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Transparency in the Application of Theoretical Frameworks to the Advancement of Knowledge in Selected Library and Information Science Journals: A Systematic Review

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Abstract

The purpose of this systematic review was to determine the extent of theoretical transparency in library and information science (LIS) scholarship. Many studies have looked at theorising and the use of theory in LIS. Unlike previous studies this research provides insights into transparency in the use of theoretical frameworks in the LIS field. Transparency is essential because different researchers employ the terms theory, theoretical framework, and conceptual framework in various ways.The transparent use of theory and the resultant theoretical framework enables other researchers to assess whether the theory is appropriate, consistent, and coherent with the empirical evidence. This systematic search followed Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines for reporting on systematic reviews supported by ADIMA®. A total number of 138 out of 2029 articles from 12 LIS-focused journals were analysed in March 2023. Most of the articles (88.6%) specified the framework they used. There was a high level of transparency in relation to the suitability of the theory to address the research problem. The degree of openness about the aim to utilise a theoretical or conceptual framework was moderate to high. The articles had a low or minimal level of transparency when it came to justifying why a certain theory was chosen for the study. Theory dropping was not apparent in the articles. The results from the articles demonstrate that LIS scholars appreciate that a theoretical framework or conceptual framework must be used in research. To ensure that readers understand the rationale behind the theories chosen for a study, it is necessary to be open about the reasons behind the selection of a particular theory. The explanation of how the theory contributed to explaining the phenomenon of interest is also essential. This article might help scholars get beyond theoretical obstacles related to the transparent use of a theoretical framework and produce theoretically sound research. It also opens discourse on "best practice" in the use of analytical tools forresearchin the advancement of knowledge.

Keywords*:* Theoretical Frameworks, Conceptual Frameworks, Theoretical Lens, Analytical Framework, Transparency And Theory, Core LIS Journals

Introduction and Background

The usage of theoretical frameworks (TF) and conceptual frameworks (CF)in library and information science (LIS) is a pertinent discourse because there are ongoing discussions of theory use and theorising among LIS scholars,includingBilal (2022)and VanScoy et al. (2022). Indeed, the role of theory in LIS research was a subject of discussion of one of the panels at the 86th Annual Meeting of the American Society for Information, Science and Technology in 2023 (American Society for Information, Science and Technology, 2023).

Many scholarsadvocate theory use and theorising and its potential contribution to the LIS field (Kumasi, Charbonneau and Walster, 2013; Jeong and Kim, 2005; Pettigrew and McKechnie, 2001; Ukwoma and Ngulube, 2021). There are various schools of thought regarding how crucial it is to base research on theory (Julien,1996; Ngulube, 2020). There is no denying that theories serve as the foundation for CFs and TFs. Adopting a theoretical or conceptual framework gives the research findings broad significance and applicability and provides useful assumptions to direct an inquiry. Theories support knowledge generation and the growth of a coherent body of knowledge in the field.Theoriesareamong the primary indicators of thematurity of a discipline(Connaway and Powell, 2010).

Indeed,"theory is the currency of our scholarly realm" (Corley and Gioia, 2011) and research that is not based on theory "is simply description" (Van House, 1991: 87). The absence of a theory in a scholarly piece of research can lead to the creation of bad scienceeven if the methodology is sound (Kaplan, Saunders and Bryan, 2011).Hence, "much is gainedif one realises that neither scientific nor practical results can be expected without adequate development of the theoretical aspect of the work" (Lewin, 1945: 132).In other words, "nothing can be studied empirically in the absence of theory and research methods" (Bergman, 2011:99) because they make it possible to impose order on naturally chaotic events (Fawcett and Downs, 1992).

Theory is needed because it is the basis for "(1) building a new foundation for knowledge, (2) consolidating knowledge, (3) making meaning between strands of knowledge, or (4) translating knowledge" (Krlev, 2023).In other words, the functions of theory include aiding in the comprehension of the phenomena they explain, providing basic concepts to address the key issues, offering a foundation for predictions, and directing the course of further investigation (Madara, Namango, and Katana, 2016). Theories used in research can be descriptive (what is this?), relational, (what is happening here? and explanatory (why?) (McGregor, 2018; Ngulube, 2018).Different perspectives and criteria can be applied to determine if a theory is fit for purpose, including, stability, coherence, uniqueness, consistency, refutability and parsimony (Madara et al., 2016).

The use of theory can be either be objectivist deductive or subjectivist deductive (Varpio, Paradis, Uijtdehaage, and Young, 2020). The objectivist deductive approach is theory-driven becausethe researcher moves from theory to data. In the subjectivist deductive approach, the researcher collects data to generate a theory like in the grounded theory research method, for instance.An open exposition of whether the research was theory-driven or data-driven can assist other researchers to understand how the theories were used in a particular research and how they may use them to advance knowledge in their context.

Theory matters in the neighbouring field to LIS such as information science(IS). For instance, Zins (2007) classified epistemology asone of the theoretical aspects that were important to the field. However, it is important to note that an epistemology (i.e., theory of knowledge and metatheory), and"epistemological paradigms that have influenced information science so far, such as hermeneutics, critical rationalism, critical theory, semiotics, constructivism, second order cybernetics, and system theory" (Capurro, 2010: 248), are not theories but metatheories.Although a metatheory is concerned with the conceptual proceduresof science, it is not a theory as partially suggested by Henning, Van Rensburg and Smit (2004).

A metatheory is the examination, analysis, and description of the means for developing theory and the utilisation of theory(Zaltman, Pinson and Angelmar, 1973). A metatheoryis invaluable to scholars because it aidsthem to develop theories,ask fundamental scientific and philosophic questions in the right way, and "it discloses conceptual sickness

and prescribes treatment for it, and widens the horizon of research" (De Groot, 1969: 19).Some scholars misconstrue metatheories such as paradigms in the Kuhniansense to be theories. Metatheory as a science of science cannot explain a social phenomenon (Zaltman et al., 1973).

Broadly speaking, a metatheory cannot be the basis of a TF or CFof a study like a theory or model. Grand or middle range theories are mainly the basis of formulating a TF or constructing CF. Grand theoriesare not appropriate for directing social science research (Bryman, 2012). Middle range theories are suitable for guiding research, because they are contextually relevant,as they are formulated specifically in connection with a certain phenomenon.

The confusionover theory usesand theorisation is compounded by the fact that it has been used and defined differently in various quarters. An opened-ended statement such as this one does not help the situation:

> Theory belongs to the family of words that includes guess, speculation, supposition, conjecture, proposition, hypothesis, conception, explanation, [and] model, so if everything from a 'guess' to a general falsifiable explanation has a tinge of theoryto it, then it becomes more difficult to separate what theory is from what isn't (Runkel and Runkel, 1984 cited by Weick, 1995).

The quotation seems to signify different things to different people, which leads to conflicting and opposing ideas about the concept, but it is partially sensible. What it does not do is clearly demonstrate how these terms relate to one another, which leads to misunderstanding and "incredible anarchy" in theory development and theory use in many fields (Freese, 1980: 189).

Images of real-world experiences and structures are created and expressed as visual and verbal modelsthat are representative of concepts or propositionsor theories (Ngulube, Mathipa and Gumbo, 2015; Zaltman et al., 1973). A hypothesis can be derived from the model and tested through some metatheorylikeasuitableresearch methodology based on appropriate epistemological and ontological assumptions.Models and theories should not be used interchangeably because they are not equivalent (Fried, 2020; Gunnell, 1969; Ngulube, Mathipa and Gumbo, 2015). Unlike theories, models do not have the power to explain, predict and control a social phenomenon as they tend tosimply describe it (Ngulube, Mathipa and Gumbo, 2015; Yadav, 2023).

In other words, models describe something, and theories explain why something happens (Ngulube, Mathipa and Gumbo, 2015). Put differently, a theory is "the entire body of generalisations and principles developed for a field", whereas models describe "stages of understanding a phenomenon" (Bates, 2005). To make a theory or concept easier to understand, models are used.However, they do not fullyreflect the complexity of the phenomenon. One way to distinguish between a model and a theory is to think of a model as a visual tool that is practical and helps observers emphasise the key elements of their explanations and to think of a theory as a story about why.

Concepts are the building blocks of theories, and they are discipline specific and the field articulates what those concepts represent (Hassan, Mathiassen and Lowry, 2019).In other words, a field of study's choice of concepts becomes crucial because a claim represents a firm stance it has taken on any topic (Foucault, 1972). The adoption of a given concept depends on the knowledge base of the recipients and their experiences. The concept may not provide any information for the recipients or observers if they are unfamiliar with the language or code (Mingers and Standing, 2018). An abstract selective description of the relationships between a range of concepts constitutes a theory that in turn assist researchers to understand an aspect of the world (Varpio et al., 2020; Zongozzi, 2021). The use of the whole range of concepts from a theory constitutes a theoretical framework.

A field's capacity to generate original concepts and claims is a sign that it is developing as a discipline (Hassan, Mathiassen and Lowry, 2019).That raises thequestionwhether theories that are borrowed from other disciplines can fully explain a phenomenon in another fieldwithout infusing the researcher's a priori knowledge and experience, and the context of the phenomenon. That makes it incumbent for researchers to reflect on the extent to which they can use theories without tapping into their a priori

knowledge and experiences when explaining social phenomena.

This study does not have the intention to get into the discussion of theory borrowing. It is just flagged here to give an opportunity to LIS researchersto explore it further in their theory use and theorisation.Ukwoma and Ngulube (2021) give an insightful discussion on theory borrowing. Suffice to say that when choosing a theory,it is important to understand the concepts of theory triangulation, theory borrowing, theory dropping and theory diversification. These concepts can help a researcher to determine how elegant the chosen theory is (Ngulube, 2020). A solid understanding of the usage and application of theory is the foundation for selecting a good theory that can improve knowledge.

Theoretical frameworks are formulated based on a theory. It is important that the distinction between a TF and a CF be preserved. When it comes to these crucial tools for conceptualising research, the literature frequently generates misunderstanding (Ngulube, Mathipa and Gumbo, 2015; Ngulube, 2020; Van der Waldt, 2020). It is important to note that a TF and a CF are conceptually different, and cannot be used interchangeably (Ngulube, 2018; 2020).

When one overarching theory serves as the foundation for a study, it is referred to as a theoretical framework since every concept or aspect in the theory is represented in all the objectives or the research questions guiding the study. On the other hand, aCF is narrower and more specific than a TFwhich is broader (Ravitch and Riggan, 2017). A CF is a diagrammatical or written representation of variables or characteristics of the phenomenon that the study is concerned with (Miles and Huberman, 1994; Van der Waldt, 2020). It is not entirely correct that a conceptual framework should always visualise the cause-and-effect relationship as suggested by Swaen and George (2022) and Van der Waldt (2020) because this may not be true of qualitative or mixed methods research studies. A CF can be developed from the extant literature, aspects of theories, personal experiences, models and the context of the phenomenon (Ngulube, 2020; Van der Waldt, 2020). Theories constitute one of the core dimensions of a CF (Ngulube, 2020; Van der Waldt, 2020).

A tree metaphor can help illustrate the relationship between a TF and a CF even though it is not philosophically exact. A single stem or trunk that supports branches and leaves makes up a tree. If a study uses all the aspects of a theory as a lens to explain a phenomenon under study, then it will be informed by a TF. In other words, a TF is a valid analytical tool for conceptualising a study if all the components or claims of the theory underpin the study. The "tree" is then used as a theory to inform the study. However, if a branch or leaves informs the study, we move away from the notion of a TF as aspects of the tree will be used. In that case, we have a CF as aspects of the theory or "tree" will be brought to bear. Whether or not a study uses a TF or CF will partly depend on how much is known about the phenomenon or the extent to which the theory addresses all the objectives of a study (Ngulube, 2018). Understanding this distinction between a TF and CF constitutes a transparent application of a TF.The term transparency is rarely defined in research circles, and it is taken for granted (Jackson, 2014). Transparency in the application of a TF refers to thedegree of explanation of how, what, why, and when the pertinent theory was applied in the research process is described, including stating who used the theoryand their level of success.

One of the burning questions in scholarship is: Can a CF and a TF be used in one inquiry? There is not agreement on this. One school of thought states that they cannot be used together because they do not serve the same purpose in a research project (Ngulube, 2020). Word (2020) is of the opinion that "the conceptual framework falls under the broader theoretical framework". It is possible to have a theory and model in any inquiry. The model can be a CF depicting the major components of a theory. In the same way, one would represent a theory diagrammatically as a CF. The theory captures the link between the propositions while the CF depicts the links among the concepts that constitute the theory and the context of the inquiry. That implies that one can depict a theory as a CF of a study. What is essential is transparency if a theory is used as a CF.

> Almost all social scientists, whatever their normative, epistemological, theoretical, and substantive beliefs, accept the basic norm of research transparency… Making data, theory, and method transparent invites others to enter the conversation as equals (Moravcsik,2019: 2).

Being transparent allows for understanding, debate, improvement, and extension of a piece of scholarly work by other scholars. Transparency is an idea that applies to all contexts and is crucial in many areas, including theory reporting.

Related studies

There are many studies that are close predecessors of this research ever since Julien (1996) called upon for an assessment of the extent to which LIS research applied theory based on systematic reviews. Using a different CF from the current study, Pettigrew andMcKechnie (2001) analysed 1,160 articles in six majorLIS journals from 1993 to 1998 and revealed that some theorywas applied in 31.4% of the articles. Jeong and Kim (2005) analysed 654 LIS articles published in two major Korean journals since 1970 that revealed significant theory use and theory borrowing. In another study, Kim and Jeong (2006) examined the application anddevelopment of theory in 1,661 LIS journal articles that were published in four journals between 1984 and 2003. They discovered that 41.4% of the papers applied or developed some theory. Kumasi, Charbonneau and Walster(2013) revealed that theory was presented and discussedin seven prominent libraryscience-focused journals from 2009 to 2011 and concluded that the use of theory ranged from minimal, moderate to major.Bilal (2022) examined 14 journals from 1999 to 2019 and posited that 60% of the articles had theoretical foundations in theories or models.

The review of these relatedstudies revealed that transparency in the use of theory in LIS research was underdeveloped. Theoretical transparency does not seem to be a subject widely discussed in the literature. The current study advances the frontiers of the LIS knowledge base by contributing to the discourse of the need for theoretical transparency when conducting research in the field using the systematic review approach.Research strategy systematic reviews have the advantage of systematically assessing and summarising current knowledge in LIS on theoretical and conceptual frameworks using rigorous methods to identify research gaps, reduce bias and produce reliable conclusions (Siddaway, Wood and Hedges, 2019; Yuan and Hunt, 2009).

Conceptual Framework (CF)

Transparency-establishing methods have been developed in various fields. For instance, the field of health studies devised the Theory and Techniques Tool consisting of 19 items to improve the reporting of theory use in intervention studies (Human Behaviour Change Project, 2023). On the other hand, political scientists developed the Theory Impact Project (TIP) to determine how theories were used and assessed in international relations research (Better Evaluation, 2022). These tools were not used in this study because they did not meet the objectives of the research. Consequently, the CF depicted in Figure 1 was formulated.The degree of transparency when using aTF includes statements on the intention to use the TF, a description of the reason why the TF was chosen, and an explanation of its suitability to address the research problem. An article having all these indicators exhibits a high degree of transparency in the use of a TF. Unlike Pettigrew and McKechnie (2001), the current study made a distinction between theories and metatheories.

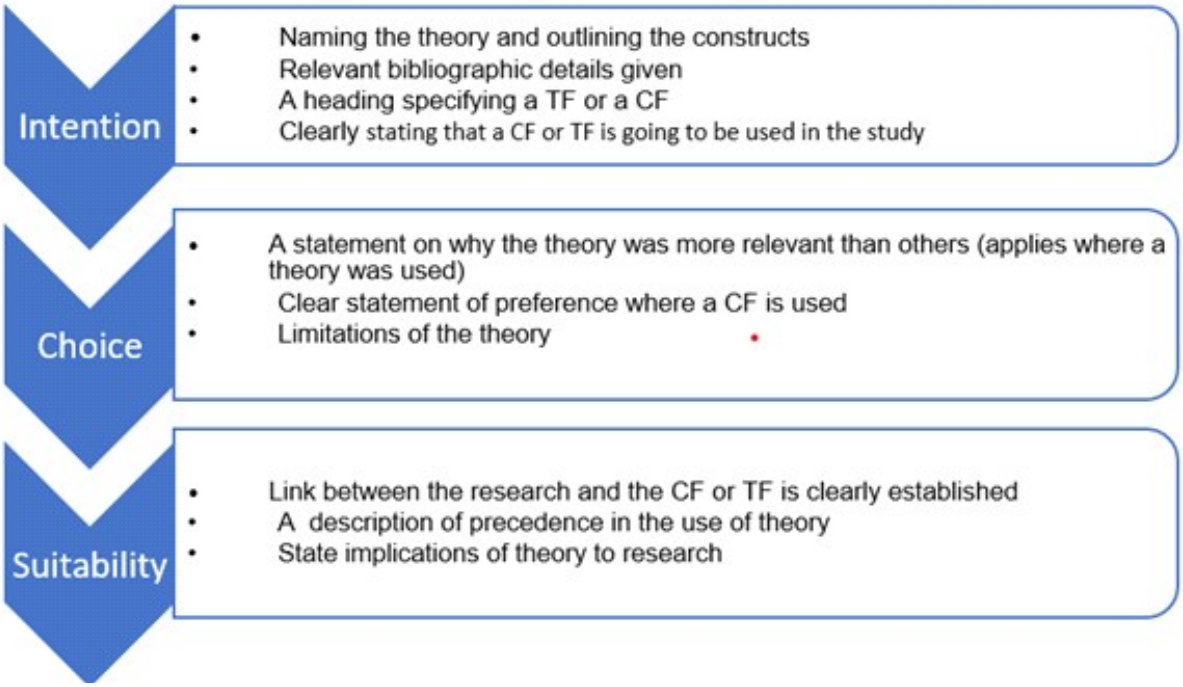

Figure 1: Conceptions of transparency in the use of a TF (Authors, 2023)

Statement of the Problem

Theoretically grounded research can contribute to valid research and the advancement of knowledge in a cognitive field. Many scholars in the LIS field recognise thattheory use and theorisingcan contribute to the growth of knowledge in the field (Kumasi, Charbonneau and Walster, 2013; Pettigrew and McKechnie, 2001; Ukwoma and Ngulube, 2021). Theory use and theorising should be "based on a coherent and explicit framework of assumptions, definitions, and propositions that, taken together,have some explanatory power" (Julien, 1996: 56).However, researchers in LIS have different uses and interpretations of theoretical concepts. In that regard, LIS scholars should build or use theories in a transparent manner by outlining the precise procedures they use in choosing or developinga theory as well as disclosing the choices and judgments they made while using or developing it. Transparency ensures that the application of theory is founded on a clear and cogent framework of presumptions, definitions, and propositions (Julien, 1996). This is going to increase the validity and quality of the research. It is critical to understand that everyone benefits from transparency, including researchers and policy makers (Baskin and Gross, 2019). Researchers can demonstrate the ethical basis and excellence of their work by being transparent (Moravcsik, 2019).

According to Hernon and Schwartz (1993), high-quality LIS research can give researchers models to enhance their own studies and aid in making research choices and to advance LIS research and teaching (Järvelin and Vakkari, 1990). Without an exposition of a need to be transparent when using theory, researchers in the field will uncritically and inappropriately use theory in their researchresulting in questionable research that will be of low quality. However, there is limited literature on transparency in the use of aTF in LIS.This study is significant becauseit buildson the others to raise awareness of the importance of transparency in theory use and theorising to produce appropriate, reproducibly, and theoretically grounded research.Transparency is a fundamental tenet of ethical research practise because it enables others to assess the accuracy, dependability, and legitimacy of the research claims. The research question that this study addressed was: What is the level of transparency in the use of a TF by LIS scholars in the production of knowledge?The sub-questions that guided the study were:

- How was the intention to use a TF in the study articulated?
- Whywas the theory underpinning the TF chosen?
- How well suited for its function was the TF?

Methodology

The first phase of the study was to select LIS-focusedjournals to include in the sample. It was challenging to choose a sample for the study because there was no established list of the ranking of LIS-focused journals. For instance, attempts by Nisonger and Davis (2005) and Nixon (2014) to provide a partial list of journals were inadequate due to the geographical limitation of the lists and the methodologies used to compile them.Both studies were not inclusive as they mainly addressed the United States (US) context.

The Web of Science (WoS)and Scopusprovide a possibleranking system, but the problem is that the list overlappedwith journals from fields such as information systems and computer science. Despite this apparent shortcoming,the researchers chose to rely on them because theyare relatively established ranking systems with wide coverage and acceptance.The researchers had to decide on which journal ranking system to use between Scimago Journal Rankings [SJR](Scopus, 2022) and Journal Citation Reports(JCR) (Clarivate, 2023). It was clear that the two ranking algorithms' quantiles (Q)for the journals were different from one another as shown in Appendix 1.

Notwithstanding the differences between the journals' rankings in the two ranking systems, the researchers chose to rely on the rankings in JCR because of its lengthy history; that is, having been established in 1975 (Garfield, 1994; Science Citation Index, 1993).That partly explains why the researchers did not rely on the list by Resurchify (2022), which is based on Scopus, and likewise recommends JCR to the readers. Aharony (2012) also used Journal Citation Reports (JCR) to identify the top LIS journals in their study – notwithstanding that the title of the articles is misleading since the author concedes that six out of the journals included in the study were IS journals and only four were LIS journals.

Instead of filtering the lists by discipline,the first phase of the study involved aBoolean Operators search of the JCR database using some of the commonly used LIS terms (Hjørland, 2000),including "library science", "information science", "library studies" and "information studies"in March 2023,yielding 190 records of journal titles. A total of 100 of the 190journal title records were between Q1 and Q4. The 90 records that were not includedin any of the quantiles were excluded from the sample as it implied that they did not fit into any quantile based on the formula for determining the quantiles. The selected 100 records were classified by scope, publisher and place of publication, and subject category. Only publications with an emphasis on the LIS field, as defined by the journal's scope and SJR classification, were chosen.Only oneout of the 12 selected journalsdoes not have a term related to libraries in the title. Appendix 1 includes the specifics. Just 12 journals were eventually included in the study. Apart from South America and Antarctica, the final list relatively covers all the continents of the world. These may be considered as the major LIS journals based on the methodology that was used in the selection.

The journals that were included in this systematic review included: *Library and Information Research, College and Research Libraries, Journal of Librarianship and Information Science, Library Quarterly, Journal of Academic Librarianship, Library Trends, Malaysian Journal of Library and Information Science, Portal: Libraries and the Academy, Reference Services Review, African Journal of Library Archives and Information Science, Journal of the Australian Library and Information Association* and *LIBRI-International Journal of Libraries and Information Studies*. The first six journals used in this study were part of the samples which were considered as the main LIS journals by the authors included in Appendix 1.

During the second phase, the study involved a search strategy performed with the help of Boolean operators focusing on the terms: "theoretical framework"; "theoretical setting", "theoretical context"; "theoretical underpinnings"; "theoretical lens"; "conceptualsetting"; "conceptual context"; "conceptual underpinnings"; "conceptual lens"in each of the 12 journals during the period 1991 and

2022. The year 1991 was used as the starting date because two of the journals used in the study were established in 1991 (see Appendix 1). The main searches were conducted inMarch 2023. Excel® was used to code and categorise data for qualitative data analysis. Data extraction, synthesisand reporting were carried out using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework (Moher et al., 2009). An independent postgraduate fellow assessed the first search to ensure the search tactics were comprehensive and robust. Figure 2 shows a flow diagram of the review process. It is interesting to note that the study of Aharony (2012) did not pick these keywords considering that two journals analysed in the current study, as illustrated in Appendix 1, were part of the sample of that study.

Table 1: Inclusion and exclusion criteria

Criteria	Inclusion	Exclusion
Publication date	Articles published between 1991 and 2022	Articles published before 1991 and after 2022
Language and duplicates	Articles published in English	Articles published in a language other than English and duplicates
Publication type	Peer-reviewed articles	Editorials, letters, conference proceedings, meeting abstracts, short communications, obituaries, dissertations, discussions, book reviews and systematic reviews (e.g., systematic, scoping, and rapid reviews) and reports
Specification of TF	Mentions TF in one or all the following areas: title and abstract; describes the utility of TF to understanding the phenomenon	No TFor CF specified
Specification of CF, including models	Mentions CF in one or all the following areas: title and abstract; explains why a CF was used instead of a TF	No CF or models specified

The third phase of the study was the screening of 2029 records to remain with journal articles in the English language after removing duplicates, book reviews, conference proceedings and other publication types. The title/abstract screening was conducted utilising Rayyan® software. Full-text screening was conducted using CADIMA (Julius Kühn-Institut Federal Research Centre for Cultivated Plants, 2023) to ensure rigorin line with the inclusion and exclusion criteria outlined in Table 1. The results were compared with 25% of the manual results based on the reading of the full article, introduction and review of the literature sections. Bilal (2022) revealed that the introduction and literature review sections of the articles were where theories or models were most frequently addressed. Finally, 138 articles remained out of 708 as indicated in Figure 2. The fourth phase of the study was a content analysis of 138 journal articles.

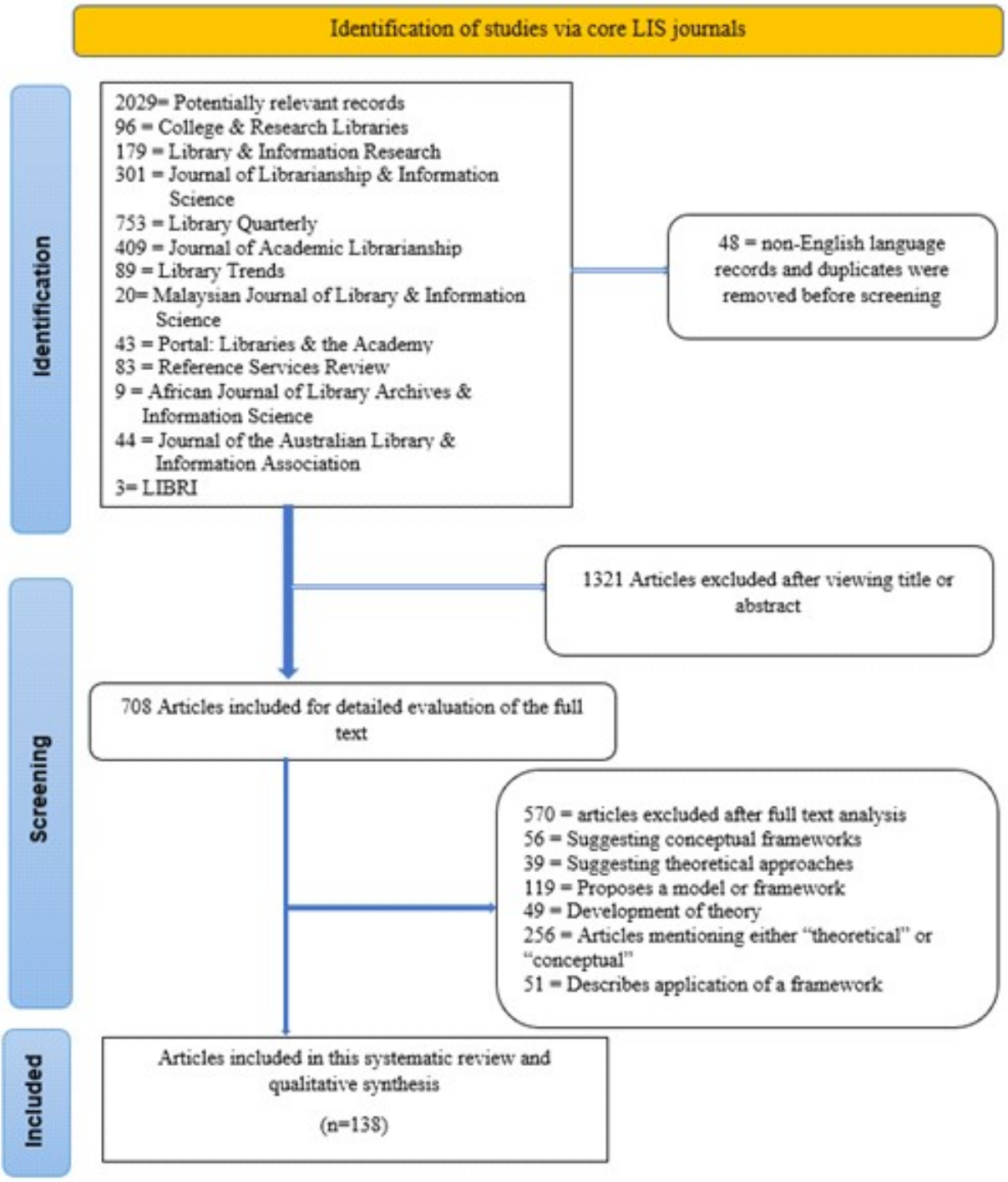

Figure 2: PRISMA flow diagram, CF, TF

Content Analysis of the Journal Articles and Intercoder Reliability

After being popularised by Krippendorff (1980), content analysis is recognised as a credible research strategy for understanding various aspects of scholarly communication, including LIS (Aharony, 2012; Armann-Keown and Patterson, 2020; Allen and Reser, 1990). Content analysis systematically analyses the content of recorded communication to establish patterns, themes, and any pertinent features (Braun and Clarke, 2006; Luo, 2022).That makes this systematic review qualitative in contrast to the

statistical one (Holopainen, Hakulinen-Viitanen and Tossavainen, 2008).The analysis of the records was based on the CFdepicted in Figure 1 and the processof coding adopted by Pettigrew and McKechnie (2001:65),which considered a theory as:

> identified if the author(s) describes it as such in the article (applicable to established or proposed theories) or uses such key terms as "conceptual" (including its variations, e.g., conceptualization), "framework," "grounded," or "underpinnings" to describe an idea/view or approach assuch.

Intercoder reliability was established by systematically selecting a sample of articles from an Excel® database of the articles that were downloaded from the journals. Articles with numbers 1, 6, 11, 16, and so on were chosen based on a fixed periodic interval arbitrarily chosen at (5n). Theresulting sample was that 28 (20%) articles out of 138 articleswere included for analysis. Three postdoctoral fellows coded the 28 articlesusing the framework in Figure 1 and the coding proposal suggested by Pettigrew and McKechnie (2001). The three coders' disagreements were resolved by the authors after they evaluated the coding.Statistical Package of the Social Sciences (SPSS) version 26 was used to run the intercoder reliability test (i.e., Cohen's Kappa (ê)) and the values ranged between 0.826 and 0.944.That represents a strong degree of agreement (McHugh, 2012; Zhao, Feng, Ao and Liu, 2022).That implied that the risk of bias was reduced and the quality of the evidence enhanced. After reading the articles, only 44 were selected as they met the objectives of this review. The articles were assigned the codesTRANS 1 to TRANS 44 to maintain the anonymity of the articles and the authors.

Results

The results are presented based on the three research questions. Table 2 summarises the indicators of transparency in the use of theory in the articles that were analysed. The level of transparency waslow (minimal) if the total number of indicators were below 50%; average (moderate)if it was pegged at 50% and high it was above 50%.

Table 2: Indicators of transparency in the use of theory in the articles

	Indicator	Frequency		Level of transparency
		N	%	High
Intention	The theories named	44	100	
	Bibliographic references for the sources of theories	44	100	High
	Constructs outlined	42(44)	95.5	High
	Heading specifying the framework	39(44)	88.6	High
	Heading specifying the framework appropriate	22(44)	50	Average
	Heading specifying the framework inappropriate	17(44)	38.6	Low
	Statement on the use of a TF made	3(34)	8.8	Low
	Statement on the use of a CF made	6(10)	60	High
Choice	Reasons why the theory was preferred over others	18(44)	41	Low
	Limitations of the theory described	11(44)	25	Low
	CF use stated	3(10)	30	Low
	TF use stated	2(34)	5.9	Low
Suitability	Link between the research problem and the CF or TF established	37(44)	84.1	High
	Precedence in the use of theory described	24(44)	54.5	High
	Implications of the theory or concepts for understanding the phenomenon indicated	29(44)	65.9	High

Articulation of the Intention to use a Theoretical Framework in the Study

The findings in Table 2 reveal that a total of 88.6% specified the framework they used. Appropriate references were provided. Four journal articles did not have a heading specifying a TF or CF. All articles stated the theories that informed the studies and 95.5 % of the articles outlined the constructs in thetheories.Theories were mainly middle range theories in contrast to grand theories. Ten articles used a CF and three of them represented the CF graphically. Six studies out of ten stated that a CF was going to be used in contrast to three studies out of 34 that indicated that the studies employed a TF.

The findings revealed that some articles showed a lack of understanding of the difference between a CF and a TF. For instance, TRANS 2and TRANS 5 used the terms interchangeably andTRANS 6 had both a CF and TF. Furthermore, TRANS 16, TRANS 24,TRANS 30 and TRANS 40 used some concepts from one or two theories and labelled the analytical tool as a TF. TRANS 11 stated the TF as social constructivism and interpretive theory.

Various labels wereused in the place of a TF or CF by the articles. That made the heading specifying the framework to be either inappropriate (38%)or appropriate (50). TRANS 4 used the label "theoretical perspective" in place of a CF or TF.TRANS 12 identified their TF as a "theoretical lens". TRANS 4 and TRANS 24 described their analytical tools as an"analytical framework".TRANS 30 used a model and called it a "theoretical framework label". TRANS 44 categorised their analytical device as both a theory and modelandreferred to them as a"theoretical perspective".With two indicators scoring low levels of transparency,one scoring an average, and more than half scoringhigh, the transparency related to the intention was deemed to be above average or moderate.

Choice of the Theory Underpinning the Theoretical Framework

The findings in Table 2 indicate that the transparency in the choice of aTF or CFwas low throughout or minimal. A total of 18 articles out of 44 gave reasons why the theory was preferred over others. The reasons ranged from the theory being "elegant", "effective", "simple", "straightforward", "practical" to "inventive". Only 11 articles described the shortcomings of the theory. Two studies out of 34 that used a TF stated that a TF was going to be used. Three out of 10 articles that used a CFstated upfront that the study was going to be using a CF instead of a TF. Six out of the ten studies indicated why a CF was used instead of a TF.

Theoretical Framework Suited for its Function

The level of transparency was high in all indicators in relation to the suitability of the theory in addressing the research problem. A total of 37 out of 44 articles established the link between the research problem and the CF or TF. The precedence in the use of theory was described by 24 out of 44 articles. The implications of the theories or concepts for understanding the phenomenon were explained by 65.9% of the articles.

Discussion

Based on the findings, the discussions are presented in line with three research questions and the conceptual framework.

Articulation of the Intention to use a Theoretical Framework in the Study

The findings show that the articles had an intention to use the theories by stating the theory that was utilised,including its constructs. Unlike in the study by Kumasi et al. (2013), the appropriate bibliographic references for the theories that were used were given. All articles used middle range theories implying that they were employing theories that were contextually relevant, less abstract than grand theories, and facilitated the integration of theories to empirical research(Risjord, 2011).

Several articles specified the heading of the framework.If an article indicates the heading as a CF or TF,it shows that the intention to use these analytical tools was there.That means that there was a recognition of the importance of these tools in explaining a research problem.However, some headings specifying the framework were not labelled appropriately as there were instances where an article used concepts from theories or the extant

literature and was classified as aTF instead of a CF. The articles that used a CF and diagrammatically represented it demonstrated that they knewthat the literature recommends a graphical presentation of the CF (Miles and Huberman, 1994; Van der Waldt, 2020).

The findings revealed that fourscholarly journals did not have a heading specifying these analytical tools. Failure to have CF or TF implies that the resultant research will have limited significance and applicability. These journals fail to recognise the importance of these tools inexplaining phenomena to the detriment of knowledge production and theory building.Research which is not supported by theory produces discrete information or data that does not advance the body of knowledge in the field (Van House, 1991). That may imply that findings remainunexplained,making the generationof new hypotheses or questionsdifficult.

The fact that many studies did not state upfront that a TF or CFwas going to be used displaysa low level of transparency in their intention to use the tools. That might imply that their conceptualisation of the matter was not clear. It is important to state that the research is supported by a TF or CF (Ngulube, 2020), as it demonstrates an understanding of the different uses of thesetwo tools of conceptualising research. For instance, some useda TF and CF interchangeably, which is not appropriate (Ngulube, 2020; Van der Waldt, 2020). It is incumbent upon the researchers to clarify the intention if the terms are used interchangeably (Word, 2020). However, it is conceptually wrong for some of the articles to equate a model to a theory forming the basis of a TF instead of using the model as a foundation of a CF (Fried, 2020; Gunnell, 1969; Ngulube, Mathipa and Gumbo, 2015). It implies that there was a misconception about the criteria of choosing a TF or a CF. Another misconception was an article that regarded constructivism as a theory that formed the foundation of its TF. Metatheories such as constructivism cannot explain or interpret phenomena, but they can provide a lens to investigate it (Ngulube, 2018; Zaltman et al., 1973). The fact that one of the articles had both a CF and TF poses conceptual challenges because of a lack of agreement on the matter. When a theory is used as a CF, it is essential for an explanation to be given why it is not used as a TF.There is a need to be transparent about it.

The articles used terms like "theoretical perspective"and "analytical framework" when referring to their TF or CF.Such terms should be used with caution in that context. A theoretical perspective is not equivalent to a TF or a CF, although they are related. A theoretical perspective is based on a metatheory. Based on paradigms or assumptions about reality and knowledge, a theoretical perspective is the lens through which the worldis viewed (Creswell and Creswell, 2018; Fried, 2020; Technological University Dublin Library Service, 2023).The ability of the theory to explain the phenomenon under study determines why it should be chosen, and the theoretical perspective influences what data should be gathered, how questions should be formulated, and how the theory should be applied.

On the other hand,an analytical framework is also not equivalent to a TF or a CFas suggested by some of the articles that were reviewed. A TF is frequently the foundation for an analytical framework (Stanley, 2012). However, an analytical framework is a methodologically-driven approach that concentrates more on the linkages and elements that are pertinent to the research question (Biria, 2017, Kunkel, 2017; Stanley, 2012). That implies that there is a difference between an analytical framework and a TF or a CF, as they serve a different purpose. The study is driven by a TF, whilst the methodologyis driven by an analytical framework (Kunkel, 2017). These terms should be used with introspection when they are applied in the context of a TF or a CF.

Choice of the Theory Underpinning the Theoretical Framework

The articles had a low level of transparency in relation to choosing theories for the studies. When choosing a theory, it is importantto explain if the theory is fit for purpose and why it is more elegant than other theories. That exhibits the researcher's knowledge of competing or alternative theories and how they relate to or differ from the preferred theory. That also demonstrates the reasoning, assumptions and criteria used to select a certain theory and its link to the research design and analysis (Stewart and Klein, 2016).

Some theories have been challenged and criticised (Collins and Stockton, 2018; Creswell and Creswell, 2018) and theories have limitations when

explaining a phenomenon (Ngulube, 2020). Furthermore, theories are not absolute facts and fixed or static entities (Muurinen and Kääriäinen, 2022). Questionable measurement procedures or vague dichotomies may also have an impact on the validity and usefulness of theories (Fried, 2020).Only five articles stated the limitations of the theories. Does it mean that the 39 articles that did not consider this indicator did not appreciate that theories are dynamic, speculative and provisional structures that can be changed or improved through time?Neglecting to state the limitations of a theory may imply that there are assumptions that theories are universal statements which can explain everything. Which is not the case.

The context where the theories are being applied can also be a limitation if it is very different from the one where the theory was originally formulated. It is critical to address thematters of criticism of the theory and the contextual shortcomings of theresearch design and analysis.Theories may also have limited explanatory power. For instance, TRANS 3 explained how the use of unified theory of acceptance and the use of technology (UTAUT-2) gave a different perspective in a non-English-speaking society.

The findings show that the level of transparencywas very low in relation to stating whether the article used a TF or a CF. If an article statedthat a CF or a TF was used,it shows that there is an understanding that they serve a different purpose, and they are based on different assumptions (Afribary, 2020).A statement of the choice made between a CF or a TF helps the readersto better understand the objectives, focus, constraints, and underlying assumptions of a study. Stating if a CF or a TF was going to be used and the reasons thereof demonstrates a high level of transparency in the use of theory and theorising.

Theoretical Framework Suited for its Function

Transparency in relation to the degree of suitability of the theory was very high as compared to other indicators outlined in Table 2. Connecting the research problem and the theory validates the research topic and enhances the robustnessand impact of research findings (Sternheimer, 2019; Stewart and Klein, 2016).The articles explained how the findings were consistent (or inconsistent) with the selected TF or CF. Even better, they provided recommendations for further research in line with the theories they used in their research. New theories can be generated and existing ones challengedifthe theory and research findingsare linked (Sternheimer, 2019). That implies that there is the potential for the developmentof new theories and to develop alternate explanations based on theory (Pacheco-Vega, 2020).

Transparencyin the use of theory and theorising demands that an indicationmust be given on whether the theorieswereused in their original state, adapted, or modified, to suit the research requirements (Stewart and Klein, 2016). Where there is no precedent in the use of the theory, there must also be transparency. A declaration that the theory was being applied for the first time in a particular context or research problem will be essential (Collins and Stockton, 2018).

The implications of the theory to understanding the problem were underscored in many articles, which means that theory dropping as conceptualised by Kumasi et al. (2013) was minimal in the articles that were analysed. The theories were fully integrated into the discussion throughoutmany articles as recommended by Ennis (1999) andthere was full application of the use of theory (Kumasi et al., 2013).It takes a lot of discipline to use a TF or a CF throughout the whole research process (Ennis, 1999; Ngulube, Mathipa and Gumbo, 2015).

Limitations of the Study

The results of the current study should be evaluated because it hasseveral limitations. The inclusion criteria based on the journal articles published in the English language and indexed in the JCR impose a limitation to the study. The absence of common operational codes used as indicators of theorisation and theory use was another setback. The use of the CF in Figure 1 and the literature partly alleviated the problem.

The methodology used has limitations to the comprehensiveness of the results. A mixed methods research approach had the potential to capture the comprehensiveness of the phenomena. After having looked at the trends and patterns in scholarly communication in the first phase, the second phase can include interviews conducted with a sample of

authors, members of editorial boards, and reviewers. The Delphi method also offers another alternative.

Althoughthe literature reviews sections in the articles can be a proxy of a CF(Ngulube et al., 2015; Ravitch and Riggan, 2017)and may cover theories used in a study, they were beyond the scope of this study. The study did not establish the correlation between the impact factor of a journal and the use of theory. Finally, the review focused specifically on transparency in the use of theoretical frameworks and did not target broad theory use and theorisation in LIS. Despite these limitations, the study contributes to the deeper understanding of transparency in the use of a TF when conducting research.

Conclusion and Recommendations

This article describes a systematic literature review on transparency in the use of a TF for the advancement of knowledge in LIS-focused journals during the period 1991 to 2022. The review followed the PRISMA guidelines, and the screening process resulted in 138articles, which were based on 12 journals that were systematically identified as core to the discipline. This systematic review revealed that there was a moderate level of transparency when choosing a theory to inform a study. That implies that there was an intention to link the studies to the broader literature and effectively explain and interpret their findings. In other words, by being transparent about their intention to use a TF or a CF, the articles set a theoretical expectation and the tone on how the study was going to be conducted.

The level of transparency when choosing a theory was low. That was in stark contrast to the level of transparencyassociated with explaining the suitability of the theory to the study. There is a need to be transparent about the choice of the theory so that readers can comprehend the spectrum, focus and limitations of the theory. Being transparent about the precedence in the use of the theoriesand establishing the link between the theories and the research question as well as their implications for understanding the phenomenon was the strongest point in the articles. That should be reinforced to advance the frontiers of knowledge.In a nutshell, the TF and CF are an essential part of research projects and research articles, which implies that they should be used transparently for them to advance valid and transformative knowledge. Transparency in the use of a TF will help novice researchersto use the tools of conceptualising and analysing research appropriately and effectively.

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Appendix 1: Sample of journals used in the study

Rank	Journal and1st year published*	Sample of journals used in previous studies	Scope, subject category and place of publication**	SJR 2021	JCR 2021
1	*Library and Information Research* (1983)	(Aharony, 2012; Bilal, 2022; Järvelin and Vakkari, 2014; Kim and Jeong, 2006; Kumasi, Charbonneau and Walster, 2013; Nisonger and Davis, 2005; Nixon, 2014; Pettigrew and McKechnie, 2001)	Cross-disciplinary with a focus on LIS (UK)	0.92 (Q1)	2.73 (Q2)
2	*College and Research Libraries* (1939)	(Aharony, 2012; Järvelin and Vakkari, 2014; Kumasi, Charbonneau and Walster, 2013; Nisonger and Davis, 2005; Nixon, 2014)	LIS (USA	1.11 (Q1)	2.381 (Q2)
3	*Journal of Librarianship and Information Science* (1991)	(Järvelin and Vakkari, 2014; Nisonger and Davis, 2005; Nixon, 2014)	LIS (UK)	0.76 (Q1)	1.992 (Q3)
4	Library Quarterly (1931)	(Bilal, 2022; Järvelin and Vakkari, 2014; Kumasi, Charbonneau and Walster, 2013; Nisonger and Davis, 2005; Nixon, 2014; Pettigrew and McKechnie, 2001)	LIS (USA	0.68 (Q1)	1.895 (Q3)
5	*Journal of Academic Librarianship* (1975)	(Nisonger and Davis, 2005; Nixon, 2014)	LIS (UK)	0.74 (Q1)	1.533 (Q3)
6	*Library Trends* (1952)	(Järvelin and Vakkari, 2014; Kumasi, Charbonneau and Walster, 2013; Nisonger and Davis, 2005; Nixon, 2014)	LIS (USA	0.54 (Q1)	1.311 (Q3)
7	*Malaysian Journal of Library and Information Science* (1996)	Never used in related studies	Relevant to Asia Pacific region: LIS (Malaysia)	0.33 (Q2)	1.25 (Q3)
8	*Portal: Libraries and the Academy* (2001)	(Nixon, 2014)	LIS (USA)	0.59 (Q1)	1.067 (Q3)
9	*Reference Services Review* (1972)	(Nisonger and Davis, 2005; Nixon, 2014)	LIS (UK)	0.75 (Q1)	0.831 (Q4)
10	*African Journal of Library, Archives and Information Science* (1991)	Never used in related studies	Relevant to Africa: LIS (Nigeria)	0.13 (Q4)	0.828 (Q4)
11	*Journal of the Australian Library and Information Association* (2017)	Never used in related studies	Relevant to Australian and Southern Asia Pacific: LIS (UK)	0.52 (Q2)	0.725 (Q4)
12	*LIBRI-International Journal of Libraries and Information Studies* (1950)	(Järvelin and Vakkari, 2014; Nisonger and Davis, 2005; Nixon, 2014)	LIS	0.30 (Q3)	0.521 (Q4)

* Based on Clarivate (2023).

**The scope of the journal is international unless otherwise stated

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