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Software Adoption in Law Firms: IT Staff Opinion Leader Influence on Top Management

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Abstract

Law firms have characteristics that inherently inhibit the adoption of technology that increases efficiency. Ironically, efficiency reduces revenue in law firms. Billable hours spent on inefficient tasks, such as manual billing or legal research using books rather than computer software, is generally directly billed to clients. In order to facilitate diffusion of new software technology, the top management decision-makers must be convinced by reliable and trusted opinion leaders backed by an innovation champion that it would be profitable to do so. In law firms, these opinion leaders are predominantly embodied in the firms' dedicated information technology (IT) staff.

Introduction

This paper seeks to identify the reasons why law firms may choose to adopt information technology software. More specifically, it identifies the influences on law firms' decision-making processes that will affect the rate of diffusion of software innovations throughout the legal market. While there has been a significant body of literature that has investigated the diffusion of technology, including that which occurs in professional service firms (Bassellier & Benbasat, 2004; Boone & Ganeshan, 2001; Gottschalk & Khandelwal, 2004; Swan & Newell, 1995), the applicability to the comparatively unique context of a law firm structure remains elusive. The distinction is important, since the likelihood of the adoption of information technology is highly dependent on the setting where an innovation is introduced (Zmud, 1982; Kearns & Sabherwal, 2006). Characteristics that propel innovation for one type of organization may be considerably different in another type of firm. The differentiation of the functions of software used by firms relating to the presence of IT-specific opinion leaders has remained relatively unexplored in diffusion of innovation theories. This paper contributes to the existing literature by combining the influences of opinion leaders, as separated from the functions of firms' top management, and the relationships to the adoption of each type of software innovation. This analysis of information technology diffusion is particularly interesting in that it is set in a comparatively novel context of a legal organization. Law firms are not incentivized to seek efficiencies and direct resources towards this goal. Revenues are primarily driven by the amount of time that is directly billed and paid for by clients. Reducing billable hours by using innovative software actually hurts the short-term bottom line of firms. Further, the costs of acquiring and using this technology exacerbate this negative effect on revenue. Opinion leaders in firms must have the expertise to legitimize the value of innovative software that will ultimately improve overall profitability, and that the short-term sacrifice is worth the long-term rewards. Here, the opinion leaders are the information technology staff that is hired by law firms.

The decision to purchase and use software technology is ultimately in the purview of the owners of law firms, who are typically attorneys collectively organized as a partnership entity. Professional service firms in general, and law firms specifically, have business needs and characteristics that tend to impede technical innovation. These attributes include lack of formality and centralization of decision-making authority, autonomous knowledge workers responsible for revenue generation, and ingrained cultural norms that inhibit change.

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The software types that will be used in this paper are divided into two categories: (1) applications that are specifically designated for administrative functions (e.g., word processing, billing, filing, etc.), and (2) applications that are required to perpetuate the value-generating operations of the firm that are necessary to effectuate performance. In this context, legal research software is the most appropriate example. Legal research is a function of the knowledge workers in the firm who rely on this capability to perform. Relying on the typology first proposed by Fichman (1992), the administrative software is identified as "Type I" and the legal research software as "Type 2". In this paper, I present propositions that analyze how opinion leaders are necessary to generate the "spark" that ignites the diffusion of information technology. These opinion leaders in law firms are those employees who are specifically skilled in the uses of information technology and are able to demonstrate the value to the decision-makers of the firm. Without the knowledgeable input of IT staff, the top management in the law firm is unlikely to adopt anything more advanced than administrative support software. Top management attorneys, however, must have the requisite ability to identify the most beneficial facets of the technology to be adopted. Merely following the adoption trends of other law firms tends to result in the acquisition of software that is inappropriate for the specific needs and structure of the firm (Abrahamson, 1991**)**. Purchasing new technology as a disingenuous symbol of appearing to be innovative is often counterproductive. Software that lacks the qualities necessary to enhance performance is a likely result when firms' decision-makers fail to identify what software packages will provide the greatest value. I propose that the use of dedicated IT staff provides this necessary information by acting as the firms' IT adoption opinion leaders.This extensive literature review aims to discuss and is organized as follows: (1) the idiosyncrasies of law firms that impact the likelihood of technology adoption. (2) differentiation of the types of innovative software that law firms may choose to adopt, (3) a brief review of classic diffusion theory, (4) the implications of opinion leaders and top management in the determination to adopt new software technology, (5) propositions, (6) practical implications, and (7) opportunities for further research.

Theory Development

This paper presents an interesting and important addition to existing diffusion theory for two reasons. First, it conglomerates theories relating to the influence of opinion leaders on top management while differentiating this influence on software utilized for functions requiring divergent levels of value perception leading to adoption. Second, the paper uses a context of analysis (i.e., the law firm setting), that has been largely ignored in diffusion literature. As Zmud (1982) postulated, context cannot be ignored in an analysis of innovation adoption phenomena. Factors found to influence innovative behaviors in one context may be seen to have little, or an opposite, influence in another context. Law firms provide a distinct organizational context to investigate the mechanisms of technology diffusion. Like all professional service firms, their primary assets are the knowledge and experience of their highly educated workforce (Greenwood, Li, Prakash, & Deephouse, 2005; Hitt, Bierman, Shimizu, & Kochhar, 2001)**.** Their work products are ingrained with complex knowledge specifically customized to each client's needs. These firms often lack functional interdependencies since the intangible outputs rarely strictly depend upon the cooperation of other attorneys (Hitt, et al., 2001). Moreover, the ownership structure of law firms is predominately that of a professional partnership, where leadership decisions tend to be fractionalized and highly informal (Pinnington & Morris, 1996).

Idiosyncrasies of Law Firms

Ironically, if lawyers use technology to increase efficiency, they will lose revenue, at least in the short-term (Lauritsen, 2006; Mountain, 2007). Billable hours spent on work for clients are directly paid by clients, including for those services that otherwise could be made less costly through the use of software innovations(Jenkins, 2008).Due to an incentive structure that is strongly linked to billable hours, technology is generally not perceived to add value (Edwards & Mahling, 1997). Losing hourly rate compensation from clients due to efficiencies reduces firm revenue. Further, clients may interpret reduced time spent on their cases as underperformance. In order to retain profit levels with fewer billable hours that would result from software efficiencies, increased hourly rates and/or flat billing would be necessary. Both of these options are consistently rebuffed by clients (Forstenlechner, Lettice, & Bourne, 2009; Mountain, 2007; Wolf, 1999). Accordingly, firms would not only lose income from billing from reduced billing, but also would have to spend money on hardware, software, and training to do so. Well-entrenched cultural norms of law firms tend to preclude collaboration among attorneys to disseminate their knowledge and personal expertise (Edwards & Mahling, 1997; Terrett, 1998). Time spent on providing others in the firm with information is time not spent on billing clients. Further, sharing knowledge may result in a loss of individual competitive advantage over other attorneys in the firm. Absent incentives to do so, attorneys will be more likely to discourage adoption of software that would facilitate the transfer of this personally valuable knowledge.

Classification of Software Uses in Law Firms

Analysis of the diffusion of software innovations requires distinction between their functions. Not all firms will need (or adopt) software for every possible type of purpose. Software designed to track patents may be critical for intellectual property attorneys, but would be superfluous for criminal defense firms. Four types of knowledge in law firms benefit from different software applications. These knowledge types are: (1) administrative, (2) procedural, (3) declarative, and (4) analytical Edwards & Mahling, 1997. Administrative data management includes software for virtually all of law firms' operations (Apistola & Lodder, 2005; Edwards & Mahling, 1997).Generally, IT and administrative components are closely intertwined (Wang, 2010). This is one key reason why administrative software is more readily adopted by law firms since most the administrative procedure in current law firm practice encompasses some level of software functionality. Special skills relating to the practice of law are not required to perform these types of tasks. Back-office functions such as word processing, tracking hourly billing, payroll, client invoicing, and calendar management are all administrative functions that are shared by virtually every law firm. Procedural knowledge involves the mechanics required in the practice of law. Filing papers with courts, managing client documents such as trusts, legal contracts, transfer of ownership paperwork, etc. are all examples. Firms may have intricately related document retrieval software, and courts may have mandatory electronic filing requirements (Jenkins, 2008). While filing paperwork and managing paperwork have some similar attributes to that of administrative knowledge, these procedures vary greatly among firms based on practice area, size, geographic dispersion, jurisdiction, and requirements of the courts that postulating any generalized software diffusion would be overly suspect. Declarative knowledge specifically relates to an understanding of the law and associated legal principles garnered from statutes, court cases, and other primary sources of legal authority (Apistola & Lodder, 2005; Edwards & Mahling, 1997). The use of information technology may help organize and share this general knowledge among those in the firm. However, the scope and accuracy of this knowledge limits the efficacy of dissemination via IT software practices. Analytical knowledge involves those with the experience and understanding of any given situation to draw appropriate conclusions in order to advise clients.

Declarative knowledge is called upon as a basis from which these conclusions are drawn, but ultimately requires the incorporation of additional knowledge to reinforce and connect existing understanding of the law. Computer assisted legal research (CALR), such as Westlaw or Lexis/Nexis, helps attorneys and paralegals delve through the myriad of information that will support their cases and refute that of their adversaries. All firms need to make sure that applicable laws have not been modified or court cases that will support their arguments have not changed (Boone & Ganeshan, 2001; Forstenlechner, Lettice, & Bourne, 2009; Jenkins, 2008). While firms with different types of practices will engage in legal research to varying degrees, it is poor practice and unethical to merely assume that nothing has changed. The review, connection, and interpretation processes define the analytical knowledge that is enabled by CALR (Edwards & Mahling, 1997; Gottschalk, 1998; Gottschalk, 2002). I will follow the designations set forth by Fichman (1992) that separates technologies into Type 1 and Type 2 based on interdependencies and the degree of knowledge burden required to use the software. Chatterjee, Grewal, & Sambamurthy (2002) and Swanson (1994) have similarly classified IT products into those that support administration work processes and those that provide the ability to integrate strategically into the core practices of the firm. Administrative software is Type 1 in that it is comparatively low in dependence on other systems and there is a low barrier to knowledge how to use it. Legal research software is closely related to analytical knowledge attained by members of a law firm. This software is designated as Type 2 because its use not only requires an understanding of how it will help with the research process, but also how the information derived from the CALR software can be put to use in accordance with additional interrelated client requirements. The key challenge for law firm management is to understand and appreciate the value of Type 2 software in creating strategic value for the firm (Gottschalk, 2002). IT staff opinion leaders are instrumental in endorsing the more advanced software so that the attorneys will be willing to commit time and money to capitalize on it.

Diffusion Theory Overview

It is instructive to review the general concepts relating to the adoption of technological innovations. The process of diffusion of new technologies will provide insight into why top management attorneys may potentially choose to invest in new software and the influences of opinion leaders on their decisions to do so.

Diffusion of an innovation begins with its first use in a population of firms and ends when all of those firms who will adopt saturate the market for that technology (Fichman & Kemerer, 1999).At saturation, all law firms may have adopted the new technology, while others may opt not to purchase this new technology despite its significant presence among their competitors. There are several well-researched generalizations regarding diffusion of technology. First, the relative advantage, complexity of integration into existing operations, ability to try out the technology before complete commitment to it, and observable results represent characteristics of innovations that may lead to eventual adoption. Second, some firms may have a culture of innovativeness that may lead to adoption irrespective of any immediately recognizable gains (Mahajan & Peterson, 1978). The predisposition of firms to rely on differing types of influence. Finally, top management reliance on opinion leaders to educate and persuade decision-makers can have an influence on diffusion rates (Cooper & Zmud, 1990; Fichman, 1992; Fichman, 1999; Rogers, 1983). Rogers (1983) identifies four essential elements regarding the elements of diffusion. These include the innovation itself, the social system or market into which the innovation is introduced, the transmission of the awareness of the innovation through observation and communication, and the rate of adoption throughout the affected industry. Firms tend to adopt a technology based on their innate characteristics, which fall into five categories: (1) innovative firms with a higher tolerance for the risk of uncertain results in an acceptable time frame, (2) early adopters, (3) early majority, (4) late majority, and (5) laggards .Characteristics of the innovation emphasized by the theory include relative advantage of the innovation compared to existing practices such as convenience, efficiency, and profitability. Other characteristics include whether the new technology is compatible with existing processes and the ease (or complexity) of its use (Bayer & Melone, 1989; Zmud, 1982).

There are several factors that decision-makers are inclined to consider in order to decide whether to adopt new technological innovations (Drazin & Schoonhoven, 1996). First, the specific characteristics of the technology are evaluated. For example, administrative software Type 1 software is more likely to be adopted since the purposes are more familiar and readily accepted as valuable. This is particularly the case where these administrative processes are not directly billable to a client (e.g., payroll, accounting, filing, etc.). Type 2 software is less familiar and is therefore perceived to be less valuable, especially since the processes associated with this type of software may be directly billed to clients. Second, the processes by which decisions to adopt technologies occur. In particular, larger firms tend to have more formalized determination procedures that can evaluate value and decide to adopt technology. Third, the characteristics of those individuals who are in the top management positions of the firm are identified. Forth, consequences for the firm in relation to the overall market for adopting, or failing to adopt, a technology are considered. For example firms may be perceived to lack an innovative culture or be "behind the times" by not embracing innovations at a comparative rate to their competitors. Finally, the degree to which there are interrelations among firms that facilitate communication and awareness of the technology that is at issue has a notable impact (Drazin & Schoonhoven, 1996). Fichman (1992) had cogently summarized the various components of diffusion, culminating a highly useful table, which is reproduced below:

Table 1: Components of the Classical Diffusion Model

Component	Definitions/Generalizations
Definition of Diffusion	The process by which an innovation is communicated through certain channels over time among the members of a social system.
Typical Diffusion Pattern	Process starts out slowly among pioneering adopters, reaches "take-off" as a growing community of adopters is established and the effects of peer influence arise, and levels-off as the population of potential adopters becomes exhausted, thus leading to an "S-shaped" cumulative adoption curve.
Innovation Characteristics	Innovations possess certain characteristics (relative advantage, compatibility, complexity, trialability, observability) which, as perceived by adopters, determine the ultimate rate and pattern of adoption.
Adopter Characteristics	Some potential adopters are more prone to innovate than others, and can be identified as such by their personal characteristics (education, age, job tenure etc.). Adopters can be usefully classified according to where they adopt relative to others (innovators, early majority, etc.).
Adoption Decision Stages	The adoption decision unfolds as a series of stages, flowing from knowledge of the innovation through persuasion, decision, implementation and confirmation. Adopters are predisposed towards different kinds of influence (e.g., mass market communication versus word-of-mouth) at different stages.
Opinion Leaders and Change Agents	The actions of certain individuals (opinion leaders and change agents) can accelerate diffusion, especially when potential adopters view such individuals as being similar to themselves.

The nature of the diffusion of technology is shaped by the type of influence exerted on firms (Mahajan & Peterson, 1985).Internal influences are constrained to a specific and compartmentalized social system market. Adoption may be initiated due to communication channels solely limited to those that are external to the firm.

The signals for adoption are generally mixed, such that influences are both internally and externally represented. This mixed influence generates the traditional S-Curve functional form of diffusion (Mahajan, Muller, & Bass, 1990; Rai, Ravichandran & Samaddar, 1998). All of the aforementioned effects assume a rational decision-making process as a response to the types of influence(s) encountered by firms. However, where there is no demonstrable and particularized effect on the diffusion of technology, the pattern will essentially be randomized "white noise" (Geroski, 2000; Loh& Venkatraman, 1992; Ravichandran, 2000).

The Bandwagon Effect

Firms that merely follow the adoption patterns of other firms may not be acquiring technology innovations at the most effective time period for their optimal benefit (Swanson & Ramiller, 2004). In fact, it may be the more advantageous for firms not to adopt the new technology at all (Wang, 2010). Without any reliable information to the contrary, law firms are often inclined to assume that an innovation is valuable solely due to the fact that other firms have already adopted it. As more firms jump on the "bandwagon", additional organizations will assimilate the technology that in turn induces even more firms to adopt the technology (Abrahamson & Rosenkopf, 1997; Swanson, 1994).The benefits of innovation are assumed based on the price of the technology or are readily apparent to the adopter based on the classification of the technology. This is more likely the case for Type 1 technologies, since firms are more readily able to ascertain value quickly and easily in comparison to other firms. Moreover, firms may rapidly switch to newer software before the full potential of the technology can be realized (Abrahamson, 1991; Attewell, 1992). The bandwagon effect is further perpetuated by the desire to exhibit legitimacy in relation to the overall market (DiMaggio & Powell, 1983; Sherer & Lee, 2002).Firms will then tend to follow the actions of their competitors, particularly those that appear to be more successful, so that they will not appear to lack credibility in their market (Abrahamson, 1991; Sherer & Lee, 2002). Based on a lack of credible information, top management attorneys that solely rely on bandwagon pressures may make improper adoption decisions. Conversely, information technology opinion leaders are better equipped to determine whether the firm should adopt new software technology based on the needs of the organization rather than merely following the herd.

Top Management Reliance on Information Technology Staff as Opinion Leaders

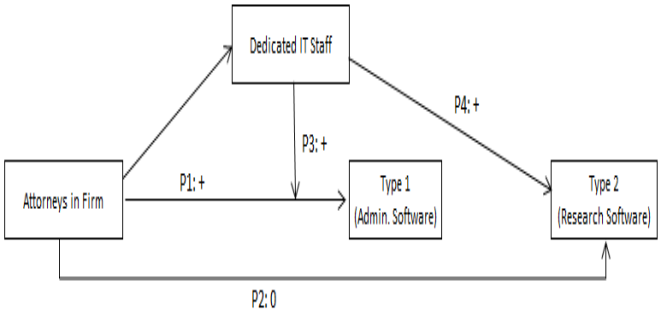
Law firms are reticent to make decisions on more complicated software adoption options due to lack of understanding regarding its value. This is often the case for firms considering complex technologies, since knowledge barriers will tend to increase uncertainty (Attewell, 1992; Fichman, 1992; Forstenlechner, Lettice, & Bourne, 2009). Accordingly, law firm decision-makers that are more technologically innovative rely on their dedicated information technology staff to use their expertise to explain the means by which technology will add value and solve complex problems (Bassellier, Reich, & Benbasat, 2001; Hitt, et al., 2001; von Nordenflycht, 2010). These IT expert staffers provide the law firm top management with a greater understanding of the benefits of software solutions. Armed with this knowledge, attorneys are more able to recognize the value of the more complex technologies and will therefore be more inclined to direct resources for their acquisition (Gottschalk, 1998; Johnson & Lederer, 2010; Kearns & Sabherwal, 2006). The decision to adopt technology at a law firm is an iterative process. New software technology may require significant initial capital investment, continuing costs of licensing and training, and the potential need to re-engineer the core practices of the firm. As such, the decision to adopt a new software technology is not generally allowed to be initiated solely by IT staff. The law firm decision-makers must ensure that the IT staff understands the particularized goals and strategies of the firm so that a most effective use of software technology can be recommended (Armstrong & Sambamurthy, 1999; Bassellier & Benbast, 2004; Ranganathan & Sethi, 2002).However, managerial decisions to embrace new technology require reliance on the guidance of the IT staff. The presence of dedicated IT staff in law firms provides the "trigger" for rapid diffusion throughout the legal industry. Hence, the adoption of IT will spike when there is a critical mass of IT opinion leaders. As with the continuing feedback loop of the bandwagon theory of technology adoption, IT staff leads to faster and diverse adoption of technology, more attorneys and firm employees then are able to utilize the valuable software technology, more IT staff is required to support the IT training and use, further value will be demonstrated by the IT staff opinion leaders' stimulus of the benefits derived from technology, and so on.

Investments in software innovations that will potentially decrease short-term revenues are those that are identified as Type 2 legal research-based software. Investment in Type 2 software requires a tolerance of uncertainty regarding the eventual recognition of revenue (Ravichandran, 2005). This commitment will reap comparatively high rewards in the future operations of a firm, but require top management champions supported by well-respected IT opinion leaders to decide to undertake software investments that have uncertain profitability (Beath, 1991; Beath & Ives, 1989; Lauritsen, 2006; Sharma & Rai, 2003; Valente & Davis, 1999). The decision-makers in law firms determine where resources are best allocated to maximize profits. However, they are ill-equipped to identify problems or information technology solutions regarding the revenue-generating operations of the firm (Sharma & Rai, 2003). By default, top management attorneys may rely on what other organizations are doing in terms of IT in efforts to retain legitimacy in the marketplace. In fact, covering the costs of new, but unnecessary, technology has the potential to force law firms to raise client fees. Barring the expertise of IT staff regarding the most advantageous software to adopt for the unique needs of the firm, top management has little recourse but to succumb to the bandwagon effect. Their primary role is to encourage other top managers to be receptive to the notion that investment in Type 2 software may, in some cases, be strategically preferable. Successful champions do, however, know how to access and leverage the knowledge of technological opinion leaders found in a dedicated IT staffing group (Bassellier, Reich, & Benbast, 2001; Boone & Ganeshan, 2001; Ravichandran, 2005). Learning about this information allows top management champions to mitigate the pitfalls of wasteful resource allocations.

Research Model and Propositions

This section investigates the influences on the diffusion of innovative Type 1 and Type 2 software is set forth in Figure 1.

Figure 1: Flow Diagram



The size of firms has generally been a positive influence on the level of adoption of innovative technology (Frambach, 1993).Here, construct of size of law firms is measured by the number of attorneys generating revenue for the firm in terms of billable hours. Top management attorneys are able to discern from the adoption behaviors of other firms, via the bandwagon effect, that some rudimentary software will be required to remain competitive and retain legitimacy in the legal marketplace. Administrative software has a low barrier to knowledge as to its value and use. Software diffusion of this Type 1 software does not require the presence of an IT department as opinion leaders to initiate adoption. Hence,

P1: As the size of law firms increases, the level of adoption of Type 1 software will increase.

Type 2 software is much more difficult to integrate into preexisting procedural processes of law firms. Longer term (and usually larger) investments are required to increase the likelihood to achieve the profit increases resulting from these more advanced software packages. Legal research is necessary for the appropriate level of representation of clients. However, it is undertaken only be the knowledge workers in the firm, namely the attorneys and qualified paralegals in the firm. Accordingly, the benefits of legal research software are not fully distributed throughout the firm. Moreover, top management may not have the knowledge, inclination, or the time necessary to evaluate the choices of legal research software that may be most appropriate for the firm. As is the case with the two dominant software programs, westlaw and lexis/nexis, once a decision is made to adopt one brand of software, it necessarily integrated in most all facets of client service. The ability to change to the competitor is severely constrained by the cost and difficulty in making a transition. By comparison, firms face similar concerns in whether to use pc or apple Macintosh as an operating platform. There is some overlap, but not full interchangeability.

Some firms may have technology savvy champions in top management, while others may not have decision-makers with this innate knowledge. Without a dedicated it staff opinion leader, there is not a discernable likelihood as to whether the more complicated type 2 software will be adopted. Accordingly,

P2: As the size of law firms increases, there will not be a statistically significant influence on the adoption of Type 2 software.

When IT staff joins a firm, the requisite knowledge to capitalize on the benefits of administrative software can be leveraged by top management. Attorneys have already bought in to the notion that this software adds value. The addition of opinion leaders acts as a catalyst for additional adoption of technology that will further enhance the benefits of its use. These opinion leaders have a large and diverse knowledge of relevant information, and are therefore able to reduce uncertainty in the subsequent adoption of additional software resources (Loh & Venkatraman, 1992). Hence,

P3: As the size of law firms increases, the presence of dedicated IT staff in a law firm will positively moderate the rate of adoption of Type 1 software.

With the introduction of IT staff into a law firm, these opinion leaders are able to substantiate the use of more sophisticated software. Using reliable experience and an understanding of the benefits of Type 2 software, decision-makers will be able to assimilate the knowledge necessary to recognize value. Champions will acquire greater legitimacy in their appeals to the rest of top management to embrace the benefits of capitalizing on the efficiencies and advantages of using CALR. Further, IT staff will be able to focus the most advantageous Type 2 software for the firm, guide its implementation, and facilitate the training and support required to integrate it into the operations of the firm. Accordingly,

P4: As the size of law firms increases, the presence of dedicated IT staff in a law firm will mediate the decision-making processes of top management resulting in the increase the rate of adoption of Type 2 software.

Practical Considerations

Ultimately, attorneys are more likely to adoption both Type 1 and Type 2 software when it they perceive that there will be a positive impact on firm revenue. Several practical implications of software adoption emerge that will guide its adoption. First, top management must commit to moving beyond the bandwagon effect of adopting new software. To do so, champions have the inherent ability to evaluate the benefits of Type 1 and/or Type 2 software with respect to the particular needs of the firm. If champions are not found to have the requisite knowledge to thoughtfully identify the value in adopting new technology, than IT staff must be relied upon to act as opinion leaders. Management must then be involved in the process to adopt only that software that will provide value (Doll, 1985).
Adopting a more formalized and centralized structure of decision-making will streamline the adoption process. Firms that embrace this format are more likely to recognize the value of new software technologies. Champions are able to be heard in more formal settings, and evidence of value provided by IT staff opinion leaders is more readily assimilated when top management attorneys are formally organized. These evaluative processes may simply require all of the necessary attorneys to be in the same conference room dedicated to making technology adoption decisions.
There are several methods of adoption of technology that can reduce uncertainty as to its viability. Limited rollout, prototypes, trials, and comparative simulations to determine the level of integration required will provide information as to whether a technology fits into a Type 1 or Type 2 category (Beath & Ives, 1989). Uncharged staff time and efforts to legitimize this evaluation process necessarily must be integrated into the culture of the firm.

Limitations

It will be most instructive to acquire and use data to evaluate these propositions and test their validity. A key source of data for empirical testing is the American Bar Association Legal Technology Research Center Survey Report. This is a 144-question survey document sent out to approximately 12,500 randomly selected names of Bar Association lawyer members in private practice. This survey has been undertaken in various forms for over ten years. These data are in the process of compilation as of the writing of this paper. Considerations of reverse causality and endogeneity may present themselves and be addressed. For example, the formation of dedicated IT staff may itself be a function of the bandwagon effect.

Also, it is possible that law firms adopt Type 2 software without any rational reason to do so (e.g., "white noise"), but are then forced to hire IT support in order to try to reap some benefit out of what may have been an ill-advised purchase. In this paper, I propose that the idiosyncrasies of law firms' decision-making processes will result in a white noise random walk in the diffusion of software innovative technology. Only when there is sufficient guidance provided by opinion leaders represented by dedicated IT staff will there be a non-random response to internal and/or external influences. It is important to note that these possibilities do not negate the importance of the propositions. The increasing rate of adoption resulting in diffusion of technology is investigated. The reasoning behind why IT staff is hired is not incumbent to the diffusion of technology of prototypical firms in the legal industry. The generalizability of these propositions, and eventual testable hypotheses, deserves comment. While it is important to note that context must be taken into consideration regarding the adoption of technology, the factors associated with the eventual diffusion of technology can be applied to all professional service firms and the service industry in general.

Opportunities for Further Research

Several opportunities for research are generated from this paper. The positive relationship of adoption of technological innovations and firm size may not necessarily hold true. In several cases, new software technology can lead to smaller firms (Brynjolfsson, Malone, Gurbaxani, & Kambil, 1994; Mountain, 2002; Ribstein, 2010). The size of law firms measured by the number of fee-earning attorneys may also not be the key determinant of diffusion. Instead, the composition of law firms, including non-attorneys such as paralegals and legal secretaries, may be a more accurate predictor of diffusion of technology. The compositional structure of firms as a variant in the likelihood of adoption is ripe for analysis in all organizational structures. In order to determine whether adoption of either classification of software due to IT staff opinion leadership will confer a sustained competitive advantage for law firms, further research is warranted (Clemons & Row, 1991; Kearns & Lederer, 2003; Kearns & Sabherwal, 2006; Mata, Fuerst, & Barney, 1995). Firms may achieve a comparatively higher level of profitability by reducing costs or differentiating its service offerings by adopting a technology prior to the majority of others in the market. Moreover, the failure to adopt technology that provides better legal services to clients can provide competing firms with an advantage. More importantly, law firms' clients may not find new service offerings to be useful to suit the purposes for which these firms were hired (Susskind, 1996). Whether a competitive advantage is attainable at all is a critical consideration in whether to undertake the expenses of integrating a new software technology. The evaluation of whether the adoption of Type 1 software will subsequently lead to more rapid diffusion of Type 2 software has generated mixed results in the literature. In one study, the duration of previous experience with given software technology was not a key factor in the later adoption of technological innovations (Delone, 1988).Conversely, Yap, Soh, and Raman (1992) did find a positive relationship. This latter study added support to the contention that smaller firms that had not yet adopted a new technology would more rapidly embrace new technology. When these smaller firms decided to engage resources for IT and recognized profits, they were more likely to perceive value in additional adoption. This adoption pattern was not investigated in the model set forth in this paper, and is a clear opportunity for further study. Diffusion of software technology was the predominant focus of this paper. A highly useful extension of this research is the extent to which the software is actually used by firms once it is acquired (Cooper & Zmud, 1990). If the software that was purchased does not fit the needs of the firm, it will be an underutilized (or perhaps wholly ignored) investment (Henderson & Venkatraman, 1993).An investigation of the rate and extent to which technology is used once it has diffused throughout a population (i.e., the "diffusion gap") was undertaken by Fichman & Kemerer (1999). The extent of the gap that is present in the context of this paper would be an interesting and highly important topic for further research.

Conclusion

Software innovations have been demonstrated to increase law firm profits so long as they are directed towards the appropriate strategic needs of the organizations (Donner, 1995, Edwards & Mahling, 1997; Jenkins, 2008; Lauritsen, 2006). Attorneys that provide a structured and reasoned analysis of their information technology needs of their firms have a greater ability to reap the profits that can be achieved with the use of innovative software investments. Although the context of this paper has been that of law firms, the theoretical constructs of this paper are applicable to all firms. The combination of the reliance of top management, champions located within the decision-making governing bodies, and the use of opinion leaders as a catalyst of adoption has not been fully explored by the literature.

Further, employing these subsets of those who influence adoption on the relationships of adoption of two distinct types of software has not been the subject of significant review. The novel grouping of concepts set forth in this paper will serve as a valuable template for application in a multitude of divergent organizational contexts.

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