Weblog Success: Exploring the Role of Technology

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Abstract

Weblogs have recently gained considerable media attention. Leading weblog sites are already attracting millions of visitors. Yet, success in the highly competitive *world of weblogs* is not easily achieved. This study seeks to explore weblog success from a technology perspective, i.e. from the impact of weblog-building technology (or blogging tool). Based on an examination of 126 highly successful weblogs tracked over a period of three months, we categorized weblogs in terms of popularity rank and growth, and evaluated the relationship between weblog success (in terms of popularity) and technology use. Our analysis indicates that weblog success is associated with the type of blogging tool used. We argue that technology characteristics affect the presentation and organization of weblog content, as well as the social interaction between bloggers, and in turn, affect weblog success or popularity improvement. Based on our observation, we propose a techno-social success model for weblogs. This model postulates that a weblog's success is mainly associated with its ability to provide value for its users and readers at the content, the technology, and the social levels.

Keywords: *Weblog (blog), blogging tool, weblog success categories, success model, value proposition.*

1. Introduction

Weblogs (or blogs) are becoming a "new form of mainstream personal communication" (Rosenbloom, 2004, p. 31) for millions of people to publish and exchange knowledge/information, and to establish networks or build relationships in *the world of all blogs*, the so called "blogosphere". Weblog-building technologies (or blogging tools) bring new capabilities, such as web publication and communication, to average people, especially those non-technical users. They are designed to facilitate simple and fast creation of web content without much technical or programming skill. Recent releases of blogging tools have been further improved to provide enhanced features for between-blog interactivity; thus promoting the creation of social networks among bloggers. As an innovative social computing technology that enables *web based word-of-month* (through blogging activities), weblog was recently identified as among the top "10 tech trends to watch in 2005" by *Fortune* magazine (Volgelstein et al., 2005, p. 43).

Weblog popularity has surged over the last few years, and reached 6 million (www.technorati.com) active blogs by the end of 2004. According to Sifry (2004), founder and CEO of *Technorati* (well-recognized for its blog tracking/ranking service), over 12,000 new weblogs are created daily and an average of at least 4.6 weblogs are being updated every second. In a telephone survey of American Internet users, Pew Internet & American Life Project reported an increase of 58% weblog readership from February to November 2004, and reached 32 million readers (27% of the American online users) (BusinessWeek online, 2005). Businesses have also begun to recognize weblog's (potential) value. Several large firms, such as Microsoft and IBM, are already seen at the forefront of the corporate blogging wave, where employees are encouraged to actively embrace this medium. Companies such as Stonyfield Farm and CareerBuilder.com are paying "in-house bloggers" salaries in the range of $40,000 to $70,000 US; a further indication that corporate blogging is becoming one of the emerging careers in Marketing and PR circles (PRWeb, 2005).

Despite the increased attention that the blogging phenomenon has received, most weblogs will never achieve wide readership, possibly being read only by their author(s) and few others. Only very few weblogs may ever obtain the readership and financial success of *Instapundit.com*, or the cult status of *Slashdot.com*. Some studies (e.g., Shirky, 2003; Sifry, 2005) suggest that weblog popularity has been following a *power-law* distribution with most of the readership focused on a very small group of highly successful weblogs, sometimes called the "A-list" of weblogs. It has also been expected that with time, the distribution becomes increasingly uneven, so that the audience-rich would become richer while the audience-poor would become relatively poorer and some eventually fade out. And yet, the web has proven itself again-and-again as a breeding ground for new ideas, new products and new services, allowing, seemingly out of a sudden, new popular websites to emerge and to replace old favorites.

The Internet and web technologies have pervasively influenced systems development and its outcomes, and radically changed people's behavior in adopting these technologies (Lyytinen and Rose, 2003). Therefore, it demands new theories and different approaches to explain and to guide research and practice in these areas. Although there has been growing interest and significant recent study of online phenomena and their success factors, most existing research focuses on the success issues relating to electronic commerce (e.g., Liu and Arnett, 2000; Molla and Licker, 2002; Torkzadeh and Dhillon, 2002), open source movement (e.g., Markus et al., 2000; Mockus et al., 2002; Raymond, 1998), and online community (e.g., Hagel and Armstrong, 1997; Kozinets, 1999; Preece, 2001). Past empirical research, to the best of our knowledge, has focused little on weblog success. We therefore seek to explore this important issue to identify IT-related factors associated with weblog success. In particular, we wish to answer the question whether blogging technology can help to increase weblog success in terms of readership popularity.

The remainder of this article is organized as follows. The next section introduces weblogs and their supporting technologies. Section three explains our study design. We then continue by discussing weblog success categories and blogging tool properties. The sixth section maps weblog success against blogging technology used. Based on the preliminary analyses and findings, we introduce a conceptual model to explain weblog success in section seven. Section eight discusses both theoretical

and practical implications from the study. We then identify limitations and possible further improvement in section nine, and draw conclusions in the last section.

2. Weblogs and Blogging Technology: the Background

2.1 WEBLOGS

The term *weblog* was first used by John Barger (1997), and was defined as "a web page where a blogger 'logs' all the other web pages she finds interesting". Weblogs are distinct in both form and content from other types of web pages (Blood, 2004). As a "log on the web", it is kept mostly in a reverse chronological order with the latest entry at the top of the web page. As a "log of the web", it easily refers to other Internet locations via hyperlinks. A more recent and comprehensive definition of weblogs is that "the site consists of dated entries" [Brigitte Easton, see (Blood, 2000)], and that the entries were episodic or conversational in a diary or "story telling" format (Brown, 2001).

As suggested by Wagner and Bolloju (2005), weblogs are ideal for experts who wish to broadcast their expertise to a large audience, and are also suitable for average persons who wish to share their stories/diaries with a small group of others. According to Winer (www.scripting.com), a blogging pioneer, weblogs have the following characteristics:

- **Personalized.** Weblogs are designed for individual use (multi-person weblog is also possible through collaboration, such as the "team blog" offered by www.blogger.com). Their style is personal and informal.
- **Web-based.** Weblogs can be updated frequently. They are easy to maintain and accessible via a web browser.
- **Community-supported.** Weblogs can link to other weblogs and websites, enabling the linkage of ideas, and hence stimulating knowledge generation and sharing between bloggers.
- **Automated.** Blogging tools help bloggers to present their words without the hassle of writing HTML code or program; instead, bloggers just need to concentrate on the content.

2.2 BLOGGING TOOLS AND THEIR EVOLUTION

In the early blogging days, during the late 1990s, no special tools were available for creating weblogs. Most bloggers hand coded their sites. But, very soon, "it became difficult to read every weblog every day, or even to keep track of all the new ones that were appearing" (Blood, 2000). Weblogs started to gain popularity after Pitas.com launched the first free *build-your-own-weblog* tool, and few others like Blogger released their blogging tools. These tools provided the ease and affordable opportunity for non-technical persons to communicate online.

Nowadays, most weblogs are powered by weblog hosting services or standalone software; although a few bloggers, like Rebecca Blood (www.rebeccablood.net), still hand code their sites. According to Bauer (2004), approximately 80% of weblogs use hosting services that provide weblog-building tools and server space, while the rest use standalone software that runs on individual servers or web hosts. Many popular weblog hosts, such as Blogger, ModBlog, and Xanga, offer basic services for free, which are good for new bloggers or general users who are happy with limited server spaces and standard features. But, successful weblogs can outgrow these basic services, and may be forced to choose premium services (at higher cost), or even to set up their own weblog hosts (Rubenking, 2003). Comparatively, standalone software is more flexible in terms of server space and control of own content, but requires some knowledge to set up the application and to maintain the server. Movable Type and Radio Userland are two popular fee-based standalone software solutions. There are also several free and open-source weblog software products in the marketplace, such as WordPress and Drupal.

2.3 BLOGGING FEATURES AND CAPABILITIES

Many blogging tools in the marketplace offer a variety of weblog-building features; some may be more suitable to certain group of users. Overall, these tools belong to three major types. The *first*

type of tools provides basic content presentation features for creating link-driven text diaries. Although their interfaces are relatively less attractive, their easy to learn and use editing functional capability fits well to those who simply wish to have a channel for expression of opinions.

The majority of the bloggers uses the *second type* of tools, which focuses on providing rich interface (or multi-media capability) to share more than just text content with the same *click-and-post* ease, and on supporting content management and between-blog commenting or hyper linking. For instance, "permalink", a permanent URL for each weblog entry, introduced by Blogger in early 2000, enabled referencing of specific past entries like other online source. "Trackback", a reverse hyperlink tracking the referrer weblogs, introduced by Movable Type in 2001, "made these formally invisible connections visible" (Blood, 2004, p. 55). These innovations, including the use of a "blogroll" to manage frequently referenced weblogs on the sidebar, as well as syndication features, have been adopted by many blogging tools, and have become part of weblogs' standard features.

Recently, a *third type* of blogging tools has begun to emerge. In addition to providing improved content distribution and between-blog connectivity (e.g., "pingback", or alert of other bloggers' comments or new posts), they include integrated applications, such as project management or workflow features, to enhance social networking and community building. For example, Lycos Circles offers users to setup the workflow for a party, from invitation to management of responses and to travel directions. ModBlog allows users to track friends' newest entries, or to know who are the most "recent visitors". Microsoft's MSN Space launched in December 2004, offers its bloggers more integrated features, such as picture/music sharing, and remote posting of updates via email or mobile devices. However, this third type of tools is apparently still in the early stage of development, and mostly focused on community or sociability features. They certainly represent one major trend. Another important movement in the world of weblogs is the rise of corporate or business weblogs. IBM, for instance uses homegrown XML-based blogging tools to communicate with the developer community; and Sun Microsystems uses the open-source software called "Roller" for corporate-wide blogging (Claburn, 2005).

In general, weblogs and blogging tools are still in the early years of development. But, they are metamorphosing fast. As we move forward, distinguishing the different dynamics in the consumer, small business, and corporate markets will become more important (Bauer, 2005). Software developers should consider these dynamics of the user markets in order to (re)position their solutions and services for different needs, in addition to providing better features to reduce people's publishing, organization, and communication efforts. Consequently, it is very important to understand the technology needs for the creation of successful weblogs.

3. Weblog Study: the Top-100 Universe

As previously mentioned, the term *blogosphere* refers to the world of all weblogs. In the blogosphere, "weblogs are heavily interconnected; bloggers read other weblogs, link to them, and reference them in their own writing" (Wikipedia.org, 2005a). Such characterization of the blogosphere appears to be most faithfully represented by a small set of extremely popular weblogs, known as the "A-list" (Herring et al., 2005). A-list weblogs are widely read, and frequently linked to by other blogs. There are a number of web services that track these interconnectivities, and provide popularity rankings based on the number of inbound links. Among these, Technorati, BlogStreet (www.blogstreet.com), and TruthLaidBear(TTLB) (www.truthlaidbear.com), are the best-known websites that update their "top 100" weblog listings on a regular basis. Herring et al. (2005) contains a comprehensive review of these weblog anaysis services that have been used as a baseline for empirical research.

The main objective of our study is to identify IT related success factors associated with weblog readership popularity, and particularly, the role of blogging technology. We therefore used popularity ranking (i.e., Technorati's top-100 weblogs) to analyze weblog success. We chose Technorati's top-100 listing because it was the most comprehensive among the three leading weblog tracking sites, monitoring about 4 million (Sifry, 2004) weblogs during our observation and data collection period. After all, a large base is important for the accuracy and reliability of blog-ranking techniques that rely on inbound links from other weblogs. Nevertheless, any ranking mechanism will have its own bias, and may not fully represent the blogosphere as a whole. But, we expected that monitoring the largest

tracking site would provide reasonable empirical evidence for our understanding of the top-100 universe of successful weblogs.

3.1 SAMPLING: MAKEUP OF AN A-LIST WEBLOGS

During a 3-month period in the fall of 2004, we recorded all the weblog ranking information that had appeared on Technorati's daily updated top-100 listing. Technorati's ranking was determined by the "number of blogs who links to the site", also referred to as the number of inbound links. A total of 169 weblogs or websites appeared on the top-100 list at some point in time during our observation period.

A pre-analysis of this website list led to the following observations. First, a number of websites did not meet our criteria for being a weblog. While they were frequently changed content sites with inbound links from other weblogs, they were not really weblogs (based on our definition of weblog in section 2.1). Second, there were a number of weblogs that had only a fleeting presence among the top 100+ weblogs during the three months observation period. Thus, to measure the top weblogs more reliably, we decided to remove weblog sites with less than 7 days presence on the top-100 list. The removal of non-weblogs lowered the count by 21 cases, and the removal of weblogs with only short-term presence led to another 22 cases being removed. Hence, overall we were left with 126 most popular weblogs. They are referred to as the "A-list" for the purpose of our weblog analysis in the following sections.

3.2 RANK AGGREGATION TECHNIQUE

The task of combining rank results from various alternative preferences is called "rank aggregation". It is widely discussed in the literature of *social choice theory* (see Arrow, 1963) in terms of forming a collective choice or a social decision. As a simple and popular rank aggregation method, *Borda's rule*, introduced by Jean-Charles de Borda in 1770 to fairly elect members to the French Academy of Science (Wikipedia.org, 2005b), is often used for ranked preferential voting with anonymous voters. Borda's rule has found its application in determining winners for sports (such as American Major League Baseball), and elections (e.g., Reilly, 2002), and recently in the context of the web (e.g., Chin et al., 2004; Dwork et al., 2001). We applied it to aggregate weblogs' daily popularity ranking scores over the 3-month evaluation period. Since this study measures weblog success based on its popularity ranking, this rank aggregation technique provides certain degree of robustness over a period of time by reducing the bias and unstable preference of daily rankings. Additionally, using a ranking score better reflects the relative (winning or losing) position of a weblog in the A-list than its numerical value of inbound links (the number of inbound links varied everyday and is relatively less stable than daily ranking scores).

Based on the Borda's rule, we assigned a score (S_i) to each weblog (*i*), relative to its daily ranking in the A-list. For example, the 1st rank among 126 weblogs was given the score $S_1 = 1$, and the 2nd weblog in the ranking had the score $S_2 = 2$, and so on. And then, we calculated a monthly mean ($\overline{S_i}$) of each weblog (*i*) for each of the three months. The monthly aggregated ranking scores were then determined based on the ranking of a weblog's $\overline{S}$ value in the A-list; similar to the way we assigned the daily ranking scores. As a result, the popularity ranking scores used to categorize weblog success in section 4 were all *monthly aggregated ranks* following the Borda's rule, and we simply referred to them as "*rank scores*".

3.3 THE A-LIST WEBLOGS

Among the 126 sampled A-list weblogs, the average number of inbound links over the three months observation period ranged from 13,829 ("top 1") to 1,385 ("top 126"), with *mean* equals 2,788 and *standard deviation* equals 1,917. To give a clear explanation of how these inbound links correspond to the (aggregated) rank scores, we plotted each sample weblog with its rank score against its average inbound links in a 2-D graph (see Figure 1). This graph also indicates that the 3-month average inbound links of the top 25th weblog is 2,798, the closest to mean.

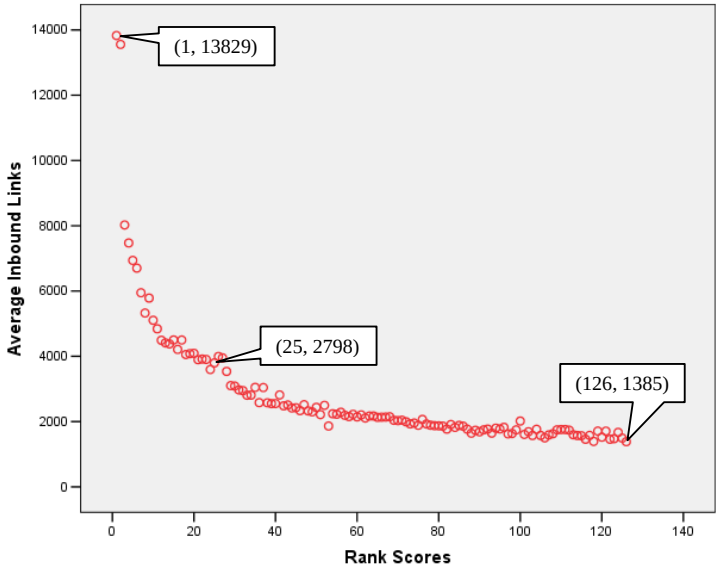

FIGURE 1. Rank scores versus 3-month average inbound links

4. Weblog Success Categories

4.1 CATEGORIZATION CRITERIA

To capture both static and dynamic characteristics of weblog success over a period of time, we divided weblog success into two dimensions: popularity *rank* (static measure) and popularity *growth* (dynamic measure). These two variables make excellent sense for evaluating a weblog's success. Weblogs are successful to the extent that their popularity or readership impact enters the top rank of weblogs, and that they possess the capabilities to grow further. If one of these variables is missing, the weblog will not be able to stay on top, at least not for long. Table 1 defines the level in each dimension.

TABLE 1
Two dimensions of weblog popularity

Popularity		Operational Definition
Rank	**High**	Rank scores were always inside the A-list in the 3-month
	Middle	Rank scores bounced inside and outside of the A-list in the 3-month
	Low*	Rank scores were always outside the A-list in the 3-month
Growth	**Positive**	Rank scores increased > 10 scores in the 3-month
	Neutral	Rank scores fluctuated <= 10 scores the 3-month
	Negative	Rank scores decreased > 10 scores in the 3-month

* Outside the scope of this study.

Although we categorized weblog popularity into three rank levels, we were only interested in *high* and *middle* ranks of weblogs in the current study, given that *low* rank weblogs fell outside of the list of successful weblogs. To separate growth rates into *positive*, *neutral*, and *negative* levels, we used the threshold level of "10" rank scores, and compared the three monthly aggregated rank scores for

each weblog in the A-list. We chose the value "10" because it reflected 10%, a quite significant, movement of the top-100[1].

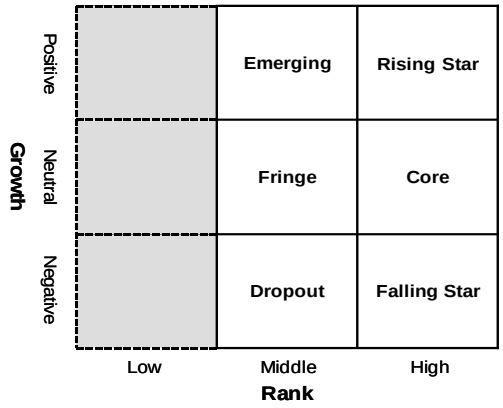

FIGURE 2. Weblog success categories

According to the popularity rank and growth levels, any weblog could be placed into one of the nine categories in Figure 2. Further, we named the weblogs that had been appeared in the A-list as, Rising Star, Emerging, Core, Fringe, Falling Star, and Dropout, representing the extent of their popularity impact and success. Weblogs belong to the first three categories either were more successful or would be potential more successful compare to the latter three. For example, a Falling Star might actually be in a higher rank than an Emerging weblog at some point in time, but given the rate of positive growth of an Emerging weblog (i.e. at least 10 ranks upward within three months), it certainly would have the potential to win over the negatively grown Falling Star in the near future.

4.2 DISTRIBUTION OF WEBLOGS AMONG CATEGORIES

The 126 weblogs of our A-list sample were assigned to one of the six weblog success categories. The summary statistics revealed some interesting insights about weblog popularity. As shown in Table 2, the largest group was those weblogs whose ranking scores remained relatively stable, namely the *Core* group (38 blogs, or 30% of the sample), followed by 29 (23%) popular weblogs whose popularity was dropping during the evaluation period, our *Falling Stars*. This result indicates two issues, namely that transition between *high* and *middle* popularity is more likely than might be assumed, and that it is easier to lose popularity than to gain it. Within our sample, 58% of weblogs remained on the A-list for the entire time, while 42% moved in and out of the list. This is different from the conventional wisdom which states that weblog popularity remains highly stable, i.e., follows an 80/20 rule (e.g., Shirky, 2003). Thus, breaking into the top-100 is possible, even if the *power-law* suggests otherwise. In our sample, "losers" exceeded "gainers" almost 2:1. While 18% of the sampled weblogs increased in popularity, 32% lost and 50% remain unchanged in popularity.

TABLE 2
Distribution of weblogs among success categories

Success Categories	Blog Count	%	Rank Levels			Growth Levels		
			High	Middle	Low*	Positive	Neutral	Negative
Core	38	30%	√				√	
Falling Star	29	23%	√					√
Fringe	25	20%		√			√	
Emerging	17	13%		√		√		

[1] The resulting even distribution between stable sample (50% neutral growth) and variation (18% positive plus 32% negative growth) later justifies our choice of "10" as the threshold to determine growth levels (see Table 2).

Dropout	11	9%		√				√
Rising Star	6	5%	√			√		
Total	**126**	**100%**	**58%**	**42%**	**0%**	**18%**	**50%**	**32%**

* Not sampled.

5. Characteristics of Blogging Tool

5.1 CHARACTERISTICS OF TOOL TYPES

As explained earlier, most weblogs are built by some sort of blogging tools, whether supported by hosting services, standalone software, or self-developed applications. Blogging tools differ in their capabilities from *Type I* (for creating link-driven text diaries or presentation weblogs), to *Type II* (which offers content administration capability with rich interface and between-blog connectivity), and to *Type III*, with integrated applications aiming to enrich social interactions among bloggers. Table 3 differentiates these three types of tool according to their key characteristics for blogging.

TABLE 3
Characterization of blogging tools

Tool Characteristics	Key Capability	Feature Examples
Type I (Content presentation oriented)	Basic content editing and linking	Text diary, hyper links, user-friendly editor
Type II (Content administration focused)	Rich interface for weblog presentation	Images, markup language
	Content management	Indexed archive, search, "permalink", "trackback", categorization, syndication
	Between-blog connectivity	"Blogroll", blog friends
Type III (Social application enhanced)	Improved content distribution and management	"Breadcrumbs", "pingback", alert of other weblogs' new posts, post of remote updates
	Integrated application for social interaction	Workflow or project management, polls, "IntraSite" messaging, web invitation, picture/music sharing

Each weblog in the sample was carefully examined and assigned to one of the three blogging tool characteristics. Two experienced bloggers were involved in the coding. In the first-round, the two raters independently placed 120 (out of 126) weblogs in the same way, an agreement rate of more than 95%. Then, both raters re-coded the remaining 6 disputable weblogs together to reach 100% consensus.

5.2 USE INDEX OF BLOGGING TOOLS

Table 4 shows that most of the weblogs in our sample used Movable Type (2.x or 3.x), a popular standalone blogging software, and currently providing *Type II* blogging capabilities. The next largest group used various self-developed tools (20.6%), mostly *Type II*. Blogger and ModBlog, two very popular hosting services, were next in terms of popularity, each accounted for more than 10% of the sampled weblogs. The rest of the tools each accounted for much less. This overview suggests that leading weblogs rely less on hosted solutions, but instead, use predominantly self-hosted third-party software (e.g., Movable Type) or even self-developed applications.

TABLE 4
Use index of blogging tools

Blogging Tools	Tool Characteristics	Blog Count	%
Movable Type	Type II	31	24.6%

Self Developed Tools	Type I Type II Type III	6 17 3	20.6%
Blogger	Type II	15	11.9%
ModBlog	Type III	14	11.1%
WordPress	Type II	9	7.1%
(Manila/Radio) Userland	Type II	5	4.0%
b2evolution	Type II	3	2.4%
BlogDrive	Type II	3	2.4%
CityDesk	Type I	2	1.6%
Cyberz Inc.	Type II	2	1.6%
Scoop	Type II	2	1.6%
NuclearCMS	Type II	1	0.8%
Other tools	Type II Type III	12 1	10.3%
Total		126	100.0%

In total, 8 of the sampled weblogs used *Type I* blogging tools (6.3%), 100 used *Type II* (79.4%), and 18 used *Type III* tools (14.3%). This demonstrates that successful bloggers have moved from primarily *content presentation oriented* tools (as it was in the early blogging days), to more *content administration focused* solutions. Recently, with more *social application enhanced* type of blogging tools, such as MSN Space and Yahoo 360°, coming into the marketplace, we expect to see more *Type III* tools to appear in the A-list weblogs in the near future. The question yet to be answered is whether there is a significant relationship between blogging technology use and weblog success.

6. Blogging Tools and Weblog Success

6.1 TECHNOLOGY-POPULARITY RELATIONSHIP

To find out whether technology plays a role in weblog success (or popularity), we performed a chi-square test of the two categorical variables: *(weblog) success category* and *(blogging) tool characteristic*. The chi-square value = 44.59 ($p < .001$), reflects a high level of statistical significance, while Cramer's V value = 0.42 (greater than 0.30) further suggests that tool property differences have a strong effect on different weblog success categories.

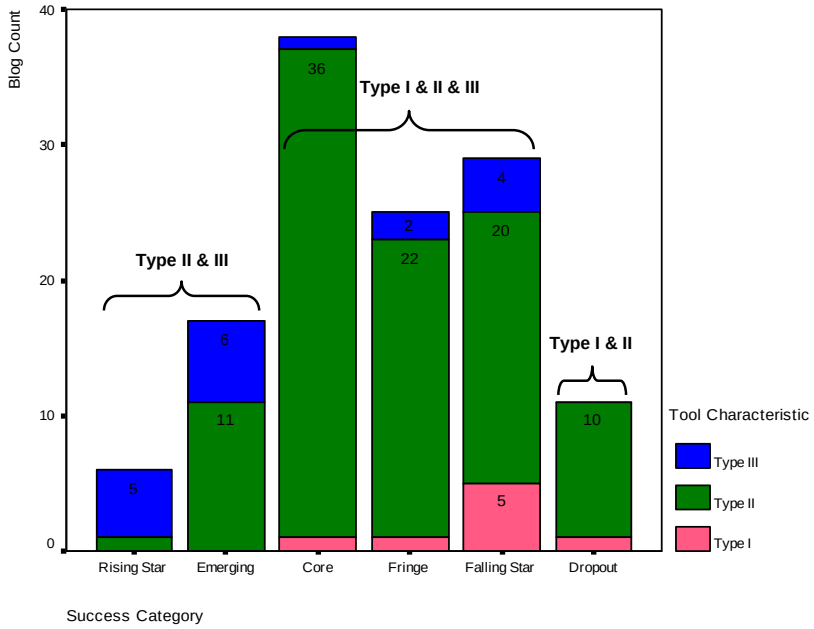

FIGURE 3. Weblog success categories versus tool characteristics

Moreover, from the stacked bar chart (see Figure 3), we can observe that *Rising Stars* and *Emerging* weblogs (the two categories with a positive growth in weblog popularity during the evaluation period) use both *Type II* and *Type III* blogging tools. But, none of the *Dropout* weblogs (the least successful category whose popularity dropped out from Technorati's top-100 list and had never came up during the evaluation period) used *Type III* tools.

6.2 CONTROL CHECKS

To tease out a potential validity treat to the technology-popularity relationship, the maturity of weblog, such as *age* (the number of years since creation), was checked against *tool characteristic* and *success category*. Chi-square tests found no significant differences between age groups ("long age" > 4 years, "short age" <= 4 years) and tool characteristic types (or success categories). We used "4" to separate age into two groups since it was the mean age of our sampled weblogs, which ranged from 1 to 19 with standard deviation equals to 2.79. Moreover, whether the weblogs had changed their blogging tools during the three months might be another confounding factor influencing the outcome. We refer to this variable as *technology shift*. Although it could not be easily assessed, we were certain that no weblogs had switched to a different blogging tool during our observation period. However, upgrading to a later version of the same tool was possible (but very rare). Even so, we still categorized them into the same tool type as there were not significant changes. For example, we categorized both version 2 and 3 of Movable Type as a *Type II* blogging tool. Therefore, we may argue that the impact of technology shift is minimal and insignificant.

7. Weblog Success Model: From a Value Proposition

Why would technology differences, in this case, blogging tool differences, be associated with weblog success? Previous observation on the relationship between tool characteristics and success categories indicated that the three types of blogging technology were either "content value" oriented or "social value" enhanced. In search for a reasonable explanation, we put forward a weblog success model, attributing a weblog's success to its value proposition in terms of the content presented, the blogging technology used, and the social resources established/maintained. We argue that weblog success (popularity rank and growth) largely depends upon the value that the weblog provides to its users or readers. Based on our previous discussion, a weblog's value is a combination of multiple elements.

The first and most obvious value factor of the weblog success is its written (or media) **content**, the information itself, like any other forms of web content. Motivated by different reasons (Nardi et al., 2004), such as documenting one's life, providing commentary and opinions, expressing deeply felt emotions, articulating ideas through writing, and forming and maintaining community forum, bloggers publish different types of information in their weblogs, and hence, attract different reader groups. Determinants of weblog content value therefore include measures such as the type of information provided, the frequency and volume of posting, and the presentation and organization of content.

Another important value factor is the built-in capability of a weblog to present and organize content, to facilitate between-blog connectivity and social interaction among bloggers. This capability is a direct result of the blogging **technology**. Weblogs' interactive capability, enabled by blogging technology, adds new value to the traditional form of dynamic web pages vis-à-vis static pages (Blood, 2004). It affects the accessibility of a weblog and its potential to spread (Bauer, 2004; Blood, 2004; Wagner, 2004). Preece et al. (2001) argue that usability and sociability of technology-supported online environments, such as online communities, determines their success. Similarly, the technology contribution in promoting weblog success may be measured by its ability to create and manage content, and to facilitate online sociability. Alternatively, tool characteristics may be another

indicator that measures its functional capability to present and administrate the content, as well as to enrich social interaction.

Another important factor and a distinct value driver is defined by the existing and potential social resources of a weblog, such as the affiliated membership or existing community of a blog host, the frequent visitors or blog commentators, and a list of inter-connected blogs (e.g., "blogroll" or "blog friends"). Readers would be expected to prefer a weblog that is read or commented by many other visitors, or linked by celebrity bloggers (Shirky, 2003; Wagner et al., 2005). Hence, a weblog's social capital (Nahapiet and Ghoshal, 1998) that is embedded within inter-blog relationships, or in other words, the **social** value of a weblog, is a third important contributor of a weblog's value.

Moreover, weblog-building technology has a direct impact on blog content. Since blogging technology is designed for authors to reduce web publication and communication effort (Du and Wagner, 2005), authors can focus on writing while the technology takes care of publishing, storage, link creation, and so forth. The less time and effort authors have to spend on these ancillary tasks, the more time they should be able to devote to content, thus resulting eventually in better content. A similar argument can be made for social value. Blogging technology that automates link creation, that identifies recent visitors (possibly with clickable back links, such as in ModBlog), or maintains subscriber lists and syndicates their content, will help create and maintain the social circle of bloggers, by significantly lowering the effort to link to and visit other sites. Here, technology's enabling character is reflected through its usability and sociability of supporting weblog success at both content and social levels.

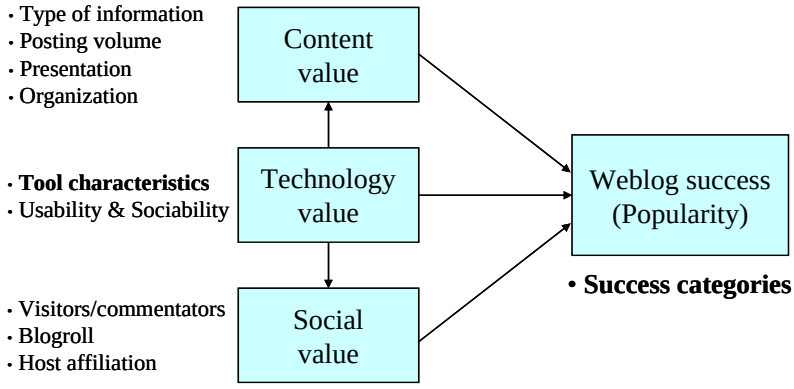

FIGURE 4. A weblog success model

Figure 4 illustrates a value-based conceptual model, and posits that weblog popularity success is primarily associated with its content, technology, and social value, wherein technology plays an important role in reinforcing weblog's content and social value. The bold variables in this Figure had been empirically tested and discussed in section 6, demonstrating the *technology-weblog success* relationship. This model is consistent with the techno-social perspective (Orlikowski et al., 2001) of information and technology research, which recognizes both material characteristics and social constructive impact of information technology. Unlike DeLone and McLean's IS success model (2003), which suggests that three quality-level success factors (information quality, system quality, and service quality) are associated with net benefits of information systems in general, our model allows techno-social and value-driven explanations to be woven together to describe why a specific social computing technology (weblog) influences the successful diffusion of a *disruptive* IT innovation. Disruptive, meaning that such an IT innovation creates new computing capabilities and radically changes behaviors in terms of view, operation, and utilization (Lyytinen and Rose, 2003), and therefore requires a new model to explain.

8. Discussion and Implications

Our study took a unique perspective, asking what made the most successful weblogs technology-wise so different. Therefore, rather than randomly selecting a large number of weblogs, this study investigated 126 highly successful weblogs out of a base set of 4 million, and explored their success factors. Measuring both static ("popularity rank") and dynamic ("popularity growth") success factors, we were able to attribute success to the type (category) of blogging technology employed.

Our resulting model explains weblog success from a techno-social perspective, but excludes other non-IT related factors, such as brand name or celebrity effect. While we expect these latter factors to matter, they are outside the scope of this IS focused study, and are likely of "far less interest to IS scholars" (Benbasat and Zmud, 2003, p. 191).

As a first attempt to study weblog success, we hope to contribute to the knowledge of a promising web-technology enabled social phenomenon. As suggested in the study, technology characteristics affect the ability of weblogs to create and deliver content, as well as to nurture social circles around them. This study provides empirical evidence in supporting both the materialist and constructivist notions of technology, namely the techno-social perspective. Further, our innovative use of Borda's rule to improve reliability of the measure by aggregating weblogs' daily ranking scores introduces a new application of rank aggregation technique to the IS research methods of a similar kind.

From the practitioners' perspective, this study provides a potential winning formula for a blog to become popular. For instance, bloggers might improve their readership popularity by choosing technologies that foster participation and community interactivity. Aside from this, the research has important implications for the design of future blogging tools. Weblog hosting services and software vendors should consider enabling their tools to be interoperable with others (e.g. allowing their weblogs to receive external inbound links); a step forward from the existing "closed" design, such as ModBlog or Xanga, which only allow automatic linking (subscriptions or friends lists) among members that use the same technology. In addition to providing interoperable tools to enhance sociability, tool providers may also consider bundling some of the technology features to offer different usability layers for weblog presentation, administration, or socialization purposes. Users, as a result, would have more features to choose from, while the blogging technology could still maintain the same level of simplicity for use.

9. Limitations and Further Research

This, like any other study, is not without limitations. For instance, success is a complex construct that should include multiple measures. We used number of inbound links as a proxy for weblog popularity, since it is, to some extent, the combined indication of attention, influence, and authority of a weblog. Yet, in doing so we left out other aspects of success, such as the users' or readers' satisfaction rating, and the (potential) market value of weblogs. Further, the content nature of these weblogs was not analyzed though it may provide interesting observation; our emphasis of the study is technology related issues.

Consequently, this research identifies numerous areas for further exploration. We can only outline some of them here. First, we may examine the technology-popularity link in more detail to determine which particular technology features are influencing popularity the most. Second, we may observe the technology-popularity relationship when other success measures are used. Third, we may explore longer-term popularity developments, to see whether popularity based on technology is only "skin deep". Fourth, we may expand our empirical analysis from technology aspect to also include semantic level ("content") as well as social level.

10. Conclusion

Overall, we view this research as a starting point from which to challenge some existing notions on weblog success and the potential of joining the "A-list" of most popular weblogs, by highlighting the importance of technology in promoting weblog success. Our findings indicate that weblog success may not simply be determined by the content that created the interest in the earlier blogging days.

Instead, the embedded ability of weblogs to create popularity and to nurture social interaction through its technology features may also be a significant contributor to weblog popularity improvement. In essence, the choice of the right technology or development of more appropriate technologies may create a distinct advantage in the highly competitive top-levels of the blogging world. Moreover, the findings may be generalizable to the design, development, and use of other types of interactive or dynamic websites or web applications.

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