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Survive or perish: Investigating the life cycle of academic journals from 1950 to 2013 using survival analysis methods

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ABSTRACT

Since the emergence of the world's first academic journal in 1665, numerous academic journals have been launched and ceased publication. At the turn of the twenty-first century, academic journals are experiencing a dramatic revolution amidst increasingly fierce competition. However, limited research has investigated the survival pattern and the reasons why some academic journals have survived and others have not. Drawing on the data of academic journals in Ulrich's Periodicals Directory from 1950 to 2013, this study examined the life cycle of academic journals and revealed contributing factors related to the survival probabilities of academic journals using a Kaplan-Meier estimator, log-rank statistics, Cox proportional hazards models and propensity score matching. The results show that (1) the average survival rate of all the academic journals presents a rising-decreasing-rising pattern; (2) the third year after commencement is a peak year for academic journals to cease publication; (3) academic journals published in the UK, China, India and Russia, those in the field of technology, and those published in a single language cease publication sooner than their counterparts; (4) academic journals that provide online formats at launch time have a higher probability of surviving than non-online ones and those that provide online formats after launch time; (5) academic journals that provide print versions at launch time are more likely to survive than those without print formats and those that provide print formats after launch time; (6) academic journals that have a peer-reviewed process and that are published in multiple languages have a higher chance of survival; (7) academic journals published in English in China and Japan suffer a higher risk of termination than those published in native languages; (8) academic journals in the field of technology are more likely to cease publication than journals in the field of natural science; and (9) academic journals published in China can survive with a relatively high probability.

1. Introduction

Examining the life cycle of academic journals is of great importance for understanding both the academic world and the publishing market. As a critical medium to record and transfer scholarly knowledge, academic journals function as a platform for the introduction of original research and the critique of previous knowledge (Blake & Bly, 1993). Academic journals have

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recently entered an era of rapid growth, as is evidenced by a sharp increase in the number of journals being published (Gu & Blackmore, 2016). Over the past two decades, scholarly publications have faced an unprecedented revolution in distribution formats primarily due to advancements in the scope and capacity of the Internet. Most well-established academic journals have added the online format as a complementary service (Laakso et al., 2011). The number of online-only academic journals has skyrocketed in recent years and grown faster than print-only journals (Gu & Blackmore, 2016). In addition, providing multiple languages and English languages is perceived to be a useful strategy for improving academic journals' visibility (Drubin & Kellogg, 2012; Salager-Meyer, 2008). In a publishing market with increasingly keen competition, some academic journals have ceased publication or have been replaced by newcomers, while others have flourished and survived for many years. A deeper understanding of the survival pattern of academic journals, together with the contributing factors of their survival, especially the role that the publishing format and languages might play, can enrich our knowledge of academia, facilitate the development of publishing markets and benefit the knowledge-creation processes.

However, few studies have examined the life cycle of academic journals or the factors related to their survival. To bridge this gap, this study aims to explore the survival pattern of academic journals and to examine the influential factors that contribute to academic journals' survival probability. First, we will consider the survival rates of academic journals and the lifespan of academic journals that have ceased publication using the dataset of Ulrich's Periodicals Directory (Ulrich's) from 1950 to 2013. Survival analysis methods and propensity score matching will then be applied.

The next section reviews existing studies on academic journals based on data from Ulrich's, the current literature on the role of language and format in knowledge transfer and academic journals' survival, followed by other important characteristics of academic journals, and the lifecycle of academic journals. Section 3 provides the data collection and methodology. In Section 4, the results are presented. The last section presents a discussion of the findings, together with limitations.

2. Literature review

2.1. The quality and comprehensiveness of Ulrich's Periodicals Directory

Ulrich's is the major database used in this study to uncover the lifecycle of academic journals. Given that our results are largely dependent on the quality of Ulrich's, we first discussed the quality and comprehensiveness of this data source.

Most of the literature on academic journals documented that Ulrich's is the most complete, comprehensive and reliable database for capturing the statistics and other features of global academic journals (Jinha, 2010; Tenopir & King, 2009). Published since 1932, Ulrich's has been widely employed to investigate the growth features of academic journals worldwide (Archibald & Line, 1991; Gu & Blackmore, 2016; Mabe & Amin, 2001) and in certain countries (Tenopir & King, 1997). Many earlier analyses attempted to estimate journal statistics using data from Ulrich's, and the estimations seemed closer to the actual statistics (Mabe, 2003b) than predictions based on other sources (Derek, 1963; Woodward & Pilling, 1993). The comprehensiveness and quality of Ulrich's laid a solid foundation for these studies. For example, in an early study, Ulrich's was used to improve the estimates on academic journals' growth based on a sample of 190 journals founded in or before 1950 (Archibald & Line, 1991). In 1995, it was estimated that there were 6771 scientific journals published by American publishers (Tenopir & King, 1997). In another study, researchers observed 10,800 active refereed academic journals launched from 1900 to 1996 that were listed in Ulrich's dataset and argued that the increase of academic journal titles was not exponential (Mabe, 2003a; Mabe & Amin, 2001). Mabe and Amin (2001) estimated 14,964 active refereed academic journals founded from 1665 to 2001 and identified three important periods of global academic journals' growth between 1900 and 1996. Based on the data of journals' characteristics provided in Ulrich's, some recent studies provided more detailed and deeper analyses of journals' growth. A study investigated the growth rates, survival rates and distribution formats of academic journals founded between 1986 and 2013 (Gu & Blackmore, 2016). Mainly based on information of publishers' countries, a recent research unraveled cross-country inequality, globalization process and spatial autocorrelation of academic journals from 1950 to 2013 (Wang, Hu, & Liu, 2017). All these studies were based on data in Ulrich's.

Prior studies that compared Ulrich's with other data sources concluded that Ulrich's was the optimal data source for investigating global academic journals (Moya-Anegón et al., 2007). As Mabe (2003b) stated, Ulrich's is advantageous due to its relatively complete coverage, the setting of diverse classification criteria and the availability of both CD-ROM and online formats. Because of an exhaustive journal coverage, Ulrich's has been used as a benchmark database to evaluate journal coverage of other databases. For example, using Ulrich's as a reference point, researchers found that journal coverage of Social Science Citation Index (SSCI) and Arts and Humanities Citation Index (A&HCI) overrepresented English-language journals and journals published in certain countries (Archambault, Vignola-Gagné, Côté, Larivière, & Gingras, 2005). A comparative analysis evaluated journal coverage of Scopus and Ulrich's based on multiple variables of journals, such as subject categories, country and language of publication and whether it is peer-reviewed, and concluded that the data bias for English academic journals was more moderate in Ulrich's (Moya-Anegón et al., 2007). By comparing the list of journals in Web of Science and Scopus with that in Ulrich's, a recent investigation found that these two databases had biases towards some journals in the aspects of field classification, publishers' country and language (Mongeon & Paul-Hus, 2016). In summary, existing evidence supports that Ulrich's can be used as a "gold standard" of reference for examining global academic journals in terms of growth and other features.

Despite the common consensus that Ulrich's is the most reliable source of journal statistics, it has limitations. First, newly founded journals may not be indexed in Ulrich's immediately (Morris, 2007). Second, the coverage of journals published in