

Citations and herding: Why one article makes it and another doesn't

The purpose of this paper is to draw a link between citations and the choice overload paradigm and show that herding plays a role in citing behavior. In addition, parallel with an increase in the number of published papers, we observe an increase in the strength of herding in citation.

The information era has brought with it the well-known problem of 'information explosion' (Hanani, and Frank 2000): researchers face an ever-increasing amount of information and with the arrival of the internet and search engines they have more options in seeking and obtaining information than ever before (Junni 2007). At the same time, the number of marketing-related journals has increased rapidly in recent years (Baumgartner, and Pieters 2003) and journals expand into broader fields of research. This proliferation of information comes with greater uncertainty (Anderson 2003) and increases the difficulty to select an option (Schwartz et al. 2002). According to the uncertainty reduction theory (Berger, and Calabrese 1975), people will engage in uncertainty reduction efforts to alleviate and eliminate the risk caused by uncertainty and to maximize outcome value. One kind of information often used in these efforts is the number of citations. While the number of citations may not be a perfect indicator of quality (Walter et al. 2003) it does play an important role in the evaluation of academics and papers (Stremersch, Verniers, and Verhoef 2007). In this study we will explore the role of herding in citing behavior.

In order to select sources for their research, one has to make a choice out of a seemingly endless amount of articles. In such a context of uncertainty, Parker and Prechter (2005) have seen a default to a herding impulse: people may imitate each other out of a desire to be safe. They may believe that persons before them had better information on the quality of articles than they themselves do, and therefore may include the articles in their own research (Bonabeau 2004). We assume that the number of citations serves as a quality cue for a given paper. As individuals follow the previous citing behavior of others without taking their own information into account, they will concentrate on a limited amount of articles with an established citation record. When this imitation occurs in large numbers, informational cascades can be formed (Banerjee 1992; Bikhchandani Hirshleifer, and Welch 1992). The limited number of papers that is already cited tends to accumulate citations increasingly rapidly while a larger set of initially uncited papers tends to be (virtually) ignored.

While former research (Stremersch et al. 2007) focused on static determinants of citations (e.g. quality and domain of the article, visibility and personal promotion), we focus on herding behavior of researchers, a dynamic determinant. In order to investigate our hypothesis, our study will be divided into two parts, the demand and the supply side: On the one hand, we will examine the herding effect of citations by the means of citation counts. On the other hand, we will look at the possible increase in the supply of journals and its articles.

For the first part of our study we collected citation data via Web of Science. We sampled six major marketing journals: *JCR*, *JRM*, *JM*, *MKS*, *JCP* and *IJRM*. We inventoried all articles published in these journals in 1985, 1990, 1995, 2000 and 2005. For each article we tallied the number of citations made in each of the 5 years following its year of publication. The herding effect will be examined by means of a mixed model approach, where the number an article got cited each year is the dependent variable and the year of publication, the year after publication, the journal and the number of citations in the first year serve as independent variables. In the absence of herding, the cites that a paper receives in the first five years after publication should be distributed uniformly over those five years. In case of herding, on the other hand, a steady increase of the number of cites that a paper attracts should be observed. Moreover, this increase should be more pronounced for papers that are already heavily cited in the first year after publication.

The results confirm our expectations. We can see a significant increase in the number of citations each year, therefore indicating a more than linear rise in the cumulative number of citations. This herding effect is moderated by the year of publication, the specific journal as well as by the number of citations in the first year. The herding effect is more pronounced in 2005 than in 2000 ($p = .07$). In addition, stronger herding is observed in 2000 than in 1985, 1990 and 1995; the latter three do not significantly differ. The stronger herding in 2000 and 2005 can partly be explained by the growing use of electronically retrieved information, causing a larger amount of information. The difference between 2005 and 2000 can be explained by the introduction of Web of Science, making citation-oriented search even more convenient and common. The herding behavior observed for *JM* also differs significantly from that of *JCR*, *JMR*, *MKS*, *JCP* and *IJRM*. It exhibits strong herding. We also found stronger herding for articles that are heavily cited in the first year.

The second part of the study investigates whether the information supply for researcher has increased over the past decade (years 1998 to 2008). To do so, we developed a list of the different journals that were cited in the 6 target journals. We also tallied how often a specific journal was cited. If the supply of relevant information has increased, we would expect that the number of cited journals has also steadily increased.

Our findings confirm this expectation. Interestingly, the number of cites that come from the Top 5–cited journals have increased. This implies that the distribution of citations has become more lopsided: an increasing amount of journals are hardly cited while another, small proportion is heavily cited. This again testifies to the herding phenomenon in citing behavior.

To conclude, our results show that citing behavior is characterized by significant herding. In addition, herding has become more pronounced over the past decade. Finally, increased herding may be attributed to the increased supply of relevant information. The latter is exhibited by an increase of the number of used journals.

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