Massachusetts Institute of Technology
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Center for Coordination Science

Information Technology Fashions:
Building on the Theory of Management Fashions

Emilio Collar and Jintae Lee

Leeds School of Business, Univ. of Colorado at Boulder
Affiliated Faculty at the Center for Coordination Science
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Jintae Lee*, **
Emilio Collar*
*Leeds School of Business,
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ABSTRACT

Recent studies of management fashions have used discourse data that contributed to our understanding of the forces underlying the rise and fall in popularity of new management techniques. Like management fashions, there are many IT (information technology) fashions. Testing the extent to which the theory of management fashions apply to IT fashions help us better understand not only IT fashions but also what is generic to the fashion phenomenon and what is unique to particular fashions like IT or management fashions. This study makes a step toward that goal by postulating and testing three hypotheses concerning the similarity and difference between IT and management fashion lifecycles: that IT fashions depend more heavily – relative to management fashions – on exogenous factors. As a result, the duration of its ascent period is (1) shortening over time, (2) shortening at a rate faster than that for management fashions, (3) but yet longer in absolute magnitude than that for management fashions. A bibliometric study yields partial confirmation, illustrating the usefulness of the theoretical framework provided by the theory of management fashion in the study of IT fashions while revealing unique characteristics of IT fashions that deserve further investigations.

INTRODUCTION

Recent studies of management fashions have made important contributions to business research. They have unearthed a rich source of research questions that lead to a better understanding of management discourse and how such discourse patterns are motivated. In turn, they influence resource allocations and other strategies in the business community, who participates in this phenomenon, and how they interact, among other things (Abrahamson 1991; Abrahamson 1996; Abrahamson 1999; Carson et al. 2000; Kieser 2000; Rueling 2000). This research may have a number of practical implications that can help managers interpret the different phases in the lifecycle of a management fashion and make appropriate decisions along the way (Carson et al. 2000).

Like management fashions, there are many IT (Information Technology) fashions. We define an IT fashion as "the production and consumption of temporarily intensive [information technology] discourse" (Benders et al. 2001). We elaborate on the definition below but some examples include Artificial Intelligence, Groupware, World Wide Web, Mobile Computing, and Ontological Engineering. Like management fashions, these technology fashions rise, fall, have stakeholders, and influence the decisions in the business community.

It is then worthwhile to articulate the similarities and differences between management fashions and IT fashions. That would help us better understand not only both types of fashions but also what is generic to the fashion phenomenon in general and what is specific to a particular domain. This study takes a step toward answering these questions by leveraging on the existing theory of management fashions. In particular, it uses the causal framework proposed in Abrahamson's theory of management fashion to

formulate and test three hypotheses concerning the duration of the ascent period in the IT fashion lifecycle. We postulate that IT fashions depend more heavily – relative to management fashions – on exogenous factors and that, as a result, the duration of its ascent period is (1) shortening over time, (2) shortening at a rate faster than that for management fashions, (3) but yet longer in absolute magnitude than that for management fashions. A bibliometric study yields partial confirmation, illustrating the usefulness of the theoretical framework provided by the theory of management fashion in the study of IT fashions while pointing to some differences. However, the study also reveals further need for more detailed analysis.

The rest of the paper proceeds as follows. First we present the theoretical framework based on the existing theory of management fashions – why the study of fashions at the discourse level is important, what has been done to date, and what implications they have for IT fashions. Within this framework, we formulate hypotheses that focus on the lifecycle duration. After describing the methods and the results, we conclude by exploring the implications of the study.

THEORETICAL FRAMEWORK

Through a number of articles over the last decade, Abrahamson and his colleagues have made numerous and important contributions. They have demonstrated that management fashion shape management practices as well as academia and therefore is a subject worthy of study on its own (Abrahamson 1996; Newell et al. 2001). They point out that traditional research "may fail to focus on why a small minority of fashions becomes institutionalized whereas a majority do not" (Abrahamson 1999). They have formulated a theory of management fashion that builds on the earlier theories of aesthetic fashion, but also build on other theories such as neo-institution theory (Meyer et al. 1977;

Scott et al. 1994) and the production of culture theory literature (Blau 1993; Hirsch 1972; Hirsch 1986; Peterson 1976; Peterson 1979) to account for characteristics, such as the practical functions management fashions serve and the influence from techno-economic factors, that differentiate it from the earlier theories (Abrahamson 1996).

Through a number of studies, they have also provided explanations of why technically inefficient innovations diffuse while technically efficient innovations get rejected – the phenomena that the traditional, rational, theory of innovation diffusion fail to explain adequately. Furthermore, they have identified the different communities of knowledge entrepreneurs – technical, consulting, academic, and journalistic communities – and related their theory of management fashion to the interplay among these communities. Recently, they have extended their research to examine more specific characteristics of the management fashion phenomena – such as the shape of management fashion lifecycle, forces influencing this lifecycle, and the type of collective learning it fosters. They have advanced a number of propositions, some of which are discussed and tested in this study in the context of IT fashions. They have also proposed some formal models to account for these phenomena (Abrahamson et al. 1997).

This research has sparked the interest of other academic research in examining the rise and fall of discourse in the business domain. There have been a number of studies that confirm, extend, or dispute the research claims of Abrahamson and his colleagues. For example, Benders et al. (2001) uses the notion of interpretive viability to reinforce the need for management fashions to be simple but ambiguous, thus allowing flexible interpretations. Carson (2000) has extended the theory by testing a number of hypotheses, based on the analysis of sixteen management fashions over five decades, relating the

management fashion lifecycle to the fashions' characteristics such as difficulty of implementation and degree of "radicalness" as well as external macroeconomic factors. Researchers have also extended the theory by providing different perspectives on the existing studies (Newell et al. 2001). Some have also suggested the usefulness of extending the research framework to other domains like academic fashion (McKinley 1996).

Wang (2001) has recently examined Information Systems idea waves, using the theory of 'organizing vision' (Swanson et al. 1997; Wang 2002), and Abrahamson's theory of management fashion. "Organizing visions" are mental images or ideas produced and sustained through discourse within an inter-organizational community. An information wave is mapped by the flow and ebb of an organizing vision's discourse. Within that framework, it proposes three drivers: business problematic, early market of innovation, and core technologies. Preliminary studies have confirmed the effects of these drivers. To our knowledge, this work is valuable from the perspective that it is the first to examine the waves of information technologies using discourse data.

HYPOTHESES

Based on the data examining sixteen management fashions, Carson et al. (2000) confirms the hypothesis that there will be a correlation between the year in which a fashion emerged and the length of its life cycle: fashions introduced later will have shorter lives. The current study formulates three hypotheses that elaborate on this hypothesis and tests them in the context of IT fashions.

Our first hypothesis is almost taken verbatim from Carson et al. (2000) but deviates from it in three ways. First, it aims to confirm the pattern of shortening lifecycle

for *IT fashions*. Secondly, we examine only the ascent period, i.e., the first appearance of the keyword in the ABI-indexed publication to the peak year. We made this change because we wanted to include data from recent IT fashions whose lifecycle may not have completed. Third, our rationale for the hypothesis differs from Carson's. As the reason for the pattern that later management fashions have shorter lifecycles, Carson et al. argue that the complexity of the contemporary business environment is exerting environmental pressure, which leads to overestimation of elapsed time, speedier judgments, a quicker pace of activity, mimetic responses, and a tendency to favor change over continuity (Bornstein 1979).

We, however, provide a different rationale, which may be compatible with Carson's rationale. We posit that the effect of the Internet and the advanced network technologies in recent years should have the effect of shortening the length of the ascent period. We expect that the advance in communication technologies should make potential fashion seeds (ideas or prototypes) more easily noticed and communicated faster. Thus, the overall pace in the generation and diffusion of information technologies, as well as information about them, would be faster the more these technologies advance. The resulting faster pace may then in turn produce the more competitive environment that Carson et al. assumes as responsible for this pattern.

Thus, we hypothesize: **For IT fashions, there will be a correlation between the year in which a fashion emerged and the ascent period of its life cycle: fashions introduced later will have shorter ascent period for IT fashions.** (Hypothesis 1)

Abrahamson's theory of management fashion (Abrahamson 1996; Abrahamson et al. 2000) postulates both exogenous and endogenous forces shape management fashions.

Exogenous forces originate from outside the management-knowledge market and are assumed to create or destroy management fashion niches or trigger demand for new types of techniques within an existing niche. As an example of an exogenous factor, Abrahamson (1996) cites major techno-economic environmental changes that induce organizations to experience certain types of performance gaps. Endogenous forces, on the other hand, refers to influences that shape management fashions independent of exogenous forces, such as the tendency for an organization to seek newer techniques whether out of a desire to differentiate itself from the others or simply in search of novelty.

This study builds on the assumption that the rise of IT fashions typically depends more on exogenous factors compared to management fashions. In particular, we assume that the popularity of an information technology depends on (1) the availability of enabling technologies including enabling technologies and standards, (2) the ability to produce them cost-effectively, (3) the critical mass of its users, and (4) the perceived performance gap that it can be presumed to solve. These factors in turn would depend on the macroeconomic changes explained by Abrahamson (1996).

When the seed of an IT fashion first appears in publication, it typically starts as an idea of a visionary (Moore 1996) and often needs to wait for other enabling technologies before the seed actually turns into a fashion. However, even when people start realizing its potential, its growing popularity depends on the delivery of the promised enabling technologies and their cost, among other things. As an illustration of this dependence, consider the history of fax. Although Fax was invented in 1843 by Alexander Bain, who was able to transmit messages over telegraph lines, its popularity had to wait for a

network structure with reasonable speed (it took eight minutes to transmit a single page in 1960s), a universal standard among the manufacturers, lower cost (it cost $8000 in 1965), and enough other users to make it worthwhile (Rogers 1995). From the above discussion, we derive two hypotheses.

Many broadly enabling technologies and standards have become more readily available than ever before, and have become cheaper, faster, and more reliable. Faster computer chips, larger and cheaper storage systems, faster and cheaper networks, faster and easier programming languages, wireless technologies and their associated open standards are some obvious major examples. They in turn led to the widespread adoption by both end users and developers. These forces drive ever-present perceived gaps because companies adopting newer technologies are always ahead of those who do not.

To some extent, these factors influence management fashions as well. To the extent that we treat Business Process Reengineering or Knowledge Management to be management fashions, they are influenced by the newer technologies that enable new management techniques. However, we believe that these factors would affect IT fashions and shorten its ascent period more directly than management fashions.

Therefore, we hypothesize that: **The rate at which the ascent period of IT fashions gets shorter over the years is higher than that for management fashions. That is, the ascent period of IT fashions get shorter even faster compared to management fashions.** (Hypothesis 2)

Because these exogenous factors introduce variables that are harder to predict and plan for, we hypothesize that the rising of the fashion lifecycle would typically have longer durations for IT fashions that depend more on these factors than management

fashions. When people are presented with a potential IT, they would be less confident of its success because they would not know whether the enabling technologies would be there in time and at reasonable cost. We hypothesize that the ascent period for IT fashion lifecycles would also be longer (in absolute magnitude) than that for management fashion lifecycles because the success of an information technology, especially an interactive IT, depends on its adoption by a critical mass (Marcus 1987) and because this dependence in turn creates uncertainties about its eventual success.

Thus, we hypothesize that: **The duration for the ascent in the fashion lifecycle will be longer for IT fashions than that for management fashions.** (Hypothesis 3)

METHODS

Identification of Information Technology Fashions

We have identified 81 initial IT fashions by reviewing the cover stories, special issues, special sections, or themes from the subset of periodicals that publishes review-like articles such as CACM, IEEE Spectrum, and the major tracks of the Hawaii International Conference on Information Systems (HICSS), using 1970 as the starting point. This set was further narrowed down to 41 IT fashions based on the following criteria. First, those fashions which have not started to descend as of the year 2000, such as Instant Messaging or Wireless Web, have been removed because it is impossible to know whether the subsequent year would have more or less discourse regarding a specific technology. Second, IT terms or acronyms that potentially had too much overlap with one or more of the technologies evaluated in this study. For example, "ERP" was eliminated from this study since it could have significant overlap with "Enterprise

Resource Planning." The acronym may also apply to other phrases that have nothing to do with technology. Third, we eliminated those fashions, such as 'agent' or 'team', whose terms are too generic. Fourth, we eliminated those whose annual publication count in ABI Inform database never reached the threshold of 9 hits. The last two criteria are further discussed further below when we define the IT fashion lifecycle and the duration of the ascent period.

Identification of the Management Fashions

We have compiled the initial list of 49 management fashions using Huczynski (1993) and Carson (2000) as the main sources complemented by other resources on the web. Applying the same criteria applied to prune the IT fashions reduced the number of the final list to 18 fashions. Quality Circle, Total Quality Management and Theory X are some of examples in the final list.

Definition of the IT Fashion Lifecycle and its Ascent Period

An IT fashion was defined as *the production and consumption of temporarily intensive [information technology] discourse.* As with Abrahamson, we use year-by-year publication count in ABI Inform as a measure of the intensity of discourse.

In defining a publication count (or hit), however, we chose to use keyword searches instead of subject searches, which was used in Abrahamson and others' studies. We made this choice with the full awareness of the danger that keyword searches can present. For example, a search on "agent" can retrieve publications that range from real estate agent to chemical agent to software agent. Despite these dangers, we chose to go

with keywords for the following reasons. First, we believe that the keyword search yields a better data set that represents the intensity of a fashion at the discourse level. The use of an IT term in a publication (in our belief) reflects its fashion status, whether the subject of the publication itself was IT or not. Secondly, keyword searches yielded much more data than subject searches, thus hopefully contributing to results that are more robust. Fortunately for the purpose of comparison with other studies that used subject searches, the results based on the keyword-based data produced patterns that are almost identical to those obtained by subject searches on the sample data that we have tested. Third, we found it prudent to use a consistent search method when collecting the data. There was some data that could not be obtained via subject search, such as early conference data, which are used in another study that we are pursuing on the topic. Fourth, as mentioned earlier, we took precautions against the dangers of the keyword search by eliminating those fashions from the final list of the fashions studied.

Given that we had started collecting the data in the middle of 2001, we could only obtain the complete yearly data up to 2000. Fashions that made the final list have started their descent before 2000. For this study, we also considered only those fashions whose lifecycle starts after 1970. Thus, the beginning of an IT fashion lifecycle is the earliest year since 1971 in which its term has a hit in the ABI-Inform database. The peak is the year in which it has the highest hits and occurs before the year 2000. The duration of the ascent period, therefore, is defined as the number of years from beginning to the peak in the lifecycle.

Carson et al. (2000) provides us with data on the ascent period for sixteen management fashions that he studied. However, the study uses the Business Periodical Index as the

data source, and subject searches to collect the data. In order to resolve the differences such as the starting year of cataloging among the different databases and to increase the sample size, we recollected the management fashion publication data using the keyword search on ABI Inform. Doing so would also enable us to check the sensitivity of the results by comparing the outcome of this study against Carson's finding based on the different data source.

The following describes the methods used to test each of the hypotheses.

Hypothesis 1: **For IT fashions, there will be a correlation between the year in which a fashion emerged and the ascent period of its life cycle: fashions introduced later will have shorter ascent period for IT fashions.**

Each IT fashion, based on its beginning year, was classified into one of the three groups, each of which corresponds to the three decades between 1971 and 1990. The ascent period duration of each IT fashion and the average for each of the groups were computed and compared.

Hypothesis 2: The rate at which the ascent period of IT fashions gets shorter over the years is higher than that for management fashions. That is, the ascent period of IT fashions get shorter even faster compared to management fashions.

For IT fashions, the duration of each fashion was plotted against the beginning year of its lifecycle. The same was done for management fashions. Their slopes were then compared. The significance of the difference was tested using the Chow test.

Hypothesis 3: The duration for the ascent in the fashion lifecycle will be longer for IT fashions than that for management fashions.

The ascent period duration for each management fashion was computed and, for each of the decades, the data for the management fashions were compared with those for the IT fashions obtained earlier. Its significance was tested with the t-test.

RESULTS AND DISCUSSION

Table 1 shows the overall result of the study. As shown in the third column of Table 1, the data clearly confirms that IT fashions introduced later will have shorter ascent periods (Hypothesis 1). It demonstrates that the average duration of the ascent period for IT

Table 1. Average Duration of the Ascent Period for IT Fashions and Management Fashions in the three decades between 1970 and 2000.
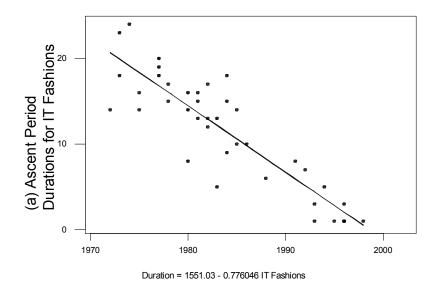
		IT Fashion	Mgmt Fashion	Mgmt Fashion (Carson Data)
1970s	Mean	18	13.62	14.8
	Number of Fashions	11	13	
	Stand. Dev.	3.35	7.03	
	Median	18	16	
1980s	Mean	12.44	10.5	7.5
	Stand. Dev.	3.72	4.04	
	Number of Fashions	18	5	
	Median	13	11.5	
1990s	Mean	2.91	5	2.6
	Stand. Dev.	2.62	NA	
	Number of Fashions	11	1	
	Median	2	5	

fashions has been dramatically reduced from 18 years in the 1970s to 2.91 in the 1990s. Our ABI-based data for management fashions is also consistent with Carson's BPI (Business Periodical Index)-based data in showing a large reduction in the ascent period duration for management fashions although the small sample size in 1980s and 1990s should make us cautious in our interpretation. It shows the reduction from 14.21 in 1970s to 5 in 1990s.

Figure 1 shows the result for Hypothesis 2, namely that **the ascent period of IT fashions gets shorter over the years at a rate higher than that for management fashions**. The result of the regression quite strongly supports the hypothesis with the slope of –0.78 for IT fashions, compared to the slope of –0.37 for management fashions. The Chow test statistic yields 8.35, which is significant at the 99% level.

The confirmation of Hypothesis 3, namely that **the duration for the ascent in the fashion lifecycle will be longer for IT fashions than that for management fashions,** is less clear-cut. On visual inspection, it seems true. In both 1970 and 1980s, the mean ascent durations for IT fashions for both 1970s (18 years) and 1980s (12.44 years) are longer than management fashions (13.62, 10.5 respectively). The t-test for these differences was significant at 95% level for the 1970 period but not for the 1980 period. This finding is consistent with the result from testing Hypothesis 2 that the duration for the IT Fashion ascent period gets shorter much faster over time than management fashions. In 1990, the mean duration for IT fashions is 2.9 and for management fashions is 5. However given the sample size of 1 for management fashions in that period, the comparison is probably not meaningful.

We believe that what is responsible for this finding is the interaction between the force postulated in Hypothesis 2 and that in Hypothesis 3. That is, during the 1970s the
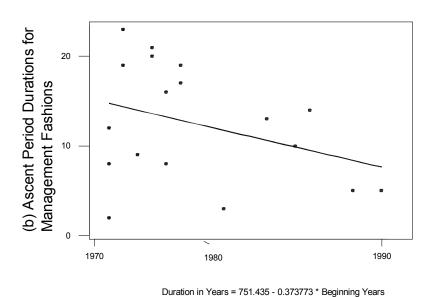
Duration = 1551.03 - 0.776046 IT Fashions

Duration in Years = 751.435 - 0.373773 * Beginning Years

Figure 1. Changes in the Ascent Period Duration for IT Fashions and Management Fashions over the three decades since 1970.

dependence of IT fashions on the exogenous factors such as the availability and the cost of enabling technologies and the mass adoption might have, in fact, made the ascent period of IT fashions to be longer than that for management fashions. However, the explosion of enabling technologies and rapid diffusion due to advances in communication factors would counter-balance technologies might shorten the ascent duration for IT fashions over time, as hypothesized and confirmed in Hypothesis 2. The effect seen in the 1970s and, as shown in the data, reduces the difference in the duration between IT fashions and management fashions' ascent period in the 1980s. In the 1990s, the finding reveals a shorter duration for IT fashions than management fashions if we speculate based on the limited management fashion data. However, the small sample size in 1980s and 1990s and non-significant t-test results point to the need for additional sampling and further analyses.

CONCLUSION

Speaking of management fashions, Abrahamson (2000) points out that transience may be more a norm than exception in the business world and that the management research need to pay more attention on such phenomena or avoid the risk of mistaking a transient phenomenon for quasi-permanent institutions. The same can be said of IT fashions. The study of IT fashions can tell us about the forces influencing business practices that are much more enduring than the fashions themselves.

If we agree upon the importance of studying IT fashions, then it is only natural to start by examining the extent to which the existing theory of management fashions can explain IT fashions. Although the theory of management fashions may not have been intended to apply beyond its original domain, attempts to apply it to IT fashions yields at least two important benefits. It helps us leverage on the existing theory for its constructs

and generalizations, which provide us with theoretical tools whereby to study IT fashions as this study illustrates. Testing the applicability of the existing management fashion theory also helps us test its generality. That is, it helps us identify how much of the management fashion theory is generic to the fashion phenomena and what is specific to a particular domain. Some have argued that we do not need the theory of management fashion because rhetoric is "the main fabric of management fashions and because rhetoric is an aesthetic form, theories of aesthetic fashion should be applicable to explanation of management fashions" (Kieser 1997). On the other hand, Abrahamson (1996) argues that the management fashion phenomenon differs from aesthetic fashions in important ways – e.g., its norms of rationality and dependence on techno-economic factors – enough so that it requires a theory of its own. We believe that the current study leans toward supporting Abrahamson in this debate and goes further to support that a generic theory of fashions, though certainly worthwhile formulating, can only go so far and that each domain would need to elaborate upon the generic theory for its own unique characteristics.

We believe that this study makes an important contribution toward this goal of articulating what is generic to the fashion phenomenon at the discourse level and what is unique to IT fashions in particular. We find that the study of fashions can be a very rich area of research. We have identified about thirty propositions that have been put forth for management fashions but also could be further tested for IT fashions. They range from those concerning various aspects of the fashion lifecycle, concerning the stakeholders in fashion-setting communities, concerning the psychological and sociological forces facilitating or restraining the phenomenon, to those postulating cross-cultural differences. We are currently exploring a number of these questions.

This study has explored three hypotheses focusing on one particular aspect of IT fashions – namely the duration of the ascent period in the IT fashion lifecycle. As such, it is only a small step but we believe an important one. It has underscored the importance of studying IT fashion as a subject of business research. It proposed and illustrated the use of the existing theory of management fashion as a theoretical framework for such a study. The study has yielded findings about how IT fashions might be similar and different from management fashions, as well as identifying issues that require further investigations. In addition, it has also produced a number of basic resources – such as the lists of IT fashions and management fashions, the dimensions along which they can be narrowed down, the publication count data for each of the fashions – that would be useful for future studies in this area. We hope that this study provides a stepping-stone for fruitful future research on this topic.

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