) has recommended the user-subjective approach to understanding PIM, and advocated that PIM systems should be related to the subjective value-added attributes that information users use to describe the data they store in PIM systems. According to him, users' subjective attributes relate to the value-added attributes, and that these attributes are capable of helping the user recall the information when needed. PIM systems serve only one user at a time and should therefore perform better when PIM systems are designed, considering user subjective attributes. Usually, these attributes are primitive, may be episodic and may also be idiosyncratic in nature. Someone might name a file after an event that may not reoccur again, or that reoccurs periodically, in order to enable retrieval of the file when needed. The names may be meaningful to the person who created the information item, but not to others (Kidd, 1994; Sellen & Harper, 2001). The subjective attribute will influence "a person's methods and rules for acquiring the information which becomes part of the system, the mechanisms for organizing and storing the information, the rules and procedures for maintaining the system, the mechanisms for retrieval, and the procedures for producing the various outputs required" (Barreau & Nardi, 1995, p. 267).

In Fig. 1, the researchers have conjectured how age, gender, rank, and institution of affiliation of faculty might relate with the personal information activities behaviors of faculty.

The personal factors deployed in this study are by no means comprehensive of the range of personal factors that might be associated with PIM behavior. However, the variables are sufficient to initiate a conversation on personal factors and PIM.

3. Methodology

The study took place in six selected universities in Ghana. The researcher used a proportional to size sampling technique to determine the sample sizes per university, resulting in a sample of 330 participants. Table 1 shows the names of the universities, their populations, and the samples.

The instrument that guided the study was a questionnaire that was designed by the researchers. To achieve validity and reliability of the questionnaire, the researchers subjected the instrument to two-steps evaluation. Two professors of information studies, one in the University of Ibadan, Nigeria, and the other in the University of Ghana in Legon, vetted the instrument. Then a pretest was carried out with ten lecturers who were not included in the final sample. The final questionnaire resulted from the inputs from these two processes.

This present paper was based on the demographic characteristics

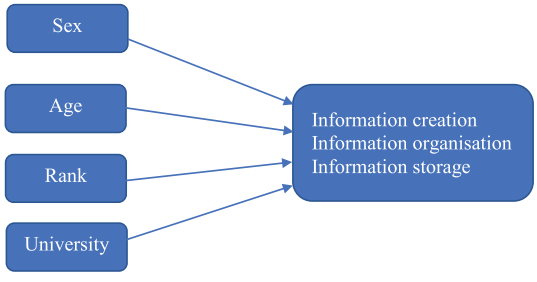

Fig. 1. Demographic characteristics of faculty and information behavior activities.

Table 1
Population and sample from each university.

University	Population	Sample
University of Ghana	587	82
Kwame Nkrumah University of Science and technology	548	76
University of Education	465	67
University of Professional Studies	256	37
Valley view University	154	37
Central University	301	44
Total	2311	330

and three personal information management activities namely (i) creation, (ii) organization, and (iii) storage (see Appendix A). Many studies on PIM focus on memory and finding/re-finding. Although adding memory and finding or re-finding in the study would have provided comparative evidence that might make the study more interesting, but the output would be voluminous and difficult to manage.

A five-point Likert-type scale, ranging from 1 (strongly disagree) to 5 (strongly agree) was used to measure the three dependent variables: information creation, information organization, and information storage. Gender and institution were measured using a nominal scale, while age and rank were measured as ordinal variables. The researchers chose to consider the four independent variables: age, gender, rank, and university as mere characteristics and not any measures of dimension or attitude, making reliability and validity measures unnecessary.

After prior permission was obtained from the authorities, the researchers visited the universities during March to November 2018 and distributed 330 copies of the questionnaire to faculty members, according to the sample sizes determined for each university. A total of 235 copies of the questionnaire were completed and returned, representing a response rate of 73%. All the copies of the questionnaire returned were found usable.

The reliability of each scale was established using Cronbach's alpha test and each variable's reliability was found to be higher than 0.70, which is the minimum acceptable level. Bivariate correlations of pairs of the three variables were lower than 0.6, indicating that the dependent variables were not similar in their characteristics, and can therefore perform acceptably well in statistical analysis.

First, the frequency distribution of the demographic factors was displayed. Then, dimensionality reduction for each of the three categories of the PIM activity behaviors was performed using Principal Component Analysis (PCA). Principal Component Analysis (PCA) is one of the oldest and most widely used techniques to reduce the dimensionality of datasets; the outcome of the reduction is a new dataset that retains much of the statistical information (or variability), in the original dataset. PCA identifies the principal components, or fewer new variables, which represent maximal variation in the original dataset. The new variables are linear functions of those variables in the original dataset, but the new variables themselves are uncorrelated with each other in order to be good candidates for multivariate analysis. PCA first isolates the common variance shared by all the variables in the original data set. PCA also isolates the variance which each of the variables in the dataset shares with each of the variables - this is known as communality. The first principal component would often account for the largest variability in the original set of variables, while each succeeding component would account for some of the remaining variability in the data set. PCA also isolates the correlation between each of the original variables and the factors, often known as factor loadings.

To test a set of data for suitability for PCA, Kaiser Meyer Olkin (KMO) test and Bartlett's Test of Sphericity (BTS) are usually applied to confirm if the items were appropriate factors based on the variances. According to Hair, Jr Black, Babin, and Anderson (2010), BTS test of variation of factors is measured from 0.000 to 1.0 and the overall value of KMO should be 0.60 or higher to carry on with PCA. Bartlett's Test of Sphericity test relates to the validity and suitability of the responses to

Table 2
Demographic characteristics of respondents.

Variables	Frequency	Percent
Gender		
Male	162	68.9
Female	73	31.1
Total	235	100
Age		
Below 30	4	1.7
30–39	119	50.6
40–49	83	35.3
Above 50	29	12.3
Total	235	100
Rank		
Senior lecturer	45	9.1
Lecturer	14	59.6
Assistant lecturer	47	20.0
Associate professor	3	13
Total	235	100
University		
University of Ghana	60	25.5
Kwame Nkrumah University of Science and Technology	47	20.0
University of Professional Studies	29	12.3
University of Education	50	21.3
Central University	30	12.8
Valley view University	10	8.1
Total	235	100

the questions being addressed, by way of testing the overall significance of all the correlations in the correlation matrix. Usually, the BTS is measured using a Chi Square test, and the null hypothesis that the correlation matrix is an identity matrix, that is, the responses are not valid, and, not suitable, must be rejected (p = 0.000) for PCA to be conducted.

The variation in the resultant information behavior variables was examined using General Linear ANOVA. Besides informing about the power of the model, General Linear ANOVA also yielded multiple regression results. Finally, Kruskal Wallis test was used to establish the magnitudes of the contributions of the dimensions of the fixed factors.

4. Findings

4.1. Demographic characteristics

The demographic characteristics of the respondents show that 162 (68.9%) were males while 73 (31.1%) were females (see Table 2). A little more than half of the respondents, 119 (50.6%), were aged 30–39 while 83 (35.3%) were aged 40–49 years. Twenty-nine (12.3%) were above 50 years and 4 (1.7%) were below 30 years. Furthermore, 45 (19.1%) of the respondents were senior lecturers, 140 (59.6%) were lecturers, and 47 (20.0%) were assistant lecturers.

Also, 60 (25.5%) of the respondents were employees of the University of Ghana, 50 (21.3%) were employees of University of Education, 47 (20.0%) were employees of Kwame Nkrumah University of Science and Technology. Thirty of the respondents (12.8%) were employees of Central University while 29 (12.3%) and 19 (8.1%) are employees of the University of Professional Studies and the Valley View University, respectively.

4.2. Reducing the dimensionalities of the dependent variables using PCA

4.2.1. Personal information creation

The six information creation variables were reduced into three principal components. The variables with highest loadings are shown in Table 3.

Table 3
Principal components for information creation.

Principal components	Loadings	Mean	SD
I create information based on task at hand	0.853	4.19	0.729
I create information mostly in digital format	0.735	3.70	1.07
I create information mostly in print	0.782	2.54	1.50

Bartlett's test of sphericity was significant (χ^2 (28) = 303.394, p = 0.000). Kaiser-Meyer-Olkin measure of sampling adequacy was high (KMO = 0.621).

Table 4
Principal components for information organization.

Principal components	Loadings	Mean	SD
I organize my information items in subfolders	0.815	4.01	0.16
I pile my paper documents on my desk/tables	0.805	3.52	0.89
I passively delete information items from the computer	0.783	3.56	1.25
I organize my print information using files	0.764	2.19	0.87
I pile up files on tables with no predefined organization	0.754	2.02	0.98
Meaningful names are assigned to folders	0.737	3.49	1.11

Bartlett's test of sphericity was significant (χ^2 (120) = 1400.390, p = 0.000). Kaiser-Meyer-Olkin was sufficiently high (KMO = 0.645).

4.2.2. Personal information organization

The fifteen information organization variables were reduced into six principal components. The six variables with highest loadings are shown in Table 4.

4.2.3. Information storage

Six of the fourteen variables were reduced to six principal components. The variables with highest loadings are shown in Table 5.

The variables with the highest loadings for each variable group were computed to achieve the dependent variables (see Table 6). Most respondents in each category agreed with the statements in the instrument.

4.3. Variation in influence of personal factors on personal information activities behaviors using General Linear ANOVA

The effect of gender was significant, F (3, 228) = 4.261, p = 0.006, η_p^2 = 0.053. Also, age: F (3, 228) = 5.006, p = 0.002, η_p^2 = 0.062; rank: F (3, 228) = 11.182, p = 0.000, η_p^2 = 0.128 and university: F (3, 228) = 2.603, p = 0.006, η_p^2 = 0.033, were all significant predictors.

Table 7 shows that rank is the most powerful predictor in the model, followed by age, sex and university. (See Table 8)

4.4. Estimates of the parameters using multiple regression

4.4.1. Information creation

Age significantly predicted information creation (β = 0.117, p = 0.029), as did rank (β = 0.247, p = 0.000) and university (β = −0.52, p = 0.008).

Table 5
Principal components of information storage.

Principal components	Loadings	Mean	SD
I delay my attention to store electronic information for consideration at a later date	0.484	3.48	0.92
Each version I keep is an improvement of the former	0.809	3.70	0.10
I keep several versions of the same electronic information items	0.729	2.29	0.22
I store digital information in the cloud	0.783	2.25	1.05
I file paper documents before storage	0.767	3.95	1.16
I pile up paper documents before storage	0.767	3.89	0.52

Bartlett's test was significant (χ^2 (91) = 739.39, p = 0.000). Kaiser-Meyer-Olkin measure of sampling adequacy was high (KMO = 0.63)

Table 6
Outcome of the reduction of the three variables.

The extracted components	Mean	SD
Information creation	3.916	0.599
information organization	3.936	1.271
Information storage	3.814	0.411

Table 7
Variation in influence of personal factors on personal information activities behaviors.

Variable	F	Df	DFerror	P	η_p^2	β	(1-b)
Sex	4.261	3.000	228.00	0.006	0.053	12.782	0.858
Age	5.006	3.000	228.00	0.002	0.062	15.019	0.912
Rank	11.182	3.000	228.00	0.000	0.128	33.545	0.999
University	2.603	3.000	228.00	0.051	0.033	7.808	0.634

Table 8
Multiple regression analysis by information activity behavior.

Variable	B	95% CI	t	P
Information creation				
Intercept	2.830	2.185–3.476	8.642	0.000
Age	0.117	0.012–0.222	2.204	0.029
Rank	0.247	0.145–0.348	4.780	0.000
University	−0.052	−0.090 - -0.014	−2.665	0.008
Information organization				
Intercept	2.790	1.345–4.234	3.806	0.000
Gender	−0.095	−0.485 - 0.296	−0.477	0.634
Age	−0.145	−0.379 - 0.089	−1.219	0.224
Rank	0.293	0.065–0.520	2.535	0.012
Information storage				
Intercept	2.518	2.083–2.953	11.405	0.000
Gender	−0.210	−0.328 - -0.092	−3.513	0.001
Age	0.120	0.050–0.191	3.359	0.001
Rank	0.136	0.068–0.205	3.923	0.000

4.4.2. Information organization

Gender ($\beta = 0.95$, $p = 0.634$) and age ($\beta = -0.145$, $p = 0.224$) did not significantly predict information organization, unlike rank ($\beta = 0.293$, $p = 0.012$) which did.

4.4.3. Information storage

Gender ($\beta = -0.210$, $N = 235$, $p = 0.001$), age ($\beta = 0.120$, $N = 235$, $p = 0.001$) and rank ($\beta = 0.136$, $N = 235$, $p = 0.000$) predicted information storage significantly.

4.5. Magnitudes of the dimensions of the fixed factors using Kruskal Wallis test

4.5.1. Information creation

The relationship with age χ^2 (3, N = 235) = 6.597, $p = 0.036$ was significant; also, with rank χ^2 (3, N = 235) = 31.781, $p = 0.000$, and university χ^2 (5, N = 235) = 58.585, $p = 0.000$, were also significant. The mean rank of age of faculty in respect of information creation followed this order: 40–49 (M = 130.57, SD = 0.732), above 50 (M = 127.17, SD = 1.102), 30–39 (M = 106.89, SD = 0.057) and < 30 (M = 121.00, SD = 0.591). With respect to rank, those in the associate professor rank (164.50) created more information than those in the Senior Lecturer rank (M = 153.38, SD = 1.109); lecturer rank (118.71, SD = 1.219) created more information than those in assistant lecturer rank (M = 75.72, 0.091). Faculty from the University of Professional Studies (M = 171.41) created more information than those from KNUST (M = 152.26, 0.192), University of Education (M = 119.36, 1.111), University of Ghana (M = 97.48, SD = 1.30), Valley View University (M = 105.24, SD = 0.961) and Central University (M = 59.55, SD = 1.092).

4.5.2. Information organization

The relationship between information organization and rank is significant, χ^2 (3, N = 235) = 42.60, $p = 0.000$). Associate professors have the highest mean rank (M = 217.00, SD = 0.03), followed by assistant lecturers (M = 58.87, SD = 1.05), and lecturers (M = 116.30, SD = 1.31) and senior lecturers (M = 74.01, SD = 1.95).

4.5.3. Information storage

The relationships with gender χ^2 (1, $N = 234$) = 14.34, $p = 0.000$, age χ^2 (3, N = 235) =11.89, $p = 0.008$ and rank χ^2 (3, N = 235) = 12.68, $p = 0.005$, were significant. The mean rank of information storage for males (M = 129, SD = 1.11) was higher than that of female (93, SD = 0.98). The mean rank for age range 50 and above was the highest (M = 151.90, SD =1.17), followed by 30–39 age range (M = 108.25, SD = 1.61). Finally, the mean rank of associate professor (M = 228.00, SD = 2.05) was the highest followed by that of assistant lecturers (M = 132.32, SD = 0.12), lecturers (M = 116.04, SD = 0.09) and senior lecturers (M = 101.80, SD = 0.90).

4.6. Synthesis of the findings

Fig. 2 presents the directions of significance of the predictors.

4.6.1. Information creation

Age, rank, and university, but not gender, predicted information creation behaviors of university lecturers. Faculty aged 40–49 created information the most, followed by those above 50 years. Also, associate professors created information the most, followed by senior lecturers; information creation reduced with rank. Finally, compared to other universities in the study, University of Professional Studies created information the most followed by University of Education.

4.6.2. Information organization

Rank of faculty predicted information organization behavior of the university lecturers. Associate professors organized information more than faculty in other rank.

4.6.3. Information storage

Gender, age, and rank predicted information storage behavior of university lecturers. Males stored information more than females. People aged above 50 stored information more than faculty in other age categories, and, associate professors stored information more than faculty in other categories.

5. Discussion

The purpose of the study was to understand the relationship between the demographic characteristics of faculty in selected universities in Ghana and their personal information creation, information storage, and information organization behaviors. Four demographic characteristics namely age, gender, rank, and university of affiliation were used as fixed

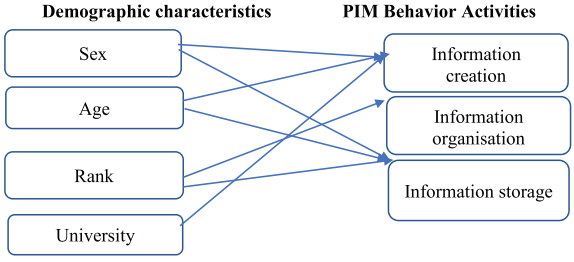

Fig. 2. Direction of significance of the fixed factors.

factors while computed variables extracted from information creation, information storage, and information organization were the dependent variables.

Despite studies giving evidence of significant difference in the relationship between demographic characteristics and information behavior (Almutairi, 2011), discussing the findings in this study is somewhat challenging as it concerns PIM, an area where demographic characteristics have not been investigated. PIM is a subset of the broader scope of information behavior, relating demographic characteristics of faculty to PIM behavior narrows and granulizes the interpretation. More related to the present study, they found no significant difference in the creation of content by males and females. In Hargittai and Walejko's (2008) study, various variables were controlled for at different stages in the analysis, and they found significant differences as a result. The researchers in the present study did not adopt Hargittai and Walejko's approach.

It is informative that age predicted information creation and that people 40 years and above were more creators of information than the people in other categories. While studies addressing this finding appear to be non-existent, there is inference from Donkor (2019) that many people in the age category of 40 and above occupied major administrative positions in the universities in the study. Faculty who perform administrative roles have many information creation opportunities through their assistants, in addition to the information they create. This study also showed that younger faculty were also the younger scholars who were probably mainly focusing on their individual research and professional development activities. This finding relates to Olorunsola (2012) who found a positive and significant relationship between age and administrative positions in the university. If this study examined the role of personal factors on PIM activities by type of information created, that is, whether digital or print, the result might change in favour of younger faculty who are more avid users of information technology (Boot & Charness, 2009).

Rank predicted information creation, with the highest-ranking faculty in the study namely associate professors being the highest information creators. Donkor (2019) showed that there existed a relationship between age and rank of the faculty, with older faculty being older in age than the younger faculty. The implication of this reference is that higher ranked faculty in the universities were also the most likely to be the older faculty who hold key administrative positions. There may be a difference if the researchers control by type of information created, or other factors, as younger scholars who are also younger in age might be creating more digital information than the older ones.

Similar to information creation where there is no significant relationship with gender, there is no significant difference between males and females in information organization. Only rank predicted information organization, with associate professor having a higher mean rank in information organization. Besides being more mature in age and scholarship, and being key administrative members of faculty in many cases, associate professors have acquired experience in respect of how to organize the information they think would be useful to them in the future.

Explaining why university of affiliation makes a difference in information creation, and why faculty in a private university would create information more than the other faculty is not an easy undertaking. Donkor (2019) observation about private and young universities being more ICT-intensive suffices here. The University of Professional Studies is the youngest university in the study, it is also private university.

This study has some limitations. The study was based on data collected from faculty in six universities in Ghana. Expanding the scope of the study may add more insights. The study was also limited to three information activity behaviors; applying multivariate analysis to expanded PIM activity behaviors may also provide further insights. More critically, what statistical scale and what variables would be appropriate to study information creation, information organization, and information storage, and in fact, other PIM activities? The scale and variables used in this study were developed by the researchers, although they were validated using appropriate methods.

None of the full professors completed the questionnaire. It is not therefore possible to know if associate professors would still rank high in information creation, for instance, had professors taken part in the study. A very important limitation is that personal factors are more complex than presented in this study. A better view of PIM would be better gleaned by expanding the range of personal factors to include, for instance, income, discipline, and computer literacy, among others.

6. Conclusion

This study demonstrated that personal factors are critical components of personal information behavior. Faculty aged 40–49 created information more than faculty in other age categories. Also faculty in lecturer rank created more information than those in other ranks. The mean rank of information storage for male was higher than that of female; the mean rank of information storage for age range 50 and above was the highest, followed by 30–39 age range. Senior ranking faculty have the highest mean rank for information organization. This study has enhanced knowledge about the role of gender, rank, institution of affiliation, and age and their impact upon the PIM of university faculty.

University faculty remain critical resources in learning and education because they have the responsibility to impart basic knowledge, mentor learners, and develop the required work force. Universities should realize that efficient faculty will require access to personal information, and the skill for accessing personal information will be very useful in improving their performance. This study has shown evidence that age, gender, rank, and institutional affiliation are among the factors that influence faculty personal information behavior. Universities should address these issues in their information literacy activities in order to ensure that the content of literacy programs matches with the needs of the faculty. Additionally, there system designers should pay attention to the role of personal variables such as education, age, and information when designing systems that suit faculty needs. Systems should not be strictly turnkey but should be flexible allowing individuals to make adjustments in the systems to enable the systems fit their personal characteristics and thus meet their needs.

Information behavior frameworks tend to be formulated based on broader information behavior dimensions such as information seeking and information use rather than based on granular information activities such as personal information storage, information organization, information keeping, recording, or organizing activities, and others. The prevailing formulations are therefore very general and may be difficult to translate into educational initiatives and productive information literacy activities. There is need for specific research that focuses on and defines micro level issues, and that analyzes specific areas of personal information behaviors. Furthermore, when persons conduct information seeking, they do not observe or follow rules and regulations that guide professional behaviors and upon which basis scientific literature has been developed. Rather they approach the task of meeting their information need as events permit and according to the resources available to them. There is therefore need for deeper understanding of the actual practices of individuals and personal characteristics that determine personal choices and actions.

Information literacy programs are always formulated as a set of integrated set of skills that are dependent upon each other, whereas heuristic and other private and primitive approaches individuals adopt in meeting their needs may differ from these standards. In Ghanaian universities, better efficiency in faculty PIM could be achieved if faculty PIM literacy programs are designed paying attention to differentials in personal factors, as revealed in this study.

In view of studies that have shown that human memory is age sensitive, and gender sensitive in some cases, a future study should consider including memory as one of the dependent variables. Further studies are also required to examine the class of personal information which faculty create the most, and which of them posmore serious challenges to them. Finally, it will be insightful to examine the role of personal factors with respect to other classes of PIM activities behaviors such as Jones (2008) or Razmerita et al. (2009), or other.

Appendix A. The Questionnaire

Demographic characteristics

1. Gender: Male [ ] Female [ ]
2. Age: i. below 30 [ ] ii. 30-39 [ ] iii. 40-49 [ ] iv. Above 50 [ ]
3. Rank: i. Professor [ ] ii. Associate Professor [ ] iii. Senior Lecturer [ ] iv. Lecturer [ ] v. Assistant Lecturer [ ] Other (specify) ……..
4. University: i. University of Ghana [ ] ii. Kwame Nkrumah University of Science and Technology [ ] iii. University of Professional Studies, Accra [ ] iv. University of Cape-Coast [ ] v. University of Education [ ] vi. Ghana Institute of Management and Public Administration [ ] vii. Central University [ ] viii. Valley View University [ ]

Information activities behavior

Information creation

1. I create/collect information based on a task at hand
2. I create information that is ephemeral or of temporal value
3. I create information that is of working or immediate value
4. I create information that is of archival value
5. I create/generate most information in print
6. I create more information in digital format

Information organization

1. I spend more time and cognitive efforts to keep my print and electronic information well ordered
2. I keep only the most important print documents
3. I discard print documents passively
4. I organize my print information using files
5. I assign meaningful names to the files
6. I arrange my files orderly in cabinets
7. I pile my files on tables with no predefined organization
8. I pile my paper documents on my desk/tables
9. I keep only the most essential information on my computer
10. I passively delete information items from my computer
11. I assign meaningful names to my folders
12. I organize my information using folders
13. I arrange my folders to a depth of two folders for information items
14. I organize my information items in subfolders
15. I don't make use of subfolders

Information storage/keeping

1. I keep small collections (print and electronic) with very few information items
2. I keep huge collections (print and electronic) with numerous information
3. I keep electronic information on my desktop only
4. I store electronic information immediately I encounter it
5. I delay my attention to storage of electronic information to a later date
6. I store copies of electronic information items to back them up at a later date
7. I keep several versions of the same electronic information item
8. Each version I keep is an improvement of the former
9. I store the same information items on different computers
10. I store my digital information on a pen drive or other
11. I store my digital information on my computer
12. I store my digital information in the cloud
13. I file my paper documents before storage
14. I pile my paper documents for storage

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