DESIGN THINKING & VIRTUAL MANAGEMENT TRAINING: A SYSTEMATIC LITERATURE REVIEW

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ABSTRACT

Does the time of 21st century training necessitate exploration into emerging research pedagogies like design thinking for a better understanding of how design influences business and management? This review explains the changes in training perspectives within management settings using creative engagement methods like design thinking which call into question the future of dynamic business innovation. The paper undertakes a Systematic Literature Review of this nascent field, followed by a Bibliometric Analysis, Content Analysis to present a taxonomy of the field, and finally outlines interesting questions for future research to address.

Keywords: Design Thinking, Virtual, Management Training, Systematic Literature Review.

INTRODUCTION

In recent literature, Design thinking is advancing popularity across almost all academia disciplines, inclusive of administration, academia, entertainment, and information technology Although the implementation of design thinking in managerial challenges is rather recent and uncharted, organizations are attempting to apply this notion to many situations, and academics and global practitioners are attempting to redefine and construe it (David & Martin, 2006). Contemporary literature explores how Design thinking has the potential to solve problems across several management functional areas specifically it is gaining dexterous traction in management business training. Notwithstanding, according to recent research, the problem encountered by a trainer today is complicated and hardly resolved by linear answer. To tackle training challenge creatively, design thinking might be employed through continuous practice (Henriksen et al., 2017). Nonetheless, as participants work in multidisciplinary teams, business management students and/or trainees throughout the world encounter a variety of problems. They can be well equipped to

deal with real-life difficulties by using design thinking methodologies accompanied with flipped classes, bootcamps and client-based projects (Foster & Yaoyuneyong, 2016). Furthermore, design creation tactics stimulate divergent thinking, which now more than ever, requires an inclusive dynamic design-based process to enhance learner's/trainee's creative and analytical explorations and experimentation (Singh & Gu, 2012).

Paradoxically, it is noticeable that researchers have begun to pay greater attention to the area, yet previous researchers have only focused on broad aspect and fields of application of design thinking but not comprehensively on the central theme of design thinking in management training. If left unaddressed, a major transformation in management training

might go unearthed. This paper contributes to the emerging field by understanding the developments in the use of design thinking in management training academia to underpin the gaps for empirical research. The paper is structured as follows: Methodology, SLR, Content Analysis, Discussion and Future Scope, Implications, Conclusion and Limitations.

METHODOLOGY

As the design thinking in the arena of management training research field is just emerging, we chose a qualitative niche focused systematic literature review (SLR) methodology to examine the underlying field. The authors conducted a SLR using PRISMA guidelines. The authors sourced the articles from the
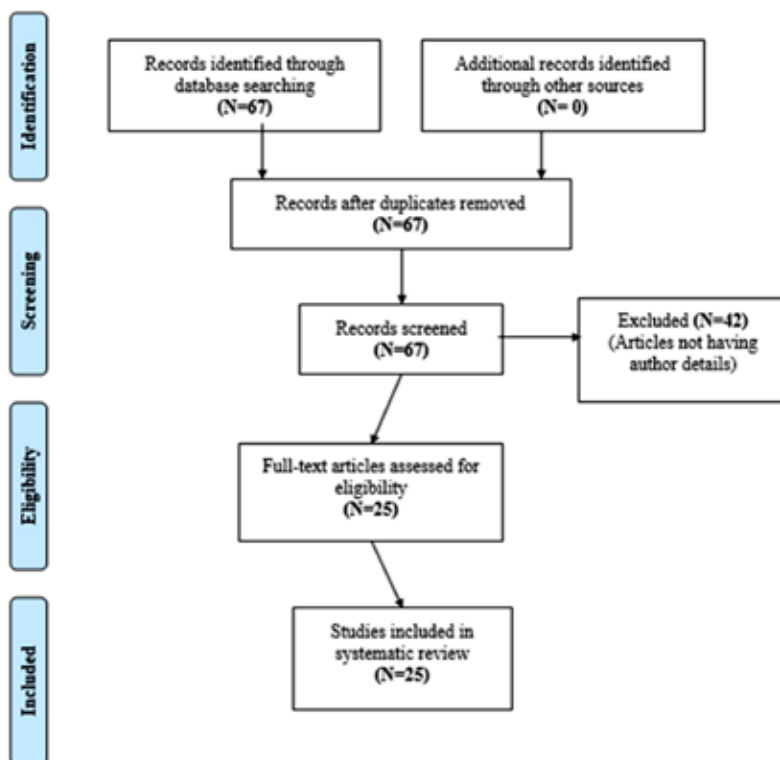

Figure 1: Data curation Process. Source: Scopus Systematic Literature Review

Scopus database. The search string used was: "design thinking" AND "management training". The search process generated 67 academic papers from 2013 to 2022. Authors jointly limited document type of 'Articles' resulting in 38 papers, in the 'Final stage of the publication' resulting in 35 papers, the source type was limited to 'Journal' resulting in 35 papers, with limiting the language to English leading to 35 papers, and limited to area of Social Science, Business Management and Accounting, Psychology, Arts and Humanities, and Neuroscience resulting in 25 papers. See figure 1 for data curation process.

SYSTEMATIC LITERATURE REVIEW

Descriptive Statistics

Figure2 displays design thinking and management training research articles by year. The topic is novel, as the first traceable article was published in 2013. The fall in year 2022 is because to data extraction process concluded articles only till June 2022. The most impactful country based on the number of publications in the domain of design thinking and management training was United Kingdom with 6 documents(see Figure3). All developed countries are evolving their training methodologies via design thinking. India is yet to find place in this recent trend. The h-index is 9 which indicated that of the 25 documents considered for the h-index, 9 have been cited at least 9 times (see Figure 4). These citations in recent years means that the area is gaining significant interest in management academic as well as organizational press and training.
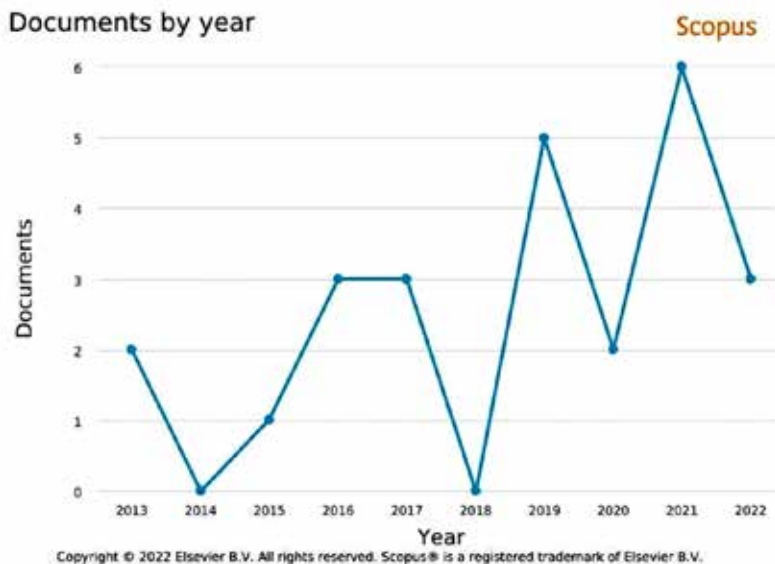
Figure 2. Publication Trend. Source: Scopus

Documents by country or territory

Compare the document counts for up to 15 countries/territories.
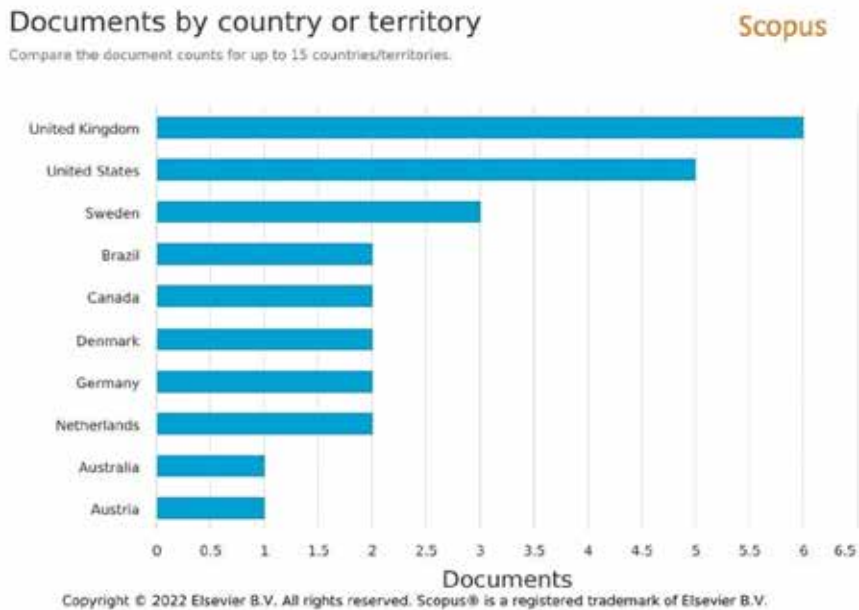
Scopus

Figure 3. Top Contributing Countries. Source: Scopus

These documents h-index9

Scopus

Of the documents considered for the h-index, have been cited at least times

Figure 4. h-index9. Source: Scopus

BIBLIOMETRIC ANALYSIS

Text Mapping

By default, VOS-Viewer suggests the inclusion of 60 % of the noun phrases selected in previous step (van Eck & Waltman, 2014) for map based on text data, wherein data is extracted from title and abstract with ignoring structured abstracts labels and copyright statements and binary counting. The default minimum no. of occurrences of a term is 7, but to expand the network we set the threshold of only 2. This results in 1032 terms out of which 127 terms meet the threshold, out of which only 60% that is 76 terms are most relevant terms. As in the figure 5 for Network visualization for co-occurrence analysis of text data, skills, teamwork, awareness, motivation, leadership, sustainability, constructivism, among others, are among the most relevant words.

Figure 5: Network visualization for co-occurrence analysis of text data. Source: VOS- Viewer

Furthermore, in the figure 6 for item density visualization respectively for co-occurrence analysis of text data, most relevant and focused items are student, environment, understanding, skills, motivation, principle, among others.
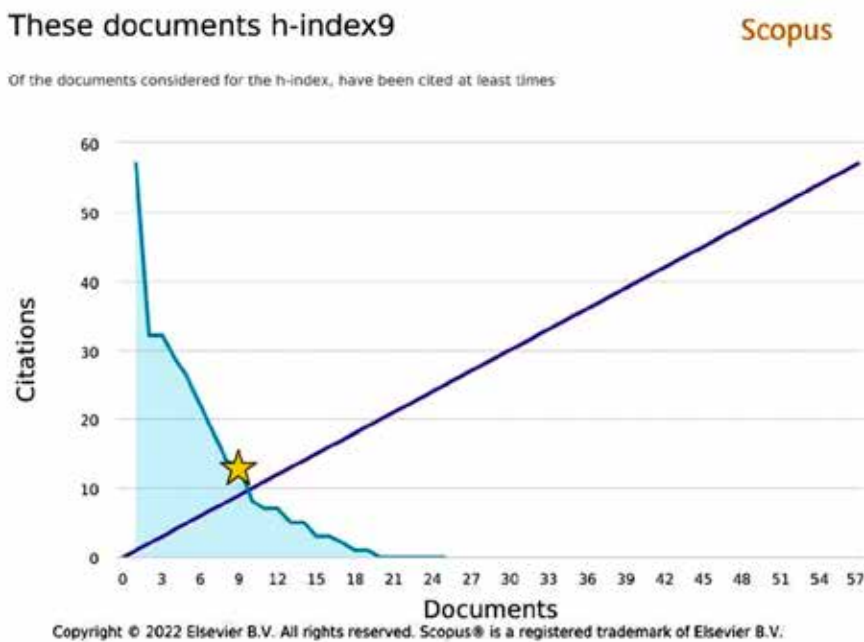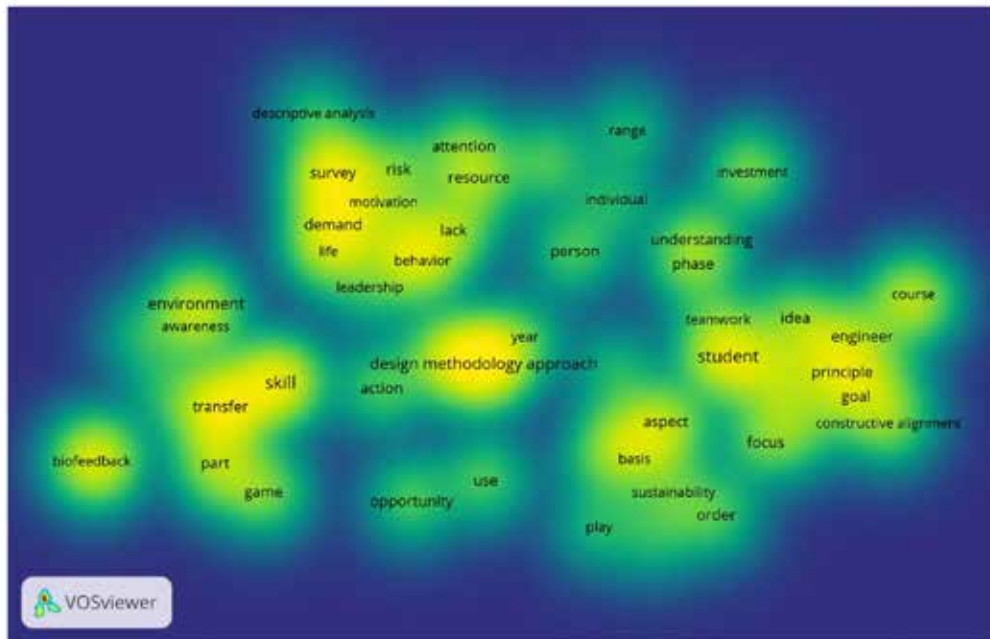
Viewer

Figure 6: Density visualization for co-occurrence analysis of text data. Source: VOS- Viewer

Content Analysis

We undertake comprehensive content analysis to present the themes and propose a taxonomy of the literature as in Figure 7.

Virtual Reality and Thinking Processes-
When existing methods are questioned or replaced by techno-based innovation, and when existing markets and societal institutions transform into coetaneous bodies, disruptions are more likely to occur. These factors confront training in humdrum, and specifically management training. In industry 4.0 technology and virtual reality is altering how and where learning happens, as well as how and why it is evaluated, along with the continuing globalization of managerial and business academia which has affected trends

and market designs (Bennis & O'Toole, 2005). Furthermore, previous research has examined how well the advent of digital technology has caused a rethinking of the learning and un-learning training models and pedagogies in the wake of design thinking. Research further found that design thinking is an appropriate erudition alternative in this digital age (Kevern, 2011).

Artificial Intelligence, Advanced Technology, Tools, and Materials-
Based on prior research, Johansson-Skoldberg et al. (2013) mentioned that 2011 marked a watershed moment in design thinking due to the Cambridge Conference on Design Management. Research mentions, (Sleiman et al., 2019), to face future problems, a virtual

design-thinking workbook, virtual planner books and artbooks can be quite useful since it inspires and engross students by lifting the designer block with artificial intelligence and advanced technologies to aid in the execution of these ideas. To address society's forthcoming need, research has also advised adopting a designer workbook as a distinct course/ stimulation. Design based training, tools and content related to design and creativity curriculum, provides for the customization of the training system, and allow the student to pick the sort of challenges they wanted to pursue on creatively. Studies have made an orphic statement that decision- makers must use creative abduction to think of new ways to animate proposed concepts and explore new core creative concepts (Dong et al.,2015). It is stated that parametric perspective is a key strategic and innovative medium in parametric design thinking (Rivka, 2017).

Modern Models and Methods-

Lee (2019) discussed the double diamond model, which aids students brainstorm, with increased focus on design pedagogy-based training, design interventions and design-based stimulations (Chambers, 2018). Many approaches of design thinking have evolved throughout time and again (Cross, 2018), from humane design thinking to intelligent technological design thinking. However, less is argued to agree that the technique was introduced by the well-known creative power-house firm IDEO, who proffered a multi-layer model that combines the authenticity and underpinnings of customer needs through empathy and observations with the dependability of abstract reasoning in idea creating, screening, and execution. The IDEO method is sentient and encourages an environment of radical interaction and experimentation, which would also result in discoveries that are more strongly associated with the demands of end users. This method comprises empathising and defining (inspiration), which entails complete absorption in brainstorming and structured observations to better comprehend challenges. The most imaginative and crucial step of the process is ideation in which participant collaborate in focus groups, teams and together learners decide on design offerings and solutions.

Flexible Mindset and Engagement-

Additionally, design thinking based integrated learning assists trainees in developing a unique identity and pansophic voice as a design thinker/individual (Arnold, 2010). Design Thinking is an attitude and mindset of growth, collaboration, and problem solving. The design mindset is an organised basis for sailing through challenges, embracing unstructured information, developing potential solutions, and polishing ideas. Trainers might state that design thinking mindset may be used in a variety of ways, including as a foundation for instructional planning or as a strategic plan for an engagement or scheme of work.

Training Outcomes-

Various studies have examined pedagogy innovation using design thinking to improve participants' experience and learning journey (Huq & Gilbert, 2017). Studies on value - creating design-based approaches in business and managerial training state (Abrams & Walsh, 2014) that this is a rather promising

but (Nielsen & Stovang, 2015) an understudied field of research, which seeks to determine if the advances in training subculture need a rethinking of existing methods (Burdick & Willis, 2011).

Design thinking in VUCA (volatility, uncertainty, complexity, and ambiguity) world is a feature of the new age (Cousins, 2018). To address this issue, design thinking is emerging with prominence since it allows trainees and organisations to learn quickly (Kali et al., 2011). Because industries worldwide are evolving in tandem with technical and social advancement, there is a salient need for a shift in the present academic paradigm if we want to put learners as employees in the business (Wrigley & Straker, 2017). Previously, design-based thinking was studied in the light of academic learning design concept (David & Martin, 2006; Carroll et al., 2010; Bekker et al., 2015). A growing insistence on the business and managerial impact of design thinking in recent times is unfolding in literature (Nielsen & Stovang, 2015). As the industrialised world's economy shifts away from industrial production and toward service, knowledge addition, and human-intended activities. As per the seminal paper in the field, design-based thinking might contribute significantly to modern virtual training approach (Brown 2008). Nonetheless, current body of literature is conflicting in the state of empirical data, since few researchers feel that imagination in design thinking is a socio-cultural phenomenon that occurs once someone engages with an experienced practitioner. According to research design thinking is an 'effective learning strategy' that can help learners integrate and process

concepts (Gemez et al., 2013). Studies have also explored the significance of sociocultural design, how and why designers should be conscious of it (Janzer & Weinstein, 2014).

The Palo Alto Art Center were able to provide a solution to the royal family's problems through design thinking. Design thinking is a more human-centred approach to question answering (Larson, 2017). Research has also discussed effectiveness to innovate, even though there are still other topics to examine with the creativity model (Roach et al., 2016).

Deficiencies in training curricula and pedagogy-

There is an interesting side of the story were following the critique of the great relevance of business school curricula, invites for modifications to management training have been made, with a specific emphasis on injecting and exploring a greater focus on practise; that thus said is, transition from academic activities to developing the skills for managing 'businesses and people' (Bennis & O'Toole, 2005; Navarro, 2008). This innovative approach of managerial training changes the substance of the curriculum but not how knowledge is transferred or gained. Indeed, the major emphasis is on what is delivered rather than how it is offered, suggesting that progressive methods are now being advocated as a reaction to natural developments in business and business training. Design thinking methodologies are an important step toward implementing more unconventional instructional techniques in business school. The goal is that they will be interim, eventually laying grounds to more innovative and humane instructional and creative approaches.
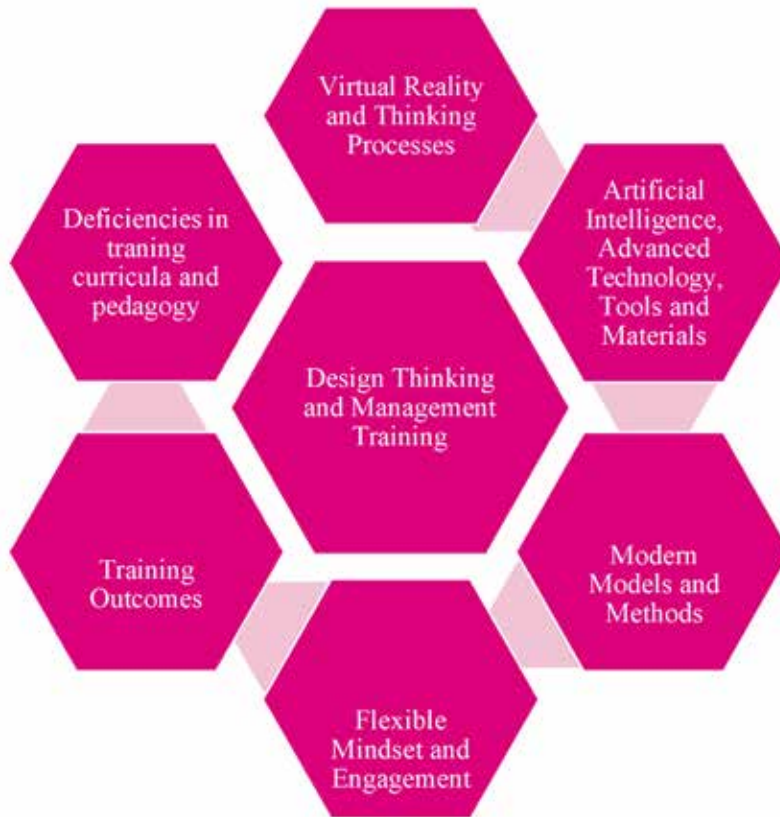
Figure 7: Taxonomy of Design Thinking and Management Training. Source: Author Compilation

DISCUSSION AND FUTURE SCOPE

Many design thinking and innovative programmes have been implemented all around the world since the first entrepreneurship and innovation curricula which was conducted at Harvard University in 1947. Nonetheless, there is much disagreement on the scope, aims, and tactics most helpful in creating a creative mindset (Daniel, 2016). Although applying design thinking to build a learner-centred training experiences can not only inspire and influence learners/participants, but also to transform participants. Thinking via design to construct a grounded and innovative training and curriculum provides significant approaches to re- envision and renew management training's promise. Even though design thinking experience has a strong role in re-shaping and strengthening individual and institutional training and learning, there still lies further possibility to rejuvenate academics and enhance the personal and collective competence. A design thinking based empirically tested course for management training is the call of the instant future to create an edge in creative value adding development of learners. Although there has been design thinking- based interventions in healthcare, tourism, engineering training institutions, similar interventions need to be explored in a management training institution

to access the effect on student learning and performance (Daniel et al., 2017). Through exploration of literature, a resultant curriculum must be modified and scrutinized using focus group methodology in the management context (Badwan et al., 2018). Furthermore, future academics may focus more on incorporating more empirical methodologies, hybrid methods, and econometric/statistical tools to improve the precision in design thinking. To conclude, even though there has been significant progress in theory development, there is insufficient progress in the creation and implementation of diverse training curricula and training ideas connected to design thinking. We believe that the following broad research questions may aid in advancing the knowledge in this field.

Q.1 How might training-knowledge be imparted and acquired in this new technological and creative era?
Q.2. How to train employees to become design thinkers?
Q.3 How might Design Thinking approaches be integrated in pragmatic management training?
Q.4. How can managers be trained to understand, adopt, and blend the designers' style of thinking with their regular analytical, critical, and managerial thinking?

IMPLICATIONS

This article contends that the dynamics confronting business schools necessitate innovations that go far beyond managerialism. The design thinking approach is advocated as a tool for reshaping how knowledge is created and implemented by embracing creativity, divergent thinking, critical thought, and human engagement. The intended effect is a recast of knowledge framework of acquisition at management and business training schools such that learning is an innovative, collaboratively driven, continuous activity fostered by an intertwined design-business curriculum.

CONCLUSION AND LIMITATIONS

Our review has shown that design thinking in the field of management training research is an active and growing area of enquiry that has yielded numerous interesting and intriguing findings. There is plausible theoretical and empirical evidence demonstrating that design thinking is an important variable that can enhance or hinder workplace creativity and innovation through appropriate training and development interventions. The paper presents theoretical implication for future researchers to address the potential, opportunities, and challenges of implementing design thinking into management training in the context of VUCA and technological world. Academicians can engage in active curricula development in business learning and innovation via design thinking.

As the field is at an evolving stage, we have attempted a niche review, yet this review if not free of limitation, the major limitation being that the database used for this study is Scopus only. However, a comparison of bibliometric dataset from the Web of Science (WoS), Google Scholar and Scopus, reported that Scopus database gives 20% greater coverage in comparison to WoS database (Falagas et al., 2008; Zupic & Čater, 2015); also in studies earlier that the output generated by Google database provides inadequate dataset for the

analysis (de Battisti & Salini, 2013)) to aid the export of a document set with cited references (Zupic & Čater, 2015). SSCI (WOS) the cited reference dataset only consists of details about the first authors which signifies that the efforts of other authors may be undervalued. Further, the SSCI's coverage of journals is confined to journals with an accredited impact factor. Because it requires a while for fresh journals to be incorporated in the SSCI, data from recently launched publications may be omitted (Zupic & Čater, 2015). Future researchers can employ more databases to contribute to advance studies in the field.

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