Redefinition and Reclassification of Literature Review under the Big Data Environment

Fan Chenxi*
Zhuhai College of Jilin University
Zhuhai, P.R.China
jlufcc@163.com

Han Songyang
Liaison Office of the Central People's Government in the
Hong Kong S.A.R
baozihan_2006@qq.com

Abstract—**This document explains and demonstrates how to redefine and reclassify the Literature Review under the Big Data environment. We compared the three typical traditional definitions by Cooker, Fink and Machi-McEvoy, and found that their definitions have not adapted to the present age. According to the new requirements about Literature Review, we put forward a new redefinition for it. Our new redefinition includes 11 attributes, which are essence, objects, objectives, patterns or forms, procedures, requirements, results, contents, scope, significance and technique. In addition, except adjusting the classifications of Basic Literature Review and Senior Literature Review, the new type Synthetical Research of Literature Review is added and discussed in detail. From the redefinition and reclassification we can know the variation of Literature Review and the Literature Review should be sharing, reusable, systematic, comprehensive and consistent in Big Data era.**

Keywords—Redefinition, Reclassification, Literature Review, Big Data

I.   INTRODUCTION

Literature Review is an important research method, and it is the prerequisite and necessary condition of scientific research. It has important significance for helping researchers to carry out studying, cultivating the scientific research ability of students, enhancing the support function of think tank and assisting scientific decision-making of leadership. In order to make a study systematically, comprehensively, deeply and scientifically, it is necessary to adopt correct method of Literature Review. Under the Big Data environment Literature Review has changed greatly, and it is very important to reposition it including redefinition and reclassification.

II.   TRADITIONAL DEFINITION OF LITERATURE REVIEW

Literature Review is a kind of synthetical research under the Big Data environment. Therefore, the terminology of Literature Review equals to Research Synthesis here. But up to now there is no consistent and explicit definition of Literature Review and Research Synthesis, because the methods and practices of them have been developing and changing constantly. Harris Cooper, Arlene Fink, Lawrence A. Machi and Brenda T. McEvoy gave the definitions of Literature Review under the traditional research environment respectively.

Harris Cooper, professor of Psychology and Neuroscience at the Duke University in Durham, North Carolina, thought that the terms of Literature Reviews included *Literature Review, Research Review, Integrative Research Review, Research Synthesis and Meta-Analysis* [1], and some of them are interchangeable in practice. He gave the simplest definition for Research Synthesis, and that is *how to find, evaluate, and integrate previous studies* [2]. Cooper summarized the basic meaning of the Literature Review in a very simple and abstract way, and pointed out the attributes of objects and procedures in the definition. Only those who have grasped the method of the Literature Review well could understand it fully because it is too terse.

Arlene Fink, Professor of Medicine and Public Health at the University of California, Los Angeles, and president of the Langley Research Institute, gave Literature Review the following definition: *A research literature review is a systematic, explicit, and reproducible method for identifying, evaluating, and synthesizing the existing body of completed and recorded work produced by researchers, scholars, and practitioners* [3]. Her definition clearly pointed out the attributes of essence, requirements, procedures and creators. Fink's definition was much more detailed than Cooker's, but it was still not enough specific and comprehensive.

Lawrence A. Machi, Professor Emeritus of Organizational Leadership at the University of La Verne, California, and Brenda T. McEvoy also gave the definition for Literature Review. In the definition they thought that the pattern is an argument in writing, the object is an existing knowledge of research topic, the requirement is to understand comprehensively, the objective is to establish a reasonable logical demonstration and the results are to draw a convincing standpoint and to answer research questions [4]. Their definition was more complete than the above two, yet there are not parts of procedures, creators and essence in it.

The three traditional definitions had different characteristics, and defined the Literature Review based on different aspects and ways. Table 1 lists the comparisons.

TABLE I. COMPARISONS ABOUT THREE TRADITIONAL DEFINITIONS OF LITERATURE REVIEW

Attributes	Cooper Definition	Fink Definition	Machi-McEvoy Definition
Creators	None	Researchers, scholars and practitioners	None
Essence	None	A research method	None
Object	Previous studies	Completed and recorded work	Existing knowledge of research topic
Objective	None	None	To establish a reasonable logical demonstration
Pattern	None	None	Argument in writing
Procedures	To find, evaluate and integrate	Identifying, evaluating and synthesizing	None
Requirements	None	Systematic, explicit and reproducible	To understand comprehensively
Results	None	None	To draw a convincing standpoint and answer research questions

III. REDEFINITION OF LITERATURE REVIEW UNDER THE BIG DATA ENVIRONMENT

In the information technology era of the Big Data environment, the scopes, objectives, methods and requirements of Literature Review have changed a lot, which leads to the objects, procedures, patterns and results are bound to change accordingly. Therefore, we need to reposition Literature Review. Based on the traditional definitions, redefinition is extremely essential and extraordinarily important.

The new comprehensive definition which we give in the Big Data era is as follows. As the antecedent foundation and the necessary condition for all kinds of scientific research, Literature Review is a kind of research method to ensure academic legitimacy, information sharing, data reuse and decision support, aiming at some research field or some specific domain of a field, applying appropriate information technology tools, collecting materials comprehensively, filtering data scientifically, analyzing information deeply and acquiring knowledge systematically from massive study results and related up-to-date information, expounding present world-wide situations, research progresses, developing trends, new perspectives and academic achievements synthetically, and providing the reference for study or decision-making in the form of literature review resource database or written argument to answer some research questions.

Table 2 shows the above statements.

TABLE II. ATTRIBUTES OF THE REDEFINITION OF LITERATURE REVIEW UNDER THE BIG DATA ENVIRONMENT

Attributes	Redefinition	Type	Description
Creators	None	Deleted	Unnecessary
Essence	A kind of research method	No Change	Equal to Fink definition
Objects	Massive study results and related up-to-date information	Adjusted	Static study results and dynamic related news
Objectives	Academic legitimacy, information sharing, data reuse and decision support	Adjusted	Objective in the Big Data
Patterns or Forms	Literature review resource database or written argument	Adjusted	Review resource database as an important foundation
Procedures	Collecting materials, filtering data, analyzing information and acquiring knowledge	Adjusted	Detailed process
Requirements	Comprehensively, scientifically, deeply and systematically	Adjusted	Intensity, advancement, depth and breadth
Results	Reference for study or decision-making	Adjusted	Results in the Big Data
Contents	Present world-wide situations, research progresses, developing trends, new perspectives and academic achievements	Added	Concrete contents
Scope	Some research field or some specific domain of a field	Added	Application boundaries
Significance	Antecedent foundation and the necessary condition for all kinds of scientific research	Added	Important degree
Technique	Appropriate information technology tools	Added	Necessity of IT

IV. RECLASSIFICATION OF LITERATURE REVIEW UNDER THE BIG DATA ENVIRONMENT

In the book *The Literature Review: Six Steps to Success*, Machi and McEvoy divided Literature Review into two types, Basic Literature Review and Senior Literature Review [5]. The book was published in 2009, and at that time the concept Big Data has not been put forward yet. In the Big Data era now, the background, purpose, requirements and application etc. have changed tremendously, which makes the classification of Literature Review must be adjusted too.

Under the Big Data environment, Literature Review has three classifications, and they are Basic Literature Review, Senior Literature Review and Synthetical Research of Literature Review. The first two have the same name like the previous, but the meaning are different. And they are adjusted according to the Big Data environment. In addition, the Synthetical Research of Literature Review has become the main type under the Big Data environment.

The Basic Literature Review is the classification of studying a specific question, theme or topic. Analyze existing materials, summarize present articles, sum up current knowledge and give simple evaluation or comments. It is usually used for Master thesis, project application or simple research report etc., and it is always a research work in a short time.

The Senior Literature Review is more complex. It is the classification of studying a complicated question, theme or topic. Based on the Basic Literature Review, point out

shortcomings, disadvantages and vulnerabilities, elaborate new discoveries, ideas and thinking, put forward advices and suggestions, and propose thoughts and methods to solve problems. It needs further deep-going arguments, new research directions and unique conclusions. It is usually used for complex Master thesis, Ph.D. thesis, complex research report and professional literature etc., and it is always a period of research work.

The Synthetical Research of Literature Review is the main type under the Big Data environment, and it includes the features of the other two. It maybe includes several or much more Basic Literature Reviews and Senior Literature Reviews, but it is not a simple combination of them. The Synthetical Research is much more complicated, in-depth, comprehensive, systematic, structured and detailed. It is the classification of studying a series of issues, themes, subjects and perspectives. It does not only try to find all of the original research and information about some research field, but also build research architecture, describe knowledge framework and dig up relational structure. It is mainly used for large professional academic literature, some research work in a large area and basic research and information platform of think tank. And it is a long, continuous and permanent research work.

Table 3 lists the comparisons for the three classifications of Literature Review.

TABLE III. COMPARISONS ABOUT THREE CLASSIFICATIONS OF LITERATURE REVIEW

Attributes	Basic Literature Review	Senior Literature Review	Synthetical Research of Literature Review
Common Characteristics	Analyze existing materials, summarize present articles, sum up current knowledge		
Study Scope	A specific question, theme or topic	A complicated question, theme or topic	A series of issues, themes, subjects and perspectives
Basic Description	Simple	More complex	Much more complicated, in-depth, comprehensive, systematic, structured and detailed
Requirements	Give simple evaluation or comments	Based on the Basic Literature Review, point out shortcomings, disadvantages and vulnerabilities, elaborate new discoveries, ideas and thinking, put forward advices and suggestions, and propose thoughts and methods to solve problems	Maybe includes several or much more Basic Literature Reviews and Senior Literature Reviews, not only try to find all of the original research and information about some research field, but also build research architecture, describe knowledge framework and mine relational structure
Usage	Master thesis, project application or simple research report etc	Complex Master thesis, Ph.D. thesis, complex research report and professional literature etc	Large professional academic literature, some research work in a large area and basic research and information platform of think tank
Duration	A research work in a short time	A period of research work	A long, continuous and permanent research work

V. Summary

Literature Review are used to describe current knowledge, justify the need for and significance of new research, explain research findings, and describe the quality of the available research [6]. The basic characteristics for Literature Review are scientific, normative and practical, and the quality characteristics are critical, creative and credible. The additional characteristics under the Big Data environment are sharing, reusable, systematic, comprehensive and consistent. The sharing and reusable characteristics are to adapt to massive data, reduce duplicated work, lower cost and improve efficiency. The systematic, comprehensive and consistent characteristics are to meet new standards and requirements. Under the Big Data environment, the Synthetical Research of Literature Review has become the main research method and the main type of Literature Review. It is not only the main way of research, but also the main research procedure. As the amount of research grew, so did the need for trustworthy research syntheses [7].

Acknowledgement

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