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Information Professional in 21st Century: Evolve or Dissolve

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Abstract

Debate about career of Information Professional (IP) is increasingly discussed among professionals in various media such as journal articles, blogs, websites, seminars, and congresses. The roles and capabilities of IP are debated in line with the current trend and needs. This article discussed the relation between 21st. century as a key indicator and career requirement of IP. Within the 100-years, information profession should step forward as various changes have occurred and will occur. By analysing various sources, this article attempts to produce significant variables related to IP within 21st. century. This article tries to explore the challenges that IP must, should and will face to remain relevant and significant in the 21st. century. An important aspect emphasized in this article is technology, social, economy, education, satisfaction, and the role of IP.

Keywords: Information Professional, 21st, Century Skills, Information Science Challenges.

Introduction

The past decade has seen the increasingly rapid changes in the information profession field which resulted from the transformation of technology, business, education and research throughout the years. Vassilakaki & Moniarou-Papaconstantinou (2015) reported that due to shifts in context of technological, social, economic and educational, the traditional practices of IP role have experienced massive changes. Meanwhile, new roles synchronously evolved. One of the cases in point of this is when IP were required to execute the role as Information Consultants and Facilitators in place to cope with the continuous upgradation of information generation and retrieval tools which give impact to the multiplying number of digital data and information (Shank and Bell, 2011; Vassilakaki & Moniarou-Papaconstantinou, 2015). Nonetheless, Mishra (2015) asserted that upon the existence of data explosion, information profession also required to make debut as an Accidental Data Scientist.

Placing the 21st. century as a key indicator, IP should step forward within this 100-year period, from 1 January 2001 to 31 December 2100 as various changes have occurred and will occur due to internal and external factors such as technological, social, economic and educational. The education sector is most prominent factor in this case, until a special term is used to describe education in the 21st. century which is '21st. Century Learning'. From the framework of 21st. Century Learning, the expected output is skills and knowledge acquired by students that can able to meet the requirements in work, life and citizenship, as well as the support systems necessary for 21st. century (P21, n.d.). There are three main variables of 21st. century learning, which are life and career skills, learning and innovation skills - referring 4Cs (critical thinking, communication, collaboration, creativity) and lastly information media and technology skills.

Looking at the variables outlined in the 21st. century education, educators try to reduce the gap between education and current needs. At the end, students produced are meet the needs of the job market and community. As such, this article was written to study the relation between the 21st. century and IP career, which became the umbrella for the librarian, archivist, information manager etc. By analysing various sources, this article attempts to produce significant variables related, to find the challenges that IP must face to remain relevant in the 21st. century.

Technology Innovations

Despite the traditional practices of information services, it has been argued that the existence of technology innovations had given a tremendous transformation in the IP roles and responsibilities. On the other hand, this could influence the implementation of prescriptive technologies where external agents were given control to fulfil the IP responsibilities or most accurate term is outsourcing (Sierpe, 2004). This happened due to *lack of technology literacy and skills* among the IP in embracing the technology development especially in providing information services. Sierpe (2004) continues that the introduction of technology innovations *does not changing the information profession instead of offering the shifting values, especially in librarianship*. Information Profession is a kind of profession that support the learning communities by focusing on user or human centered services. However, the introduction of computer mediated system in information services industry has led to the changes to information profession which acquired the service outcome to be based on information or technology centred align with the user's demand where it suits this technology developing age.

This could be related to the appearance of Industry Revolution (IR) 4.0 emerged from Cyber-Physical System (CPS) into Cyber-Physical Production Systems (CPPS) (Zhou, Zhou, & Liu, 2015). It gives such a big impact to the information profession when Darnley et al. (2018) cited that the creation, use, and management of infinite volumes of data are the main focus of IR4.0 which categorized big data, Internet of Things (IoT), cloud computing, machine learning artificial intelligence and automation as the key features for data management technologies. This technology is beneficial to the data management through the means of automation and digitization of the process, however human interaction is still required to operate the technologies.

To that extend, IP definitely need to intensify their capability and awareness in unfolding the technology development by becoming more tolerant in complying the integration of traditional skills with the technological innovations (Ashcroft & Watts, 2005; Biddiscombe,

2001; Sharp, 2001). Thus, Ashcroft & Watts (2005) emphasised that due to advancement of technology without pause, the need of continuous training and learning to enhance the technology literacy among IP are exaggerating in order to slash out the digital divide.

Social

To fulfil the demand of information services in the society, professionally trained information professional is utmost importance to possess. This could help in making sure the information professional could adapt and control the user's needs depends on the environment. Sometimes, the ability to quickly accommodate with the society will innovate new services depends on the user's need. Luyt (2012) stated that in July 1923, the first professionally trained librarian in Raffles Library, which is a European library in Singapore, namely James Johnson who used his knowledge in librarianship as pioneer in the opening of Raffles Junior Library. His training added to his enthusiasm for public library services to kids.

Nonetheless, to enhance the society's trust towards information institutions, information professionals need to be complied with higher standard of education. Instead of having only knowledge of the profession hold by them such as librarianship, archiving, records management and so forth, at least a compact basic knowledge on the user's scope of study or information preferences also need to be dig in by information professional so that they are able to cope with the user's demand later on. For instance, Luyt (2012) also noted that librarians in Raffles Library were desired to have knowledge of European authors and books to serve their users at that time which consist of clerks. Furthermore, information professionals also should own various languages proficiency especially when serving in multinational and multilingual country. The importance of language competency among information professionals was proven by Luyt (2012) when Raffles Library was not able to recognize the nature of the materials collected in the library since some of the collection was particularly in Chinese, Malay as well as various Indian languages. Since Raffles Library is a European library, the main language used is English. However, in the purpose of expanding non-European membership, another language of information resource needs to be added into the library collection. Due to incompetency of the librarians in language skill, the quality of the collections added was in uncertainty.

Social also always recognized as one of the important elements to enhance the engagement of users and IP. Hence it is important, thus should understand first the personas of the users that can affect the socialization of users and IP. It does sound significant to support the roles of IP when personas played by the users were presented. In review of Bilandzic & Foth (2013) study, they found that there are five personas presented by the users which at the same time showed users attitudes, perceived barriers, and motivation to social learning. The study was conducted at The Edge (bookless library space) at the Queensland State Library in Brisbane, Australia. Five personas proposed by authors are Coworking Chris, I-wanna-share-it Garrett, Learning-freak Fred, What-can-I-do-here Sophia and Doesn't-care Claire.

Coworking Chris is where Chris uses The Edge as his third place after workplace and home. Socialization does occur through spatial circumstance and particular social between unacquainted people. An IP could start the conversation for the icebreakers in the library such as with individual like Coworking Chris.

I-wanna-share-it Garrett is where Garrett is intrinsically motivated to pass and share his experiences, skill, and know-how. It is volunteered effort of users which to share their hobbies among other users through run a workshop. An IP could attract people like Garrett by

encourage collaboration and at the same time, an IP could also increase their amount of skill, social capital, and expertise in the user community through IP participation.

Learning-freak Fred is where Fred like The Edge idea as a centre for individual that creative, to collaborate, hang out or meet which related to technology and digital culture projects. An IP could develop forum for social learning activities such as every week invite the volunteered with different background or themselves (IP) to give story telling about their core interest.

What-can-I-do-here Sophia is where Sophia does not know what offers by The Edge as well as its purpose and function as a bookless library. An IP could increase awareness and opportunities for social learning by approach users outside the building such as having a campaign to attract users' attention. This could also improve socialization of IP among users where it will make users feel closer with IP.

Doesn't-care Claire is where Claire uses The Edge as point of access to internet, computer, multimedia equipment, software, and hardware. However, this persona showed the socialization does not occur based on some individual that ignore The Edge as a place for collaboration. But an IP could develop their socialization through chat with Doesn't-care Claire user to identify if they have any problem.

Last but not least, an IP should play their roles to have socialization among users based on the personas proposed by the authors where the personas does affect the social learning of users in the library as well as socialization of IP important such as when they also actively participate to support the activity involves knowledgeable users and IP could also take their chance to expertise their knowledge and build strong engagement where users will feel they need IP in the library.

Economy

Guarria and Wang, (2011) stated that majority of the library have the experienced flat or reduce budget from many expect in additional budgets cut in the future. From that in library could examine the workflow into increasing the efficiency, priority, good project, and measures. There is similar effect throughout the academic as a librarian and administrators. The authors mentioned an indication is the biggest budget cuts for upcoming in materials, supplies and travel. However, there is also an idea that would be used to manage throughout the economy downturn. The authors also examine the interesting into harsh economic times that cuts the budget in library use. in fact, people tend in using library frequently to save the budgets.

Overall, the issues have been surrounding in affect the library on its operation such as indication that economic having slow return process into normal capacity. The authors found the reasons in cautious confidence. Hence, it is the important reminder to prepare for strategic that could be continue into improving the economy for the future. The opportunities into attracting outside and institutional funding for serving to continue the needs of the users. The authors aim to discuss the concern in measureable manners. The authors also highlighted the challenges that face in academic library which is budget and affected in the program services. Finally, this study is representing the experience of librarian's experience in recession into continuing the rise into normal condition of economy.

Mouza and Taousanis (2018), in their study involving 116 librarians which to examine the effects that faced on public librarian's obligation towards Greece's economic crisis. The finding reveals that, there are several difficulties that faced by public library in Greece such as heavy workload and increase responsibilities due to the lack of qualified workers which

both in library and computer science. Reducing in funding also one of the difficulties in Greece's public libraries and this bring effect in incapability to meet some operational needs in organization.

Based on current economic crisis in Greece where its effect towards public libraries, in confront the workload, where the public libraries may use alternative practices to decreased on this issue such as [1] improve the personnel for one year period over the process of secondment, [2] employee undergraduate students through work placement practicums by providing the chance to widen their knowledge and gain work experience, [3] employee the volunteers from local community to participate and support library's program and operations. Furthermore, the libraries as well faced the problem in lack in budget and manpower to support their activities. The public libraries take initiatives by support in reaching their users and cooperate with local cultural institution to develop an effort which as their role for local community. In this situation, where the public libraries retrieve support of voluntary contributions from the citizens and local actors to assist in various events that provided by public libraries. These volunteers are contributing in the activities of libraries' intellectual such as trainers, speakers, processors and even as assistants which beneath the guidance and supervision by librarians. To continue as functioning library, there are many donors as well in providing the financial support and materials and related equipment for libraries.

Education

There are many higher institutions that offers student through formal education and programme that train them in becoming IP. Carrasco and Vanderkast (1998) stated that, "professional information that does not acquire knowledge and skills through formal education will not be able to take part as information workers when there is request". Being IP will face too many challenges because they need to deal with variety of users' behaviours to provide users with reliable information as well as the advancement of technology today. Thus, in becoming IP, they need education and training related to IP job. This is due to future IP position seems to become more challenges where they will be required to have multiple or set of various skills (multi-skills).

There is a statutory body in Malaysia known as Malaysia Qualification Agency (MQA) where it was set up to accredit academic programs under Malaysian Qualification Act 2007. There are three processes for MQA quality assurance starting with programme accreditation, institutional audit, and self-accreditation. Information science programme standard also includes in this MQA focusing on the three key areas which is information retrieval, information management and information technology. Areas covered in the information science standard of Malaysian Higher Education such as in the fields of information management, library science, record management, archives science, management of museum and heritage information and knowledge management. There is continual quality improvement for Higher Education Provider (HEPs) to disclose and monitor various issues to meet the demands in the education sector continually and systematically. Besides, there are three circulars for this programme which are Circular No. 5/2013 (standard use of the programme which includes two areas which are psychology and information science), Circular Letter No. 2/2013 (cancellation of the programme) and Circular Letter No. 2/2016 (cancellation of the programme).

Gorman and Corbit (2002) stated that, the need to utilise better the skill set on facing the challenges was through the development and implementation of master's degree in information management. One of the important needs for the education is core

competences. The core competencies of information management program must be combined with two disciplines which are library information science and information system. They suggest the program to be included in the program of information management such as managing information and knowledge for clients' needs and services, mastering information, organization of knowledge and knowledge resources through information architecture, system and structure and technology application and utilisation.

However, Arms (2005) study stressed more on information science which he stated that, "individual who are well or highly educated in computer science and social sciences have career opportunities not just about career in libraries, publishing and information services but could beyond it because it offer more career opportunities for example knowledge manager, system analyst and many more). He stated that there are many leaders which have education as librarians have become leaders in computer science industry. This is because the computer science also seen as one of the fundamental parts for information science education. In achieving the balance between computer science and social sciences that contribute to information science, he also suggested the subject such as information systems, mathematic and statistics, human centred system, and society. Both two studies showed that, to be the IP they need various skills in managing the information, system, socialization and etc.

Latest concern with the changing needs of IP proposed by Chikonzo, Bothma, Kusekwa and Mushowani (2014), they conduct an assessment in Zimbabwe to identify the need for IP to change, determine IP curriculum perception by LIS, and based on the results inform the development of curriculum at Library School and determine what needs of IP to adapt with the changing needs and what are the strategies use for IP. They found that, there are categories such as the changing needs (means IP roles and responsibilities), causes for the changes (major driver such as new user expectations and needs, technological developments, library automation, and electronic publishing), training needs (essential training needs for all group categories: respondents year experience in their study such as web computing, ICTs and database management), curriculum perceptions and new course (for library and information science curriculum suggested by the respondents which course attribute such as changing global trends, digital environment and changing user expectation as well as computer science) and adaption to change (embracing new technologies, upgrading qualification and being flexible, experiential learning and lifelong learning).

In addition, the only UK's information profession that has independent voice is Chartered Institute of Library and Information Professionals (CILIP). Their establishment are to support, united and develop IP. CILIP not just open to anyone who works with data, information, knowledge, or libraries to become their members which has many benefits but also providing training to become high quality graduates to be placed in the organization. Thus, this could become additional education to have added value. In addition, another largest association of library in the world is known as American Library Association (ALA). One of the significant impacts ALA is education and lifelong learning. In Malaysia, Librarians Association of Malaysia or (PPM: Persatuan Pustakawan Malaysia) is the association that support the development of IP.

In line with standard by MQA, the higher institutions also need to review the curriculum program and emphasize the importance of accreditation to further emphasize. Mohd, Ahmad and Fuziah (2012) stated that, throughout LIS education development it was driven by governmental policies, societal needs, and technological changes. Related to this, the Faculty of Information Management in Universiti Teknologi MARA (UiTM) Puncak Perdana which has

been celebrating its 50th. anniversary (1968-2018) showing the maturity of this faculty in recruiting the IPs in Malaysia. As IP also, the information resources (Best, 2010), thus they need to growth by add value in their profession to confronting the future challenges as well as to get recognition from the society through the revision of the government policy. With education, it will provide our future IPS.

Job Satisfaction

The people who work in organization and people who are study about job satisfaction are extensive interest about this study. The organizational phenomena that can relate with job satisfaction such as leadership, motivation, attitude, conflict, moral etc. The researchers have identified what are the factors of job satisfaction, acknowledge the significant of each factor of job satisfaction and study the effects of these factors on employees' productivity.

According to Spector (1997), job satisfaction can be defined as the emotional reaction of everyone in their working environment where it emphasized about employees' feeling which based on their job and its different aspect. In other words, job satisfaction also as the various aspect of employee's work that bring emotional towards them. While Ellickson and Logsdon (2002) defines job satisfaction as the factor where employees are satisfied with their work.

Job satisfaction signifies a combination of positive or negative feelings of the employees have towards their work. Job satisfaction represents the extent to which expectations are and match the real awards. Job satisfaction is closely related to the behaviour of individual in the workplace (Davis et al.,1985). Job satisfaction is where the achievement and success that retrieve by the employees. It is also related to productivity as well as to personal well-being in work environment. Enjoy the task that have been given, doing it well and being rewarded for one's efforts is indicate to job satisfaction. Job satisfaction further implies enthusiasm and happiness with one's work. Job satisfaction is the key ingredient that leads to recognition, income, promotion, and the achievement of other goals that lead to a feeling of fulfilment (Kaliski, 2007).

Job satisfaction and dissatisfaction not only depends on the nature of the job, it also regarding to what are the task that have been given to the employees (Hussami, 2008). The factors of job satisfaction where lower convenience costs, higher organizational and social and intrinsic reward will increase the job satisfaction (Mulinge and Mullier, 1998; Willem et al., 2007). It is influenced by the factors like salary, working environment, autonomy, communication, and organizational commitment.

In previous study (Valentini and Kalliopi, 2015) investigated about work values that contribute to the IP job satisfaction. The results reveal that IP were satisfied. Thus, the IP derived satisfaction from intrinsic work values (focus on the process of work, and intangible rewards associated with level of interest, opportunities for acquiring new knowledge, and creativity). These results suggest that IP derive satisfaction from intrinsic work values, whereas social work values, prestige, and extrinsic work values may not contribute highly to job satisfaction. These author also have examined the different in job satisfaction between the IP employed in different types of information organizations where significant differences in job satisfaction between the four groups of IPs (public libraries, academic libraries, special libraries and archives) in relation to work values.

The findings show that, professionals in academic librarians were more satisfied with the nature of their job, supervision, level of autonomy, and working conditions than with salary and promotion. While professionals in special libraries were more satisfied with extrinsic work values than those. Then, professionals working in public libraries were more satisfied with

prestige work values and professionals in archives were less satisfied with social work values than their colleagues in public.

The above findings indicate that IP coming from several organization types get satisfaction from different work values. This may relate to the specific characteristics of each type of information organization. The different in job satisfaction between the IP with a different number of years of work experience where finding indicating that, job satisfaction was not related to years of experience. However, professionals with more than 20 years of experience were more satisfied from work values.

In conclusion, the result of study indicates that, intrinsic works values as the most sources of job satisfaction among the professionals and IPs retrieved different satisfaction which based on the values that depends on the type of organization that employees' work. Furthermore, this study also significant to those library managers in order to acknowledge and understand the sources that satisfied their employees' jobs and it also may improve the management practices in order to encourage the supportive environment in working situation.

The study by Vassilakaki and Papaconstantinou (2016), where this study investigates the perceptions of IP by public library' user. Specifically, it focuses on exploring users' perceptions regarding librarians' status, work duties and performed work. The finding shows that:

1) Librarian's Status

The status of different professions in society where librarians were rated fourth in the ranking and were placed higher than lawyers, computer engineers and accountants. The status of information professions also based on users' educational level which users with an elementary education rated the importance of librarian's profession as high.

2) Librarian' Duties

The perceptions of a librarian's tasks where majority of respondents rated 'serving the public' as a librarian task.

3) Performed work

The type of work performed by different professionals which users characterized librarian's work as intellectual work. The perception of the nature of the work performed by librarians where majority of the respondents agreed that the work of librarians is 'responsible' (Job characteristics). Other than that, the librarian's skills which users identified the specific skills that a librarian should possess is communication and the perceptions of librarians themselves where majority of the respondents agreed that librarians are 'willing to provide services.

This finding is particularly important for libraries because it will lead them to discover new and different ways to maintain and improve their image as a forward in looking service. In overall, IP are not viewed as negatively as previous studies suggested. It could be argued that more positive perceptions were recorded compared to previous studies. This research identified some implications. IP need to maintain the positive image that currently public library users obtain but also work on promoting further their service and user-oriented tasks and characteristics, as well as their leadership skills.

While the next study by Okpara, Squillace and Erondy (2005), examine the effects of gender on the job satisfaction of US academics. The result shows that:

Table 1: Effects of Gender on the Job Satisfaction

Factor	Men	Women
Pay Satisfaction	Male university teachers at all levels are more satisfied with their pay, promotion opportunities, and supervision.	Female university teachers are indeed less satisfied with their pay than their male counterparts and more satisfied with the work itself and co-workers.

There are several reasons on the gender wage gap. The first reason where senior faculty members and university administrators, who are predominately male, make recommendations for promotions and pay increases and may be biased against women. Second reason which female teachers are more than men tend to be concentrated in the lower academic ranks. The other reason could relate to the cultural, political, and social issues associated with the glass ceiling intended to keep women behind. For example, women have not been fully recognized by most institutional leaders as equal partners in management and delivery of instruction in higher institutions.

In the US, when differences in the levels of job satisfaction of university teachers are compared on the grounds of gender, women are still paid less and are less satisfied with major areas of their jobs. Female teachers hold negative perceptions about their pay, supervision, and promotion, thus producing a low level of overall job satisfaction, while their male counterparts hold favourable opinions about pay and promotion policies, supervision, and overall satisfaction.

The results of this study suggest that it is important to address the issue of gender and job satisfaction because of its relationship to other organizational variables such as absenteeism, turnover, and performance. Universities with overall salary levels that are externally competitive, good supervisors, excellent working environments, unbiased promotion policies, and excellent co-workers are more likely to have faculty members that are more satisfied with their jobs.

Roles in 21st. Century

The internet has been the substance for many subject areas and online platform. Burns (2016) stated that, IP such as archivists, IT developer and librarians are impacted in development and promotion of digital humanities content of research, teaching and learning in a modern academic. Roles of library and IP skills are to acquire, manage, preserve the content.

In proposed of IP their roles of to get the right information source which is suitable to focus on the skills, experiences, practices, and strategies necessary for acquisition and the development. The need of the profession roles is broadly if IP are focus on the unique contribution to manage the environment of information that has been changed by electronic networks. The major of roles is performed by IP in the content of the management organization self. The minor includes the provision of information. Roles of IP including aspect, crisis, and change.

Related to education, it is thoughtful that approach to prepare an ethical in an organization. Regarding the technology in terms of contribution that have reevaluate roles in develop the information and networks (Omekwu, 2006). Job satisfaction in field of organizational are enough regarding the factors influence task performance in job satisfaction (Won et al., 2017). That indicate between level and job satisfaction as well as task performance that understand the role performance of job satisfaction.

There is an impact in information failure and roles of IP that can make an important of the contribution to recover and sets out the roles of profession. However, it can be concluded that if less of IPs in proactive role in making good economy or information management, the risk of recurrent economy and information management crisis will be increase.

IP can be in different organizational of environment including financial institution, corporate libraries also media. Al-Suqri et al, (2010), stated that the role of information in the economy or organizational are important either the information profession is effective to fulfil the role. This might make it more contribution to future and the stability and the growth. Instead of IP are often among the first to aware of new information and responsibilities to actively disseminates in any organizations which are user friendly and easy.

Information management professionals in the services sector also required to give the central roles to ensure that the information was maintained by organizations and available to meet the requirements. More legislation imposed in the future of sector as expected (Montana, 2018). Moreover, Hawkins. (2009), stated that IP must adapt to emerge the communication such as in blogs, online social networking, and other online media. However, the profession takes the responsibilities to ensure the information has no failure regarding the misleading of information and the causes of economy or information management crisis.

Discussion

After extensive discussion and deep study on information profession, authors keen to give summarization based on the literature reviews that have been cited. Based on the review, IP are facing with technological challenges that have led to the rapidly changing information from paper to digital, from small volume to big, and from slow creation to fast. However, finding shows that technology was not changing the information profession instead of offering the shifting values, especially in librarianship. The IP need to get suits with technology development. In addition, emergence of Industry 4.0 Revolution, where creation, use, and management of infinite volumes of data are the focus, IP need to cope with the features of data management technologies proactively. Consider this situation, it is suggested that IP need to have continuous training and learning to enhance the technology literacy to reduce the gap in digital divide.

Social aspect is important as the basic field of IP's which generally about social science. By that, focal issue here is to enhance the society's trust towards information institutions. Therefore, to solve that issue, IP's need to be comply with higher standard of education, with addition at least a compact basic knowledge on the user's scope of study. Study also reveal that, proficiency in various languages especially when serving in multilingual country is very crucial and will be an added value to IP's. In the user aspect, IP's need to give attention to five personas presented by the users which at the same time showed users attitudes, perceived barriers, and motivation to social learning. It is Coworking Chris, I-wanna-share-it Garrett, Learning-freak Fred, What-can-I-do-here Sophia, and Doesn't-care Claire. By this argument, we can see two perspectives need to be emphasized which IP's itself need to more prepared and focus on user perspective to face 21st. century environment.

From the economic views, IP can increase it focus into professional contributions related to their job description. Taking Greece as example, IP's can take initiative to economic crisis in library management, by improving the personnel in the confluence of a weak economic for one-year period over the process of secondment, employee undergraduate students through

work placement practicums. Providing the chance to widen their knowledge and gain work experience. Employee and volunteers from local community can participate and support library's program and operations.

In educational perspective, it shows that the core competencies of information management program need to be integrate from two disciplines which are library information science and information system. This situation is closely related to the rapid technological change as stated in the previous debate. Then, in educational institution such as the faculty, it should provide suitable subject such as managing information and knowledge for clients' needs and services, mastering information, organization of knowledge and knowledge resources through information architecture, system and structure and technology application and utilization, subject of information systems, mathematic and statistics, human centered system and society. In addition, this responsibility is not only in formal educational body, informal body such as CILIP, ALA and PPM may offer current trend of education for lifelong learning for IP.

Job satisfaction also has been discuss because it is closely related to the behaviour of IP in the workplace. Study found that most IP were satisfied with their job in aspect of intrinsic work values. Intrinsic work values are regarding process of work, and intangible rewards associated with level of interest, opportunities for acquiring new knowledge, and creativity. At the same time, IP who are coming from several organization types get satisfaction from different work values. This is undeniable because even in the same umbrella, the operation of an information organization differs. Archives, libraries, and private companies, they all have different connections with job satisfaction. On the other hand, IP is not viewed as negatively as previous studies suggested. IP need to maintain the positive image to serve the society.

Regarding the roles of IP, the core roles of IP is to acquire, manage, preserve information in organization. Study found that a lot of roles can be played by IP in the 21st. century environment. It is also related to the changes of technology. In this era, IP should get the right information source which is suitable to the need and actively disseminates within organizations by friendly and easy manner. This will be significant to the existing of IP in organization when many people still face problem to survive in managing and retrieving information. The existing of IP in organization can be a central role to ensure information are maintained by organizations and available to meet the requirements. With this current environment, the IPs must adapt with the emergence of communication medium such as blogs, online social networking, and other online media. The most crucial roles are to prevent information misleading, cause by economy or information management crisis.

Conclusion

The discussions on IPs in the 21st. century emphasized several points of view. While there are various perspectives that can be presented, this article emphasizes the discussion on six things: technology, social, economy, education, job satisfaction and role. All of this has been summarized in the above discussion based on past studies and expert opinions. Therefore, based on previous study, the challenges will continue to exist, but how IPs will react, when information is very important to humans. Hence, IP need to face this challenge, or they will be extinct like other professions due to slow in adapting to the need of the current market trends.

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2. Advanced Analytics Engineering Center (AAEC), UiTM Malaysia

References

- Arms, W. Y. (2005). Information science as a liberal art. *Interlending & Document Supply*, 33(2), 81-84. <https://doi.org/10.1108/02641610510700188>
- Ashcroft, L., & Watts, C. (2005). ICT skills for IPs in developing countries: Perspectives from a study of the electronic information environment in Nigeria. *IFLA Journal*, 31(1), 6–12. <https://doi.org/10.1177/0340035205052651>
- Best, D. P. (2010). The future of information management. *Records Management Journal*, 20(1), 61-71. <https://doi.org/10.1108/09565691011039834>
- Bilandzic, M., & Foth, M. (2013). Libraries as coworking spaces: understanding user motivations and perceived barriers to social learning. *Library Hi Tech*, 31(2), 254-273. doi:10.1108/07378831311329040
- Burns, J. A. (2016). Role of the IPs in the development and promotion of digital humanities content for research, teaching, and learning in the modern academic library: An Irish case study. *New Review of Academic Librarianship*, 22(2-3), 238-248. <https://www.tandfonline.com/doi/full/10.1080/13614533.2016.1191520>
- Carrasco, L. O., & Vanderkast, E. S. (1998). The IPs in a networked society. *Aslib Proceedings*, 50(5), 95-99. <https://doi.org/10.1108/eb051490>
- Chikonzo, A., Bothma, T., Kusekwa, L., & Mushowani, A. (2014). An assessment of the changing needs of IPs in Zimbabwe. *African Journal of Library, Archives, and Information Science*, 24(1), 107-118.
- Darnley, R., Diplacido, M., Kerns, M., & Kim, A. (2018). *Industry 4.0: Digitization in Danish industry*. Retrieved from https://web.wpi.edu/Pubs/E-project/Available/E-project-043018-094010/unrestricted/Industry4InDenmark_FinalPaper.pdf
- Davis, K., & Nestrom, J.W. (1985). *Human Behavior at work: Organizational behaviour* (7th ed.). New York: McGraw Hill, 109.
- Ellickson, M. C., & Logsdon, K. (2002). Determinants of job satisfaction of municipal government employees [Electronic version]. *Public Personnel Management*, 31(3), 343-358.
- Gorman, G. E., & Corbitt, B.J. (2002). Core competencies in information management Education. *New Library World*, 103(11/12), 436-445. <https://doi.org/10.1108/03074800210452969>
- Guarria, C. I., & Wang, Z. (2011). The economic crisis and its effect on libraries. *New Library World*, 112(5/6), 199-214. doi:10.1108/03074801111136248
- Hawkins, D. T. (2009). SSP's annual meeting: advancing scholarly communities in the brave 'now' world. *Information Today*, 26 (7), 24-25.
- Kaliski, B.S. (2007). *Encyclopaedia of Business and Finance* (2nd. ed.). Detroit: Thompson Gale, 446.
- Luyt, B. (2012). The social role of the Raffles Library, Singapore, in the inter-war years. *Journal of Documentation*, 68(1), 134-143. doi:10.1108/00220411211200365
- Mahmoud AL-Hussami, (2008). A Study of nurses' job satisfaction: The relationship to organizational commitment, perceived organizational support, transactional

- leadership, transformational leadership, and level of education. *European Journal of Scientific Research*, 22(2), 286-295.
- Mishra, A. S. (2015). IPss and Big Data. *International Journal of Advanced Research in Computer Science and Software Engineering*, 5(9), 123–129.
- Montana, J. (2008). Records & information management in the post-bailout world. *Information Management Journal*, 42(6), 26-29.
- Mouza, A. M., & Taousanis, A. (2018). The economic crisis and public libraries in Greece: investigating the threats and challenges via job description. *Library Management*, 39(3/4), 216-232. doi:10.1108/lm-08-2017-0077
- Mulinge, M., & Muller, C.W. (1998). Employee job satisfaction in developing countries: The case of Kenya. *World Development*, 26(12), 2181-2199.
- Omekwu, C. O. (2006). Managing information and technology: Critical roles for librarians in developing countries. *The electronic library*, 24(6), 847-863. <https://doi.org/10.1108/02640470610714260>
- P21. (n.d.). Framework for 21st. Century Learning - P21. Retrieved from <http://www.p21.org/our-work/p21-framework>
- Papaconstantinou, V. M., & Triantafyllou, K. (2015). Job satisfaction and work values: Investigating sources of job satisfaction with respect to IPs. *Library & Information Science Research*, 37(164-170). doi.org/10.1016/j.lisr.2015.02.006
- Sierpe, E. (2004). Managing the information revolution: Library management, the control of prescriptive technologies, and the future of librarianship. *Library Management*, 25(177–182). <https://doi.org/10.1108/01435120410546059>
- Spector, P. E. (1997). *Job satisfaction: Application, assessment, cause, and consequences*. CA: Sage.
- Vassilakaki, E., & Moniarou-Papaconstantinou, V. (2015). A systematic literature reviews informing library and IPs' emerging roles. *New Library World*, 116. <https://doi.org/10.1108/NLW-05-2014-0060>
- Won, H. K., Young-An, R., Jong, G. P., Bora, K. (2017). Role of burnout on job level, job satisfaction and task performance. *Leadership & Organization Development Journal*, 38(5), 630-645. <https://doi.org/10.1108/LODJ-11-2015-0249>.
- Zhou, K., Zhou, L., & Liu, T. (2015). Industry 4.0: Towards future industrial opportunities and challenges: FSKD 2015: 15-17 August, Zhangjiajie, China. *12th International Conference on Fuzzy Systems and Knowledge Discovery*, 0–5. <https://doi.org/10.1109/FSKD.2015.7382284>