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Changing paradigms: Library and Information Science (LIS) education and training in Zimbabwe[1]

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ABSTRACT

The purpose of the study is to assess paradigm shifts in society and their implications for Library and Information Science (LIS) education and training systems in Zimbabwe. The study was informed by the postpositivist paradigm which allows for methodological pluralism. Qualitative and quantitative methodologies were used to inform both the research design and data collection processes. The qualitative methodology was dominant, complemented by the quantitative. The strategy of inquiry combined case study with survey research designs. Respondents in the five study cases were surveyed using questionnaires and in-depth interviews. Documentary review was used to collect data on LIS curricula in Zimbabwe. The findings of the study show that the dictum of success of the industrial era is no longer valid in the era of knowledge. The shift of focus from capital to knowledge has created different educational needs that require different educational systems. The study also found that although LIS scholars bemoan the perceived decline of LIS education and argue for improvements, only superficial changes have thus far been observed. This lack of positive development has been attributed to conservatism, inertia and the favouring of vested interests. The study provides policy makers with evidence-based research critical for analysis, advocacy, forecasting and strategic planning of an effective transformation of LIS education and training in Zimbabwe. Further research needs to be done concerning the reasons why LIS faculty staff members resist making revolutionary changes.

Keywords: paradigm shift, Library and Information Science, education, change, competencies.

1. INTRODUCTION AND BACKGROUND

The transition from the industrial age to the knowledge economy, coupled with advanced technological development and globalisation have revolutionised economies and labour markets, creating perpetual demands for a combination of new skills and mindsets. This has led to a severe mismatch between university offerings and industry needs and demands (Hensley, 2015). This disjuncture between supply and demand has prompted industry to question the validity of the traditional mode of learning in Higher Education (HE) and specifically their curricula offerings (Hensley, 2015; Wisbauer, 2017; Katuli-Munyoro & Mutula, 2018). Wisbauer (2017) asserts that the validity of the traditional mode of learning in HE (lecturing, cramming, and examination) has for some time been questioned. Critics such as Evans-Greenwood,

O'Leary and Williams (2015), Barber (2017), Tangient (2017) and Wisbauer (2017) argue that this mode of education will someday be cast aside, for disruptive changes are coming. Yet educators in many parts of the world cling to tradition and demonstrate imperviousness to adapting to change (Wisbauer, 2017).

The changes in HE have led library education programmes globally to diversify their offerings from the library focus towards information, and many programmes have expanded their curricula, introduced a range of courses in information technologies and related fields, and modified their names by adding 'information' in the title or dropping the word 'library' altogether (Matusiak, Stanburry & Barczyk, 2014). The transformation suggests a trend towards the realignment of Library and Information Science (LIS) education programmes offerings to contemporary worldviews and societal conditions. The shifts in LIS education programmes globally, confirm assertions in literature that socio-economic and technological imperatives are rigidly linked to educational needs so that paradigm shifts in the economic means of production cannot be sustained over a long period without a suitably aligned education system (Katuli-Munyoro & Mutula, 2018).

Kuhn (1996: 10) defines paradigms as 'universally recognized scientific achievements that, for a time, provide model problems and solutions for a community of researchers'. Barker (1992: 32) sees a paradigm as 'a set of rules and regulations (either written or unwritten) that does two things: 1) it establishes or defines boundaries and, 2) it tells one how to behave inside the boundaries in order to be successful'. A paradigm shift is described as

> a reconstruction of the field from new fundamentals, a reconstruction that changes some of the field's most elementary theoretical generalisations as well as many of its paradigm methods and applications […]. When the transition is complete, the profession will have changed its view of the field, its methods, and its goals (Kuhn, 1970: 84-85).

However, the views on paradigms and paradigm shifts in LIS differ. Braude (1997), for example, suggests that the changes in the LIS field are not paradigm shifts but merely changes in the environment in which professional tasks are carried out, and in the tools used to accomplish these tasks. Gatten (1991) is of the opinion that LIS is a non-paradigmatic discipline, arguing that the discipline does, as yet, not possess a truly scientific tradition. Dick (1995) perceives LIS as a multiple or a dual, paradigmatic science while Matusiak, Stansbury and Barczyk (2014) consider it to be a hybrid field, some aspects of which are scientific in the Kuhnian sense ('normal science') and susceptible to paradigm shifts whereas others are not susceptible to paradigm shifts *per se*.

The education paradigm that controls and informs HE today was conceived, designed and structured to fulfill the specific intellectual, technological and socio-economic requirements of the industrial age. The industrial age needed labourers (skilled and unskilled), who could perform different mundane tasks on the factory assembly line or, generally, deal with managing the factories. It was essential that the industrial age workforce had mastered the knowledge and skills requisite for fulfilling a specific role in the factory – for example on the assembly line – while the workers usually had limited understanding of the overall production process (Tangient, 2017). An education system cast in the mold of the factory assembly line requirements was developed and became institutionalised in society. Education was concentrated in the early years of an individual's life, before a career properly began. Knowledge was fragmented into a series of discrete segments called subjects which were then departmentalised in a factory assembly line approach (Tangient, 2017).

Topics, skills, attitudes and values were arranged into prescribed standard curricula. It implied a 'one size fits all' teaching and learning approach whereby stocks of knowledge were transferred from educator to

student using lectures as the primary means (Evans-Greenwood, O'Leary & Williams, 2015). The teacher was the custodian of information. Students were expected to work within the ideological confines of the received knowledge. Standardised tests were used to determine whether the knowledge transfer process was successful and a student's proficiency was judged by his or her ability to recall lessons and pass tests (Bertolini, 2011). The education system thus emphasised memorising or 'banking'. Paulo Freire coined the concept of 'banking', meaning 'depositing' information in students for later use (Freire, n.d.: 242).

The factories, however, needed the assurance that individuals did indeed have the knowledge and skills they claimed to have. Thus, formal credentials became the norm and were used as a golden standard against which candidate employees were measured (Evans-Greenwood et al. 2015; Bertolini, 2011). Formal qualifications became the emblems of knowledge in society and a guarantee for getting a job for life. The amount of schooling received became a measure of one's success in terms of income, position held at work, well-being and social class (Evans-Greenwood et al., 2015). It took years and an extraordinary amount of investment, political will and advocacy for this educational approach to become indoctrinated and institutionalised in society (Bertolini, 2011). For more than two centuries, this education paradigm has served society very well (Duffy, 2010) until, in the 21st century, it succumbed to increasing doubts, criticism and anomalies (Barber, Donnelly & Rizvi, 2013).

In the 21st century, the burgeoning of an economy based on knowledge requires 'what they call "smart creatives" - smart and capable generalists who demonstrate the attitudes and behaviors that will enable them to be effective learners and team players, with formal credentials (should the candidate hold them) playing only a minor role' (Evans-Greenwood et al., 2015: 6). This trend is evident in contemporary society as was demonstrated by Ernst and Young, Penguin Random House Publishers, when they scrapped an academic degree as an entry point requirement, reasoning that there is 'no evidence correlating success at university with success in work environments' (Sherriff, 2017: 1). In today's knowledge economy, lifelong learning (LL) has become the norm as a way of keeping up to date in one's field (Tangient, 2017).

In Zimbabwe, Goodsett and Koziura (2016) reported that graduates being produced in HE were inadequately prepared for contemporary labour requirements. Burnett's (2013) study assessing the changing needs of information professionals in Zimbabwe substantiated the assertions in literature that LIS graduates were not adequately prepared to fulfill their roles and responsibilities as expected. Another study by Munyoro (2014) found that LIS employers were dissatisfied with the products of Zimbabwe's LIS education systems.

The present paper focuses on paradigm shifts in society and the challenges they pose to the survival, and the very existence, of the LIS profession and its academic discipline in Zimbabwe. The paper aims to raise awareness of, stimulate debate about, and advocate for, deep-seated transformations in LIS education and training. The central argument of this study is that LIS educators and policy makers need to realise that the world is in the midst of a historical development. Where the world socio-economic imperatives are evolving from focusing on capital as in the industrial era to 'knowledge' as a critical resource for socio-economic development. As a result, the requirements for success are substantially different from those that typified the industrial age. LIS graduates need and deserve an education that prepares them for success in today's global, highly interconnected and continuously changing environments.

2. PROBLEM STATEMENT

Literature concerned with the LIS profession and its academic discipline indicates that internal as well as external influences are inspiring important innovations that may lead to major transformations (Moran & Marchionini, 2012; Raju, 2013; Munyoro, 2014). In the meantime, many LIS practitioners have realised their inadequacies and are adapting to the needs of the contemporary information environment. LIS

academics however, by their nature, remain reluctant to proactively initiate changes in the curricula that may leapfrog the academic discipline ahead in order to meet the requirements of the contemporary information environment (Van House & Sutton, 1996). As a result, industry and the LIS academic discipline currently seem to operate in different paradigmatic contexts. This has led to a major disjunction between supply and demand and a chronic dissatisfaction with LIS education products (Munyoro, 2014).

The situation has motivated the present researcher to assess the changes taking place in the LIS profession and its academic discipline. Similar criticisms of other academic fields are hotly debated in scholarly discourse and literature but in relation to LIS education and training, the problem remains under researched in the Zimbabwean context. The present research aims to address this gap. The purpose of the study is to assess LIS education and training in Zimbabwe in the context of the paradigm shift in society and to determine if, and to what degree, indicators of change, mostly at the global level, are reflected in LIS education in Zimbabwe. Continued dissatisfaction with the products of Zimbabwe's LIS education systems poses a major problem. If the problem is not addressed, LIS education will continue to stray from its principal mission of supplying qualified professionals for industry and society.

3. Objectives of the study
The present study was guided by the following research objectives:

1. To determine the changes effected in the LIS profession and its academic discipline
2. To assess awareness and attitudes of LIS faculty staff regarding the changes.

4. Definition of concepts

Diffusion	Diffusion is 'the process by which an innovation is communicated through certain channels; over time, among the members of a social system' (Rogers & Scott, 1997: 4).
Innovation	Innovation is any 'new idea, practice, or object considered new to individual or other units of adoption' (Rogers, 2003: 11).
Paradigm	'Universally recognised scientific achievements that, for a time, provide model problems and solutions for a community of researchers' (Kuhn, 1996: 10).
A paradigm shift	'A reconstruction of the field from new fundamentals, a reconstruction that changes some of the field's most elementary theoretical generalisations as well as many of its paradigm methods and applications […]. When the transition is complete, the profession will have changed its view of the field, its methods, and its goals' (Kuhn 1970: 84-85).

5. THEORETICAL FRAMEWORK
The study is informed by the Diffusion of Innovation (DOI) theory by Rogers (1995). The DOI theory centres on the conditions which stimulate or inhibit the likelihood of the dispersal of new ideas, products, or practices within a given social system (Rogers, 1995). The theory suggests that an innovation is 'a new idea, practice, or object considered new to an individual or other unit of adoption' (Rogers, 1995: 11). An individual's perception of the newness of an innovation influences its rate of adoption more than the actual time it has been around (Rogers, 1995). New innovations diffuse within a social system through communication channels. The innovation is either adopted or rejected, based on its attributes (relative advantage, complexity, compatibility, observability, and trialability) and on its consequences (positive or negative outcomes). The adoption of innovations within a social system is a change process which alters the status quo of the social system and is therefore, likely to be received enthusiastically or resisted.

6. REVIEW OF LITERATURE

In this section, relevant literature on paradigm shifts in society and the resulting disjunction between skills supplied and skills needed in the labour environment is discussed. The purpose of the review is to position the study in relation to the existing body of knowledge, to evaluate what has been done on the subject and to identify the research gaps that provide the rationale for the study. Literature is reviewed on the basis of two themes derived from the study's objectives, namely changes in the LIS profession and its academic discipline and the awareness and attitudes of faculty staff/practitioners regarding the above-mentioned shifts.

6.1 Changes in the LIS profession and its academic discipline

The advanced developments in ICTs have moved the communication culture, business operations, modes of information production and dissemination radically into cyberspace. The embrace of cyberspace has compelled the LIS profession to revise its service philosophies which, in turn, have revolutionised its service models, practice, standards, professional tasks and routines and, logically, also the competencies required. As a result, LIS professionals have become 'system designers, knowledge managers, web designers and administrators, educators, problem solvers, navigators and publishers' (Verma 2015: 102, Kennan, 2016) or, in the words of Ugwuanyi and Ezema (2010: 3), 'technology officers, project managers, data administrators, data curators, data modelers, data architects, web librarians, digital librarians, cyber librarians, information scientists and knowledge analysts'. In the resulting hyperactive and ubiquitous work environments, LIS professionals are called 'upon to explore, develop, and implement new models, new skills and attitudes, new metrics, new ways of looking at old problems, and new approaches for new problems' (Mathews, 2014: 22). This has generated anomalies that cannot be solved within the existing paradigm of LIS education and training.

In LIS, labour environments hiring practices have shifted '[…] from trying to find the most highly credentialled specialists possible, [… in pursuit of] smart and capable generalists who demonstrate the [right] attitudes and behaviors that will enable them to be effective learners and team players […]' (Evans-Greenwood et al., 2015: 6). The attitudes and behaviours that are valued in contemporary work environments fall outside the boundaries of 'what a university education all-too-often provides' (Barber, Donnelly & Rizvi, 2013: 12). This new reality has brought with it a major disconnection between LIS academic offerings and the requirements in labour environments. The result is a chronic mismatch between education and labour market demands. Hence, the perception that LIS graduates are inadequately prepared.

In response to the growing dissatisfaction, the LIS education and training departments have changed the names of their various programmes replacing the word 'library' with a plethora of phrases perceived as more effective such as information science/studies/management/communication/systems and knowledge management. The name changes were used as a strategy to 'embrace diversification and clustering into larger organizational grouping' (Raju, 2013: 254) to attract students and raise the status of LIS education programmes (Nnadozie, Igwe & Nwosu, 2017). Multi/trans-disciplinary and ICT-related modules and subjects were introduced (Moran & Marchionini, 2012; Siddiqui & Walia, 2013; Hensley, 2015). The aim was to prevent curriculum drift, improve quality and introduce ICTs in the curricula, aligning these with perceived environmental demands while simultaneously diversifying academic offerings. Other schools introduced minor degree programmes, work integrated learning projects, job shadowing and internships (Lowden, Hall, Elliot & Lewin, 2011). Educators, such as White (1995: 44), claim that the changes are cosmetic in nature, meant to 'impress higher-level administrators with the appearance of newly found academic rigor'. White argues that the hastily 'patched together' curricula and programmes are a disservice to LIS students as the changes are superficial and the basic premises (assessment, teaching and learning methods) are still intact. Sharma (2008) concedes that it takes time and strategic planning to develop a curriculum that is properly balanced between theoretical and practical education and that fulfils contemporary demands.

6.2 Awareness of, and attitudes towards changes in the LIS field

Awareness implies acknowledgement of what is going on, in this case, knowledge of innovations in the LIS field. Kuhn (1970: 67) asserts that 'awareness is prerequisite to all acceptable changes of theory'. According to Kuhn, 'awareness begins in the mind of the person. What we perceive, whether normal or metanormal, conscious or unconscious, is subject to the limitations and distortions produced by our inherited and socially conditional nature' (1970: 67). LIS practitioners, faculty staff, students and policy makers are aware of the changes taking place in the field. This awareness is affirmed by the existence of a considerable body of literature on what is going on in the LIS field (see, for example, Mathews, 2014; Raju, 2013; Siddiqui & Walia, 2013).

It has been recognised that LIS education systems are based on different perceptions of change (Hensley, 2015; Raju 2017). Some role players in the LIS academic discipline have enthusiastically embraced change, whereas others have responded more cautiously, preferring to scrutinise and test proposed changes before accepting them, and others have seen change as a threat to their established values and understanding. Nemser and Whitener (2018) consider proposed changes as an impoverishment of the LIS field and its academic discipline and protest that the innovations are marginalising the traditional tenets of the profession. Hensley (2015) and Nnadozie, Igwe and Nwosu (2017) on the other hand, are optimistic and suggest that recent innovations heighten the status of the profession and have brought renewed prestige and esteem while mitigating existing negative perceptions of LIS education and training.

6.3 Quality assurance in LIS education

Internationalisation and massification of higher education have resulted in 'a growing demand for accountability and transparency . . . [which has] in turn led to a need to develop a quality culture' (Smidt, 2015: 626). Many countries have developed accreditation systems, while others have established evaluation committees or centres that carry out cycles of external review. Independent bodies have been established, often a single national agency but sometimes, separate agencies or bodies have been established to monitor quality in different types of institutions or regions (Smidt, 2015). Such variation in approach reflects political and cultural preferences within each country.

In Zimbabwe for instance, the Zimbabwe Council for Higher Education (ZIMCHE) is an overall controlling body for higher education institutions that is concerned with the quality of both Technical, Vocational Education and Training (TVET) and university education (ZIMCHE, 2016). ZIMCHE came into being in 2006 through an Act of Parliament (Chapter 25: 27). The Act empowers the Council to promote coordinate, register and authorise education and training programmes. Its major role is to control and maintain standards (standards of teaching, examination and faculty qualifications) and to enforce government policies and regulations (ZIMCHE, 2016). However, ZIMCHE is limited in terms of capacity and resources to effectively monitor and enforce quality standards in HE in Zimbabwe in a systematic manner (Madzimure, 2016).

7. METHODOLOGY

The study has adopted a postpositivist perspective and combined qualitative and quantitative methodologies whereby the qualitative methodology was dominant. The study has integrated case study and survey research methods within a single research design (Creswell, 2014). Respondents in the case study were surveyed using self-administered questionnaires and in-depth interviews. The population covered by the study comprises all LIS faculty staff, Deans/Head of Departments (HODS), final year students of the five institutions offering LIS education in Zimbabwe, and LIS employers. Statistics from the five institutions concerned enumerate a population of 47 LIS faculty staff, five Deans/HODs and 150 final year students. Groves and Couper (2018) recommend the study of whole entities in small populations in order to

eliminate sampling errors, achieve high precision and provide data for all respondents. Therefore, all the five Deans/HODs and 47 faculty staff were interviewed and surveyed respectively. Out of the 150 LIS final year students, a sample of 108 students was drawn with a 5% margin of error and a confidence level of 95% (Groves & Couper, 2018). A simple random sampling technique was employed to obtain a representative sample population of students. LIS employers were purposively selected as their numbers could not be easily determined (Benoot, Hannes & Bilsen, 2016). The total population and drawn sample population are summarised in Table 1.

Table 1:
Total population and drawn sample population of the study

Institutions	Deans and HODs	Faculty	LIS final year students	LIS employers
National University of Science and Technology (NUST)	1	15	66	
Zimbabwe Open University (ZOU)	1	10	-	
Harare Polytechnic College	1	10	48	
Bulawayo Polytechnic College	1	08	24	
Joshua Nqabuko Nkomo Polytechnic College	1	04	12	
Major LIS employers (ZimLA)				17
Total Population	**5**	**47**	**150**	**17**
Drawn sample population	**5**	**47**	**108**	**17**

A total of 22 respondents (five Deans/HODS and 17 LIS employers) were interviewed, using in-depth face-to-face interviews. Open-ended questions were utilised to enable the respondents to respond in their own words (Creswell, 2014). One hundred and fifty-five respondents (47 LIS faculty staff and 108 LIS final year students) were surveyed using survey questionnaires. Survey questionnaires enabled the researcher to collect anonymous and confidential data from a large and geographically dispersed population and to gather responses in a standardised manner (Creswell, 2014).

LIS curricula documents from NUST, ZOU and polytechnic colleges (polytechnic colleges use a standardised national curriculum) were reviewed. Permission was sought to secure access to, and release of, the documents from the relevant institutions (Centers for Disease Control and Prevention (CDC), 2009). The document review method enabled the researcher to collect data free from respondents' reactivity effects (CDC, 2009). This data collection technique also enabled the researcher to gather behind-the-scene data that could not be obtained through interviews and questionnaires (CDC, 2009). Data were collected for a period of five months (April to August 2014). SPSS 20 and NVivo 10 were used to compute and analyse the data.

8. Findings, analysis and discussions

This section presents, analyses and positions the research findings in the existing body of literature. Out of the 155 survey questionnaires distributed a response rate of 66.4% was achieved. A 100% response rate was achieved for the in-depth interviews. All three LIS curricula documents were reviewed.

LIS HODs/Deans and faculty staff were asked to answer the question: What are the goals of LIS education and training programmes in Zimbabwe? The resulting research data underline the preparation of aspirant

LIS professionals, research and accreditation as the primary goals of LIS education in Zimbabwe. This was summarised by one respondent stating that:

> Our core function is to transfer the existing body of professional knowledge, skills and competencies to those joining the profession through teaching, learning, research and endorsing that the professional body of knowledge has been successfully transferred by awarding formal qualifications.

The findings, therefore, underlined teaching and learning, research and accreditation as the goals of LIS education in Zimbabwe. Barber, Donnelly and Rizvi (2013) also identify teaching and learning, research and accreditation as the core functions of HE. The emphasis on the transfer of standardised professional knowledge and accreditation signifies that LIS education is still informed by a deep-rooted education paradigm conceived to satisfy the requirements of the industrial era. The findings confirm Duffy's (2010) assertion that an education paradigm cast in the mold of the industrial age still controls the design, performance and outcomes of education systems today. The findings reflect the inability of LIS education systems in Zimbabwe to meet their own goals and demands based on the current design. Gardner (2017) advises education systems to free themselves from the constraints of the obsolescent industrial education paradigm and to reconfigure an education system fit for the emerging knowledge economy. This perspective is in line with Greer, Grover and Fowler (2013: 41) who assert that, 'when paradigms in society shift, comparable shifts are needed in the professions and academic disciplines that serve society'. The findings demonstrate the failure of LIS education to realign in accordance with the perceived demands of changing environments.

On the basis of the question, 'What competencies are encapsulated in the LIS curricula?' LIS curricular documents in Zimbabwe were scrutinised. The data show that LIS curricula were designed to impart traditional core knowledge and skills of the profession with marginal incremental changes allowed to avert curricula drift and meet perceived environmental demands. This flaw was demonstrated by the dominance of traditional core knowledge and competences, primacy of the lecture method and over-reliance on the results of standardised tests in the curricula. The course outlines reviewed indicate the lecture method as the preferred delivery method and standard testing as the assessment method. This substantiates OECD (Organization for Economic Co-operation and Development) (2016) assertions that the educational system of the industrial era continues to determine the design, performance and outcomes of education systems today.

The centrality of traditional LIS core competencies and skills in the curricula signifies that LIS education systems in Zimbabwe have not deviated much from the profession's traditional core value of information provision. Myburgh (2016) confirms that librarians still see information provision as a main task. This trend is considered laudable by Evans-Greenwood et al. (2015: 6) who note that, in the present knowledge era when professional knowledge stocks may be giving way to knowledge flows, aspirant professionals still need to know enough to 'be conversant with, and productive in, their chosen fields'. The findings indicate that LIS graduates are indeed knowledgeable and conversant with the traditional core tenets of the profession.

A close look at courses, modules or subjects, such as Information Communication Technologies (ICTs), information systems, business management, project management, knowledge management, entrepreneurship, indigenous knowledge systems, practicum, law, ethics and marketing, shows marginal integration. This was typified in the course outlines reviewed which reveal the lack of a standardised approach to what is taught and how it is taught. Further, the lecture method and standard tests were emphasised even in applied ICTs modules. The finding confirms Haydn's (2009) view that what is taught and how it is taught, is left to the individual lecturer's discretion in terms of competencies, preferred subject

pedagogy, teaching methods, available resources and time. Duffy (2010) considers this type of change as a tweaking strategy, focused on modifying the surface without overhauling the deeper assumptions ingrained in the curriculum. This point of view is shared by Barber, Donnelly and Rizvi (2013: 78) who consider incremental change as no option in today's volatile environment but as a 'classic error of strategy to calculate the risk of action [but that fails] to calculate the (often greater) risks of doing nothing'. The finding indicates the need for profound changes in LIS education going beyond superficial reforms, so that any outdated assumptions in today's educational systems may be rooted out.

The diversity of the competencies on offer in contemporary LIS curricula suggests a commendable attempt to break away from the primary bastion of the industrial education mode, namely its devotion to the transfer of tightly held standard professional knowledge and skills. The research findings corroborate the observation of Balistreri, Giacomo, Noisette and Ptak (2012-14) that the skills needed to survive and thrive in this knowledge age have transitioned. However, a closer analysis of the data shows a delayed pace of change in LIS curricula compared to the changes taking place in the wider society and industry. The findings suggest the presence of a strong inertial tendency and vested interests controlling the pace and type of change in Zimbabwe's LIS academic discipline.

The diversity and increase of core competencies suggest that LIS education finds itself in a period of observable, but discontinuous change that involves a fundamental transformation of its education strategies, power, structure and systems so that a new basis for alignment to the needs of contemporary society may be created. Such a period is characterised by Gersick (1991: 20) as a 'punctuated equilibrium', when a system's deep structure comes apart, leaving it in disarray until the period ends. The period has been recognised as a time of learning and trial. New ideas, practices and technologies are tested and what seems to work best is preserved until a new equilibrium is attained. Barber, Donnelly and Rizvi (2013) substantiate this research finding, stating that no one is yet sure of the contents of the new paradigm. They advise that those involved in education systems look for early signs of the newly emerging paradigm in both present and past and to use these proactively to outline the likely shape of the new paradigm and its requirements.

The study also sought to address the question, 'what LIS skills are needed by the information industry?' LIS final year students, when asked to comment on the statement that LIS graduates are not well suited to or prepared for the job market, were by and large in agreement. The majority (78%) consider themselves not well prepared for the job market. The findings are presented in Table 2.

Table 2:
Preparedness of LIS graduates for work environments (N=72)

	Frequency	Percent
Sufficiently prepared	16	22
Insufficiently prepared	56	78

Table 2 shows that the majority (78%) of LIS final year students consider themselves inadequately prepared for the work environment, while 22% consider themselves adequately prepared. One student noted:

The curriculum used does not speak to the reality on the ground.

The finding suggests that LIS graduates are not confident that what they have learned will enable them to succeed in the 21st century work environments. They consider LIS curricula outdated. Mugwisi and Hikwa

(2015) are of the opinion that LIS programme educators need to evaluate their curriculum constantly so that it remains relevant and aligned to environmental demands. The implications of the finding are that, as long as LIS education continues to hold on to past ideologies, it will struggle to develop the intelligences and behaviours that are essential for success in a knowledge-based economy and society.

In relation to the above questions, LIS employers assert that LIS graduates have skills gaps that need to be addressed by adapting curricula. The various perspectives of LIS employers were explicitly captured by a senior university librarian who stressed that

> We cannot say they are not well suited or prepared but we can say they have knowledge and skills gaps which need to be addressed in LIS curriculum.

A closer look at the data shows that the standardised national LIS curricula common in polytechnic colleges were last reviewed in 2010 and university curricula (NUST and ZOU) have had no major reviews since their inception in 2013 and 2009 respectively. Further, there is, in LIS programmes in Zimbabwe, a dearth of tracer studies that can inform education. Findings from tracer studies provide useful data to evaluate and strengthen education programmes (Mugwisi & Hikwa, 2015). The research finding confirms Murphy's assertion (n.d.) that few LIS education and training programmes scrutinise the relevance of the curricula they offer.

Furthermore, the data show that the polytechnic colleges and the ZOU curricula are obsolete. This suggests inadequate quality assurance measures in HE in Zimbabwe. The finding substantiates Madzimure's (2016) assertion that the guaranteeing of quality cannot be done by an outside body like ZIMCHE alone, all universities should make a deliberate move in establishing a Directorate of Quality Assurance that will serve to guarantee and sustain quality.

The documents analysed showed that most LIS departments in Zimbabwe have established programme advisory boards. These advisory boards, from the researcher's experience as faculty staff and board member, exist to satisfy university and ZIMCHE requirements. The advisory boards rarely meet due financial inadequacies and as a result, are out of touch with the education programmes realities. This suggests that in order for national and institutional quality management systems to operate effectively, a number of supportive infrastructural policies and frameworks are required.

Regarding the question of which skills are required of LIS professionals in the contemporary workplace, the research data show that ICT-related competencies and an array of transferable skills and behaviours are highly valued in LIS work environments. The diverse views of the respondents were aptly summarised by a university librarian:

> We need LIS professionals with the ability to manage projects, design business plans, source funding, manage the funds, evaluate projects and above all individuals who are creative, quick to learn, enterprising, able to work in teams, resilient and willing to [practise] continuous learning and adapt to new technologies and professional trends. Most of all we need individuals creative enough to find new ways to solve new problems, teach, communicate, research and network.

In addition, a director of a specialised library noted:

> We need graduates with a working knowledge of ICTs and their applications. Individuals with the ability to use and apply information communication technologies in library operations and institutional repositories; compare, evaluate, select technologies and software, translate print based services to electronic services, design web pages and manage them. The graduates need to be honest, curious,

passionate, versatile, resilient and able to work independently, able to build partnerships, continuously learn, communicate and add value to our services.

The findings make clear that LIS work environments value transferable skills and behaviours above professional expertise. They confirm the observations of Schmerling (2016) that employers look for generic transferable skills and personal attributes. A study by Katuli-Munyoro and Mutula (2018) corroborates these findings, adding that LIS employers increasingly ask for transferable knowledge and skills, rather than for traditional professional competencies. There is, in other words, an emerging trend away from the industrial demands of the past towards a new concept of professionalism and a different view of what constitutes professional knowledge. It is a subtle but perceptible trend, exemplified by hiring practices that have evolved from hiring specialists to hiring generalists or curious people who are willing to continuously learn and adapt (Evans-Greenwood et al., 2015). Caza and Creary (2016) confirm the reality of this trend, noting that careers are being transformed from a narrative of increasing specialisation into a story of blending domains and disciplines in pursuit of compelling value propositions and a competitive edge.

The emphasis on transferable employability skills, applied skills and behaviours that imply resilience and the willingness to keep learning, entails the fading value of the 'job for life' notion. As a result, LIS work and careers are no longer static and predetermined. In the knowledge economy, the nature of competencies, work and career paths have become ephemeral and unpredictable. The data collected by the present study show that some tenets of the industrial era work environments, among them the 'job for life' notion, are becoming somewhat passé and are replaced by the lifelong learning concept. Mayasari (2010: 13) suggests that 'when organizations are in transition, the result will be better if they employ people with the right competencies and attitudes and with a sense of curiosity that drives them to keep trying and learning'.

LIS faculty staff members were asked to answer the question: 'Have you integrated ICT in teaching and learning?' The majority (61%) indicated that they have not integrated ICT in their teaching and learning. Alternatively, the minority (39%) stated that ICT is part of their teaching and learning. The findings are presented in Figure 1.

Figure 1:
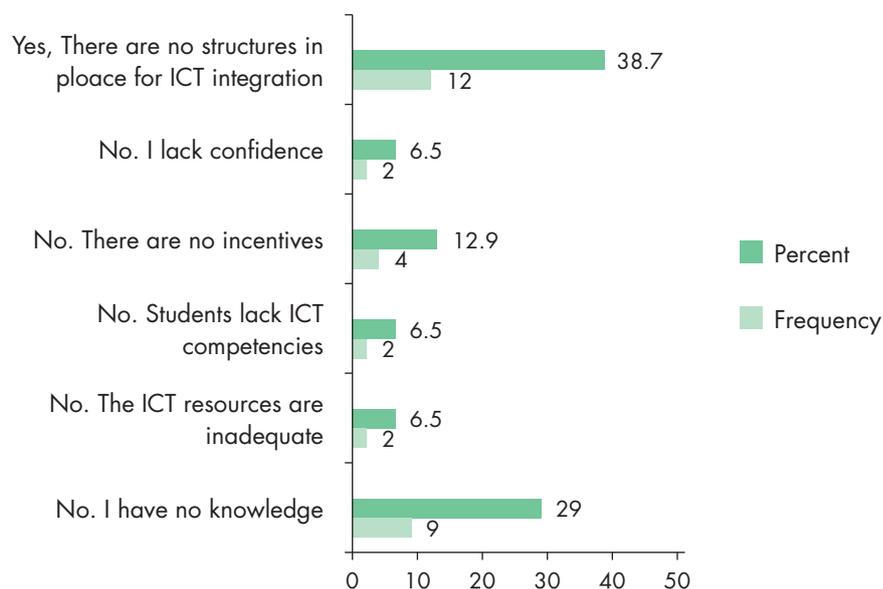*ICT integration in teaching and learning (N=31)*

Figure 1 shows that 61.3% of faculty staff members have not integrated ICTs in teaching and learning and attributed their failure to do so to a lack of guiding standards, confidence, incentives, capacity, ICT resources and knowledge. It is clear that the levels of ICT integration in teaching and learning in LIS education programmes in Zimbabwe are very low. The data indicate that 39% have made ICTs part of their teaching and learning. Further analysis of the data show that 39% were in the 21-35 age range; the millennials or digital natives who bring technology from their personal lives into their workplace. The activities of these millennials were observable across the five institutions offering LIS education. From this group come the innovators or change agents who are willing to try out innovations, irrespective of perceived environmental constraints in their workplace.

A critical analysis of the data indicates that the 39% of faculty who have embraced ICTs use them as teaching and learning aids. The research finding indicates, however, that ICTs are still far from being fully integrated in teaching and learning in LIS education in Zimbabwe. Sharma (2008) considers it unfortunate that, while ICTs are available to facilitate the shift to a new paradigm of teaching and learning, they are in most cases put to little use other than as mere aids to lectures. The data signify an uneven ICT adoption in LIS education and training in Zimbabwe. Czerniewicz and Jaffer (2007) attribute the uneven take-up of ICTs to the lack of an ICT policy and of regulatory frameworks, and a shortage of knowledge concerning the correct use of ICTs in teaching and learning. In addition, Baylor and Ritchie (2002: 398) posit that 'technology will remain underused as long as faculty staff do not have the skills, knowledge and attitudes necessary to make it fully part of educational systems'.

The prevailing inadequacies in ICT resources, faculty staff and student capacity, benchmarks and guiding principles, suggest that Zimbabwe is not e-ready. Indeed, the World Economic Forum (2013) positioned Zimbabwe among nations with low levels of e-readiness. It means that Zimbabwe is not adequately prepared to apply ICTs in education and training. This is unfortunate as ICT has been defined as an essential instructional infrastructure for 21st century education systems. Sergis and Sampson (2014) opine that the state and level of a country's technological development is a key determinant of ICT use in teaching and learning. This would imply that in the view of Sergis and Sampson, the present level of technological development in Zimbabwe does not allow for a beneficial use of ICT in teaching and learning. The findings of this study highlight the need to put in place the requisite ICT facilitative conditions to enable the full adoption of ICTs as part of education systems.

To measure the awareness or knowledge, among LIS faculty staff members, of paradigm shifts in the information industry, a five-point scale ranging from 'strongly agree', via 'agree', 'undecided', and 'disagree' to 'strongly disagree' was used. LIS faculty were asked to indicate their level of agreement with the statement: 'There have been paradigm shifts in the information industry'. Nearly all (93.6%) of the LIS faculty staff members surveyed agreed that paradigm shifts have occurred in the information industry while 6.4% disagreed. The results are presented in Figure 2.

Figure 2:
Faculty staff response to question on paradigm shifts in the information industry (N=31)
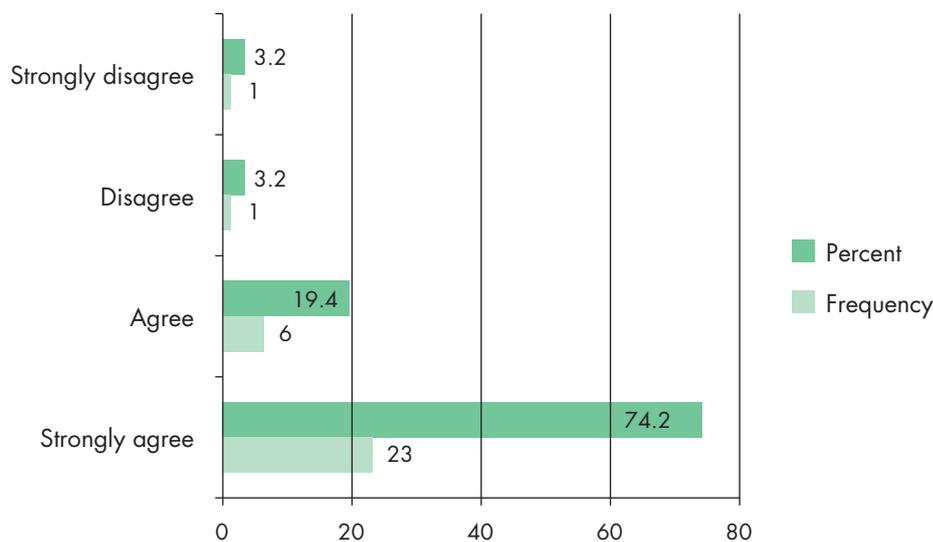
Figure 2 shows that 74.2% strongly agreed, 19.4% agreed, 3.2% disagreed and 3.2% strongly disagreed that paradigm shifts would have occurred in the information industry. The 93.6% who agreed demonstrate that faculty members have high levels of awareness or knowledge regarding paradigm shifts. Further analysis of data show that the 6.4% who disagree consist of individuals who are wary of change. Braude (1997) considers changes in the LIS field as mere changes rather than as signals of a paradigm shift. However, Myburgh (2016) recognises these changes as part of paradigm shifts. At the same time, the high level of awareness, or knowledge, of paradigm shifts suggests that the LIS field is highly interconnected, that the communication channels are efficient and the change agents' promotional efforts are effective. The implication is that LIS academics are aware of the changes taking place in their profession, the academic discipline and the wider society.

LIS faculty staff and employers were asked to respond to the statement that the adoption and use of ICT in the LIS profession offers more advantages than changes previously made to LIS curricula. The aim of the statement was to determine the positions of faculty staff and employers as regards change. The majority (42) felt that the introduction of ICTs and digital content had broadened career prospects, teaching and research opportunities and increased professional growth and prestige of LIS whereas a minority (6) thought that it had resulted in the obsolescence of much LIS traditional professional knowledge, competencies, routines and tasks. The different views of the respondents were captured by a male lecturer who stated,

ICTs have redefined the LIS profession and given shape to the profession. Whereas all along the LIS profession has been operating like an amorphous entity, now with this current trend we begin to see the shape of the LIS profession. This has broadened our horizon of research and teaching.

The diverse views of the minority were expressed by a male senior lecturer as follows:

ICT and information related subjects have recently gained importance in the LIS curricula and traditional LIS subjects like collection development and management, reference services, cataloguing and classification have been relegated to lower level qualifications in the curricula.

Another practitioner commented:

Our library statistics show a decline in visits per capita and our circulation and reference services are no longer in demand. Every day our traditional skills, standard knowledge, routines, tasks and procedures developed and cherished in the profession for years are swept aside in favour of computer mediated procedures and services. Does this signify the end of our profession?

The findings show that the majority of LIS faculty staff and practitioners have positive views on changes in the LIS field, while a minority perceives them as negative. The remarks made by the majority group resonated optimism and a favourable outlook on the future of the information industry. Respondents consider the changes as opportunities to evolve and improve the profession and its academic discipline. Earlier studies by Raju (2017) also describe the innovations as an opportunity for the LIS profession to grow. Mugwisi and Hikwa (2015) and Myburgh (2016) declare that the changing focus from library institution to information has raised its status and managerial efficiency and has brought about at least a partial negation of the low prestige connotation of the term 'librarian'.

Contrary to the optimistic majority, evidence from the study data shows that the pessimistic minority, instead of perceiving the changes in the profession as opportunities to evolve and improve their professional selves, consider them as a threat to the profession. Their remarks reflected a sense of loss and a desire to protect the traditions of the profession. This may indicate the strength of the existing paradigm and the difficulty of accepting ideas in which it no longer plays a role. The minority group would seem to suffer from paradigm paralysis (a determined belief that the existing paradigm is better). This prevents them from understanding and appreciating changes to the paradigm. Mathews and Linski (2016) claim that individuals who have invested much in an existing paradigm will resist change and often are very defensive of the paradigm.

Ironically, despite the prevailing high levels of awareness and the optimistic views of the participants in this study regarding change, the research data show that efforts to effect change in LIS education and training in Zimbabwe remain restrained. This is clear from the dated curricula and incremental change strategies adopted. The findings suggest that considerable inertial forces hold back more radical change. Smith (2009) also mentions the prevailing inertia that stops those involved in LIS education from initiating meaningful innovations. Such an inertia has also been observed in scholarly discourse and literature in the LIS field where scholars depict change as a 'crisis' or 'demise' (see, for instance, Ribeiro, 2008; Munyoro, 2014). Matusiak, Stansbury and Barczyk (2014), and Hensley (2015) describe such scholars as 'crying wolves' who fret about the state of LIS education and the urgent need for change, while at the same time they do whatever is in their power to avoid change and maintain the status quo. Schon (1973: 30) in his seminal publication describes this type of behaviour as 'dynamic conservatism': a natural inclination to adapt to changing environments while at the same time wishing to protect and stay true to core values and traditions that are familiar. This study has found that the vested interests of faculty staff and HE structures, together with traditions, cultural insights and normative beliefs, are factors of considerable influence on the way change is approached and managed. According to the research data, this can be attributed to paradigm paralysis: the appeal of the existing paradigm, the pain of losing it, the fear of entering unfamiliar regions, fear of failure and the possibility of missing opportunities and even discrediting one's life work. In addition, embracing the new paradigm might confront one with unfamiliar reward systems, inadequate human and physical resources, as well as HE structures, traditions and cultural and normative beliefs that are difficult to circumvent.

9. CONCLUSION AND RECOMMENDATIONS

The study shows that the LIS academic discipline in Zimbabwe is failing to unshackle itself from the control, influence, design and other routines of the ebbing industrial paradigm and to reconfigure itself to suit the requirements of the emerging post-industrial paradigm. This has created a major disjunction between what is demanded by industry and what is offered in LIS education institutions.

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The preparation of highly credentialled LIS experts no longer conforms to the current needs and aspirations of the knowledge economy where an open pool of competent, flexible, creative and lifelong learners is required. The present study makes clear that LIS education and training systems are failing to adjust to changing environments and their demands.

Prevailing defeatist attitudes in LIS education and training towards change are detrimental to the survival, growth and relevance of the academic discipline and the profession. LIS education administrators, faculty staff and private and public partners need to come up with robust strategies to break the barriers preventing change and rise to the opportunity of offering the quality relevant education the world needs. However, this asks for strong political advocacy, will, courage, passion, strategic vision and visionary leadership.

Unless LIS educators in Zimbabwe realise the urgent need to confront their cognitive, motivational and obligatory barriers, it will be very difficult to steer the academic discipline towards the best possible future. If the LIS academic discipline fails to break down the barriers and accept change, it will not be able to make a niche for itself in the emerging knowledge age. Instead of bemoaning the state of LIS education, stakeholders should rally in support of the historical shift of paradigms and accept its consequences. The study suggests that the Zimbabwean government, policy makers and the LIS profession and its academic discipline should seize the opportunity and reorientate LIS education systems, making them meet the needs of the knowledge age. This process requires the results and insights provided by sustained research in addition to ICT infrastructure, software and hardware, faculty competencies, reward systems, policy and regulatory frameworks, responsive curricula, new teaching and learning approaches and technologies, and funding streams. Advanced societies in Europe, America, Australia and parts of Asia have seized the opportunities offered by the paradigm shift and are already transforming their education systems, bringing them in line with the requirements of the budding knowledge age.

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