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Organizational culture, innovation, and performance: A test of Schein's model

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ABSTRACT

Innovation is the key to organizational survival and therefore the study of processes that support innovation should be of interest to researchers and practitioners alike. Schein's multi-layered model of organizational culture offers a useful framework for thinking about processes that foster innovation. A defining characteristic of the model is the subtle but important distinctions between the varied "layers" of organizational culture (i.e., values and norms, artifacts and behaviors). The basic assumption of this study is that Schein's model offers a tractable explanation of cultural processes that support organizational innovation, especially in service firms. Despite the intuitive appeal and practical value of Schein's conceptual framework, empirical research in relation to the model is limited. This paper develops a rationale for an empirical model based on Schein's conceptual model; the study reports a test of an empirical model. Data collected from approximately 100 principals of law firms provides a suitable empirical context for a test of the model. The findings generally support the hypothesized relationships. A key result is how layers of organizational culture, particularly norms, artifacts, and innovative behaviors, partially mediate the effects of values that support innovation on measures of firm performance. The findings have implications for theory and practice, especially in relation to building an organizational culture within professional service firms that fosters innovative behavior.

1. Introduction

Following the worst global economic crisis experienced in fifty years, a report from the Organisation for Economic Co-operation and Development (OECD, 2010) highlights the potential of innovation for long-term economic growth. Innovation is a key driver of economic development and plays a crucial role in competition at both the national and firm levels (Cefis & Marsili, 2006; Tellis, Prabhu, & Chandy, 2009). Given the complex and dynamic conditions in which organizations compete today, the need for organizations to innovate continually has never been greater (Gumusluoglu & Ilsev, 2009; Tellis et al., 2009). Prior literature proposes a positive link between innovation and a range of desired performance outcomes (e.g., Garcia-Morales, Matías-Reche, & Verdu-Jover, 2011; Han, Kim, & Srivastava, 1998).

Consequently, empirical interest continues to increase understanding of paths to innovation. Not surprisingly, much of this research has focused on manufacturing firms. Few studies document processes that support innovation in service firms that deliver high "value added" services, by comparison. Organizational culture as the key to fostering processes that support innovation is one speculation (Khazanchi, Lewis, & Boyer, 2007; Tellis et al., 2009); this perspective may be relevant especially in the context of professional service firms.

The concept of organizational culture originates in cultural anthropology and is popular within the organizational behavior, management, and marketing literatures (e.g., Gregory, Harris, Armenakis, & Shook, 2009; Homburg & Pflesser, 2000; Schein, 1992). Organizational culture refers to the values and beliefs that provide norms of expected behaviors that employees might follow (Schein, 1992). Schein (1992) considers organizational culture as a social force that is largely invisible yet very powerful. Empirical evidence suggests that organizational culture significantly influences market-oriented behaviors, and market and financial performance (Homburg & Pflesser, 2000), employee attitudes and organizational effectiveness (Gregory et al., 2009), and has a greater contribution to knowledge management and organizational effectiveness than organizational strategy and structure (Zheng, Yang, & McLean, 2010). An organization's culture strongly influences employees' behaviors beyond formal control systems, procedures, and authority (O'Reilly, Chatman, & Caldwell, 1991). As such, organizational culture is a powerful means to elicit desired organizational outcomes.

Nonetheless, despite much focused attention on the topic of organizational culture, extant literature does not sufficiently document the characteristics of an organizational culture that supports innovation. Importantly, prior research does not sufficiently document the explicit process by which organizational values (i.e., the foundational building blocks of culture) translate into observable desired behaviors. Moreover, advancing the literature requires a finer-grained view and clearer explanation of the specific layers of an organizational culture supporting innovation. "That organizational culture influences firm effectiveness is an assumption implicitly held by many managers and management

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researchers, although few empirical studies have provided detailed insight into the relationship" (Gregory et al., 2009, p. 683). This research begins to address this important gap.

A central aim of this paper is to contribute to existing literature by providing a clearer understanding of the links between the distinct layers of an organization's culture and innovative behaviors. The motivation for this paper is to provide a more complete account of the key cultural characteristics and processes that lead to innovative behaviors within a knowledge-based context. This study contributes to understanding these key issues in several ways. First, this study presents and empirically tests Schein's (1992) multi-layered organizational culture model. In contrast to most previous studies that conceptualize organizational culture as a unidimensional construct, we build on and extend Homburg and Pflesser's (2000) work. We argue that distinguishing between the subtle but distinct cultural dimensions underpinning behaviors provides a finer-grained picture and better understanding of the interrelationships between the specific layers of organizational culture that drive desired behaviors. As such, our study provides a means to assess and therefore manage specific elements of an organization's culture. Second, this study contributes to establishing the value creating outcomes of these complex constructs. In doing so, our study addresses important and timely issues that are fundamental to organizational effectiveness. This study therefore establishes some very clear guidelines for managers seeking to build a culture of innovation, within professional service firms in particular.

2. Theoretical framework

2.1. Schein's model of organizational culture

Many definitions of organizational culture exist, however, organizational culture generally refers to the organizational values communicated through norms, artifacts, and observed in behavioral patterns (Homburg & Pflesser, 2000; Schein, 1992). The intrinsic worth of values is to act as social principles or philosophies that guide behaviors and set a broad framework for organizational routines and practices (Hatch, 1993; O'Reilly et al., 1991). For example, values communicated by senior management assist the innovation process by embedding expected behaviors within an organization's culture. Values therefore provide a subtle mechanism through which senior management can exercise influence (Mumford, Scott, Gaddis, & Strange, 2002). By emphasizing certain values and by building corresponding norms for expected behaviors, managers can begin to build an organizational culture that has a powerful and compelling influence on employee behavior (Mumford et al., 2002; Tellis et al., 2009). Values and norms can in turn manifest in artifacts (e.g., organizational rituals, language and stories, and physical configurations) and lead to desired behaviors such as innovation.

While most prior research considers organizational culture as a single construct, Schein (1992) considers the importance of analyzing and distinguishing between several layers of culture (see Fig. 1). Further, Schein (1992) attributes the confusion in definitions of culture to failure in differentiating the levels at which organizational culture manifests correctly. As Fig. 1 illustrates, values underlie norms and artifacts and determine observed patterns of behavior. Norms are expectations of acceptable behaviors held by members of an organization and have the force of social obligation or pressure (O'Reilly et al., 1991; Schein, 1992). For instance, innovative behaviors can result from norms that support information exchange about new ways of doing things within an organization (Amabile, 1988; Moorman & Miner, 1997). Organizational norms derive from values and are manifest in artifacts. Whereas values are the least visible, artifacts represent the most visible layer of organizational culture and are manifestly evident in organizational symbols, rituals, language, and physical workspace arrangements (Schein, 1992).

2.2. Organizational innovation

Innovation theory has developed within manufacturing and high-technology industries, and the innovation construct is generally conceptualized as a discrete process or dichotomous variable. That is, innovation is often considered as either radical or incremental (e.g., Subramaniam & Youndt, 2005), technical or administrative (e.g., Han et al., 1998), or product or process (e.g., Chen, 2009). Within manufacturing industries, innovative outputs are tangible, such as new products, produced using technological process innovations, and stored for later use. The development of new machinery and equipment is central to the innovative activities of firms within these industries.

However, this conceptualization is not always appropriate within service contexts because services are perishable and intangible, and the close interaction between the producer and the customer in the service delivery process makes it difficult to distinguish between product and process innovation. Within the context of a professional service,

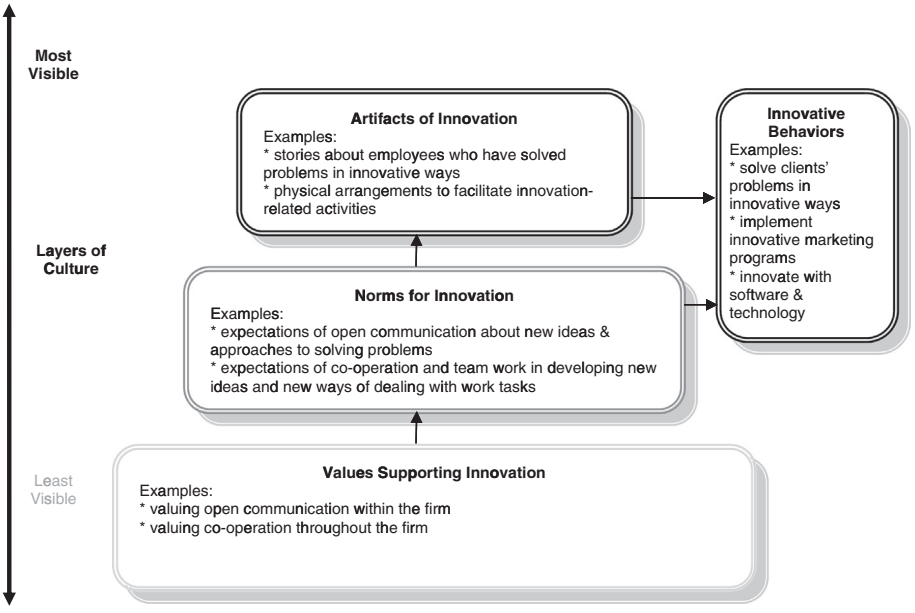

Fig. 1. Layers of an organizational culture that supports innovation.

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knowledge and information that is intangible in nature are the main outputs; the outputs do not involve physical or technological aspects necessarily. For example, the provision of an innovative solution to a client's problem within a professional service context involves the provision of both the service and product, as well as the process of supplying an innovation that is intangible and is unable to be stored for later use.

An emerging perspective within the literature is that the innovation conceptualization needs to include multiple dimensions (Wang & Ahmed, 2004). Hogan, Soutar, McColl-Kennedy, and Sweeney (2011) three-point model is one such conceptualization. The components of the construct capture innovative behaviors directed towards the development of client-focused, marketing-focused, and technology-focused innovation activities. This particular innovation construct has the advantage of capturing the types of innovative behaviors that are possible within professional service firms. Hence, this multi-dimensional perspective provides the basis for the conceptualization and measurement of innovative behaviors described subsequently.

3. Empirical model and research hypotheses

The empirical model of Fig. 2 outlines the core hypotheses for this study. Central to this process model is the idea that basic values supporting innovation, norms for innovation, and artifacts of innovation lead to innovative behaviors. In turn, innovative behaviors have performance implications for firms. Attention now turns to developing a rationale for these constructs and their hypothesized interrelationships.

3.1. Organizational values and norms

Values theorists suggest that values develop through the influences of cultural and social contexts (Dose, 1997; Rokeach, 1973). Values espoused within an organizational environment are defined as evaluative standards relating to work, or the work environment, by which individuals discern what is considered "right" or "wrong" (Dose, 1997). Values serve an important function guiding specific norms, or expectations of behavior, within organizations. Previous research provides support for the influence of certain values, norms, and artifacts on the behavior of employees. For example, Homburg and Pflesser (2000) investigate the different layers of a market-oriented organizational culture across a range of industries in Germany. They found strong support for the role of specific values, norms, and artifacts in shaping employee behaviors that support a strong market-orientation (i.e., staying informed of market trends, reacting to customers' shifting preferences).

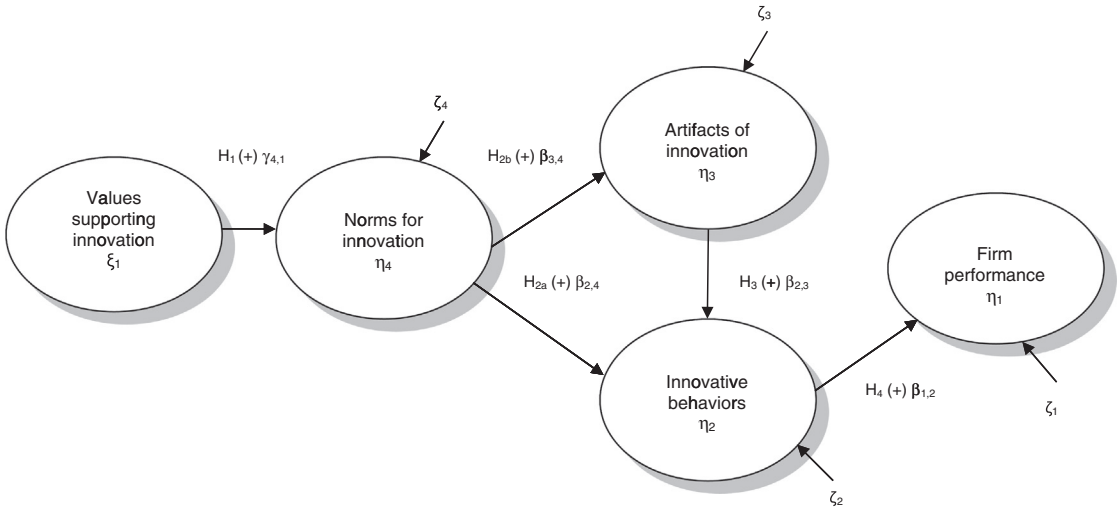
Based on a review of research and relevant literature (summarized in Table 1), our study examines the values, norms, and artifacts that the literature suggests motivate innovative behaviors. We therefore assess an innovation-oriented culture through the following value dimensions: success, openness and flexibility, internal communication, competence and professionalism, inter-functional cooperation, responsibility of employees, appreciation of employees, and risk-taking. As Homburg and Pflesser (2000) note, some values may yield other valued behaviors (e.g., pro-social displays).

Although not directly observable, values have a powerful force on norms and resultant observable behaviors (Dose, 1997; Rokeach, 1973). Norms are social expectations based on underlying organizational values and represent behavioral rules that guide actions within groups, and often specify precise sanctions for violations of these expectations (O'Reilly et al., 1991). Whereas values provide a broad foundation for an organization's culture, norms provide explicit guidance to desired behaviors. Social learning theory suggests that individuals learn values, attitudes, behaviors, and skills through observing others in a social context (Bandura, 1986). By observing others, reinforcement of organizational values and the subsequent expectations of specific behavior occurs. This implies that a set of underlying organizational values provides a basis on which to foster a set of corresponding norms, or expectations, for innovation-related behaviors. Stated formally as a hypothesis:

H1. Values supporting innovation positively influence norms for innovation.

3.1.1. Norms and innovative behaviors

Formal control systems are assessed for effectiveness through the measurement of either behaviors or outcomes, such as productivity (O'Reilly, 1989). However, not all behaviors are predicted and measured, and organizations often seek to elicit appropriate attitudes and behaviors from employees through the development of informal controls (O'Reilly, 1989). "Social norms are among the least visible and most powerful forms of social control over human action"



ξ = exogenous construct; η = endogenous construct; γ = exogenous construct to endogenous construct; β = endogenous construct to endogenous construct; ζ = error variance for endogenous construct.
Note: for purposes of clarity observed variables are not presented.

Fig. 2. Empirical model of an organizational culture that supports innovation.

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Table 1
Research and literature on dimensions of organizational culture that support innovation.

Value dimension	Definition	Rationale	Citations
Success	The degree to which an organization values success & strives for the highest standards of performance, & values the provision of challenging goals & encouragement of employees to excel	* Raises performance expectations of employees; * creates psychological ownership of organizational goals; * enhances intrinsic motivation & feelings of self-efficacy; * increases employees' motivations to find novel solutions to organizational problems; * improves innovative performance	Abbey & Dickson (1983); Amabile, Conti, Coon, Lazenby, & Herron (1996); Gumusluoglu & Ilsev (2009); Mumford et al. (2002); Redmond et al. (1993); Sethi, Smith, & Park (2001); West (2002)
Openness & flexibility	The degree to which an organization values openness & responsiveness to new ideas, & a flexible approach to solving problems	* Facilitates creativity, empowerment, & change that are essential for the exploration that drives innovation; * encourages intrinsic interest in, & appreciation of novelty, promotes variety seeking, receptiveness to new ideas, & tolerance for ambiguity associated with creativity and innovation; * facilitates idea generation, divergent thinking that enable problem identification & implementation of creative solutions	Amabile (1988); Howell & Boies (2004); Khazanchi et al. (2007); Mumford et al. (2002)
Internal communication	The degree to which an organization values open communication that facilitates information flows within an organization	* Social development theory and situational learning theory emphasize cognitive growth through social interaction & communication of information; * provides access to and availability of diverse knowledge, cross-fertilization of ideas, improved quality of decision-making & consideration of novel alternative solutions that yield innovation	Amabile (1988); Baker & Freeland (1972); Binnewies, Ohly, & Sonnentag (2007); Caldwell & O'Reilly (2003); Garcia-Morales et al. (2011); Moorman & Miner (1997); Sonnentag & Volmer (2009)
Competence & professionalism	The degree to which an organization values knowledge & skills, & upholds the ideals & beliefs associated with a profession	* Professional knowledge, expertise & technical skills (i.e., domain relevant knowledge) constitute the raw material for innovation; * increased professional knowledge & expertise leads to increased problem analysis & solution provision, increased initiation of and adoption of technical innovations, increased total, technical & administrative innovation adoption, increased innovative human resource practices & increased radical innovation capability	Amabile (1988); Sonnentag & Volmer (2009); Subramaniam & Youndt (2005)
Inter-functional cooperation	The degree to which an organization values coordination & teamwork	* Resource dependence theory suggests that when working on highly innovative projects, members from different functional areas consider their tasks to be more heavily reliant on the expertise, information & resources of other functional specialists in order to achieve buy-in & successful & innovative outcomes; * High levels of integration & sharing among teams is facilitated through complex coordination, communication, information-sharing, cooperation & conflict resolution processes, which in turn influences innovation success	Abbey & Dickson (1983); Baker & Freeland (1972); Caldwell & O'Reilly (2003); De Clercq, Menguc, & Auh (2009); Song & Swink (2009)
Responsibility	The degree to which an organization values employees' proactiveness, initiative, autonomy & responsibility for their work	* A relatively high degree of responsibility, autonomy & encouragement of initiative fosters innovation; * when employees perceive responsibility for achieving the overall goals of a project & have discretion in how goals are accomplished they develop a sense of ownership & control over their own work & ideas, overcome potential problems with persistence & determination, & produce more creative & innovative outcomes	Amabile et al. (1996); Binnewies et al. (2007); Caldwell & O'Reilly (2003); Mumford et al. (2002)
Appreciation	The degree to which an organization values, rewards & recognizes employees' accomplishments	* As a directive mechanism, output expectations are more successful when accompanied by rewards & feedback, & the provision of rewards & recognition of innovative accomplishments positively influences innovation; * the synergistic effects of extrinsic motivation (e.g. recognition) & intrinsic motivation (e.g. commitment to work & exploratory learning) influence innovation; * performance–reward dependency & risk-taking are positively related to all stages in the development of new technological innovations	Abbey & Dickson (1983); Amabile (1988); Howell & Boies (2004); Mumford et al. (2002); O'Reilly (1989); West (2002)
Risk-taking	The degree to which an organization values experimentation with new ideas & challenging the status quo	* Valuing risk-taking, or an encouragement to take meaningful & calculated risks within the scope of one's job, & an encouragement to challenge the status quo in an effort to produce positive job-related outcomes, is related to the psychological safety construct where employees have a sense of being able to experiment with new ideas & to do things differently without the fear of negative consequences to self-image, status or career; * Encouraging risk-taking strengthens superordinate identity & when combined with supervisory support & encouragement positively influences product innovativeness	Caldwell & O'Reilly (2003); Dewett (2004); Sethi et al. (2001); Tellis et al. (2009)

(Bettenhausen & Murnighan, 1985, p. 350). An organization's culture grows via norms, and the approval or disapproval attached to these expectations (O'Reilly, 1989). Norms provide order and meaning to ambiguous or uncertain situations, therefore providing standards against which individuals can evaluate the appropriateness of behavior. As governance mechanisms, norms have been shown to safeguard against opportunistic behavior and encourage "pro-social" behavior.

Previous research suggests norms associated with enhancing creativity (e.g., expectations and encouragement of risk-taking), and norms associated with promoting the implementation of projects (e.g., expectations and encouragement of teamwork, such as coordination and information exchange) are significantly related to innovation (Caldwell & O'Reilly, 2003). When these norms are present individuals are more likely to propose new and creative solutions to problems and are more likely to have an easier time putting creative ideas into action than if these norms did not exist (Caldwell & O'Reilly, 2003; Dewett, 2004). Other research confirms early studies and provides support for the relationship between norms for collaborative problem-solving and related behaviors (Taggar & Ellis, 2007). Based on this discussion, organizational norms for innovation often occur in antecedent paths of innovative behaviors.

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H2a. Norms for innovation positively influence innovative behaviors.

3.1.2. Norms and artifacts

Artifacts are the most explicit and observable characteristics of an organizational culture (Schein, 1992) and provide a context for employees to understand what is expected within the organization (Mahler, 1997; Meyer, 1995). Ceremonies and rituals reveal what is important in a particular organization, and can symbolically convey organizational values and norms (Higgins & McAllaster, 2002). Rituals celebrating successful events, such as an award ceremony for the success of an innovative marketing strategy, reinforce the importance of expected behaviors. Rituals affirm and communicate to organizational members in a more tangible and visible way an organization's underlying values and norms in order to create and maintain the culture (Beyer & Trice, 1987).

The degree to which an organization values and expects certain behaviors (e.g., achievement, service, efficiency, appreciation of employees, autonomy, and inter-functional cooperation) influences the display of artifacts such as language and metaphors containing messages that emerge consequent to organizational norms that support innovation (Gibson & Zellmer-Bruhn, 2001). The language and metaphors used in support of desired behaviors provide employees with essential information about expectations regarding their job-related roles, scope, objectives, and organizational membership. Moreover, the conceptualization of inter-functional cooperation, or teamwork, as evidenced by metaphors and language may give rise to psychological safety, which may lead to innovation in teams.

Organizational norms have a crucial role in shaping an organization's social and physical environment. The physical layout of an organization not only serves instrumental, but also symbolic and aesthetic functions (Vilnai-Yavetz & Rafaeli, 2005). Office design physically expresses the underlying values and corresponding norms of an organization and creates a particular atmosphere, feeling, and meaning for employees over time (Elsbach & Bechky, 2007). As the visible part of an organization's culture, office design and décor symbolize an organization's social order (Schein, 1992). An organization interested in promoting a culture of equality among groups, for example, would discourage and eliminate visible status symbols, such as executive lunchrooms and extravagant offices for senior management. Similarly, an organizational culture that expects collaboration, open communication, and problem solving between groups, would facilitate and encourage these behaviors in the office layout.

The manifest indicators of an organization's cultural artifacts (i.e., artifacts including stories, rituals, the organizational architecture, and language) depend upon the presence of norms. Hence, the following hypothesis:

H2b. Norms for innovation positively influence artifacts of innovation.

3.2. Artifacts and innovative behaviors

According to the model of Fig. 2, artifacts of innovation lead to innovative behaviors. Relevant organizational artifacts include language and symbols, rituals, and the physical environmental and layout. Language as an element of organizational culture (Schein, 1992; Trice & Beyer, 1984) cues appropriate and inappropriate behavior using metaphors and meaning structures (Gundry & Rousseau, 1994; Smith & Ellis, 2001). The findings from previous research highlight the important task that managers have in sending appropriate messages, and through the use of appropriate language, that will be recalled by employees when deciding how to behave.

Success in relation to innovation may further depend on an organization's ability to effectively manipulate and manage symbols. For instance, research by Martin, Feldman, Hatch, and Sitkin (1983) suggests that the way stories are told has a significant effect on shaping the attitudes and behaviors of employees. According to attribution theory, organizational stories framed in the positive, in which employees are portrayed as working with diligence, persistence, and ingenuity to overcome an obstacle, led to employees feeling they had the same desirable control over outcomes. Organizations can craft strategic stories to mobilize members to move the organization in a desired direction. As Bartel and Garud (2009) propose, narratives of innovation not only symbolize expected behaviors, but they also provide a means of information sharing, inspire new ideas, and can promote coordinated action during the innovation process. When employees can locate themselves in a story, their sense of commitment and involvement in actual behaviors increases.

Successful innovation requires that managers provide clear and consistent signals to employees about what is important for the organization and its chosen course (Barnes, Jackson, Hutt, & Kumar, 2006). That is, rituals provide clear signals and public recognition of employees' accomplishments that are valued and expected by an organization, and serve to motivate other organizational members to greater effort (Trice & Beyer, 1984). Rituals are generally perceived as helpful in managing behavior in accordance with value-based expectations by providing guidelines and social maps (Beyer & Trice, 1987). Through the practice of rituals, organizations can begin to realize the practical consequence of rewarding desired behaviors so that other employees repeat and emulate these behaviors (Barnes et al., 2006).

Finally, the physical layout of organizations impact on valued and expected behaviors. Toker and Gray (2008) investigated whether differences in spatial layout of organizations affected face-to-face consultations and ultimately innovation processes in settings where innovation was expected and encouraged. In organizations that featured open shared spaces as well as quiet individual offices that were easily accessible, with shorter walking distances between them, exhibited higher face-to-face consultation rates, increased connections between consultation networks, and increased innovation outcomes. The spaces created by office design facilitate or constrain social interaction between groups, and are a means to elicit desired behaviors.

In summary, a reasonable conjecture is that innovative behaviors are likely to emerge in response to environments in which artifacts (e.g., stories, rituals, the physical architecture, and language) are used to signal and communicate an organization's underlying values and norms. Innovative behaviors require a physical and social environment that can support the development and implementation of new ideas, products, strategies, and systems.

H3. Artifacts of innovation positively influence innovative behaviors.

3.3. Innovative behaviors and firm performance

The final link in the empirical model of Fig. 2 is between innovative behaviors and firm performance. Establishing this link should be of central concern to strategy and organizational theorists with an interest in organizational cultures that are presumed to support innovation. To be sure, innovation is seen as a key source of an organization's competitive advantage (Bharadwaj, Varadarajan, & Fahy, 1993; Weerawardena, 2003). This occurs for reasons including enhancement of product and service quality, the realization of new customers and markets, and improvement in a firm's marketplace position. The link between developing new products and performance outcomes is supported in manufacturing firms (e.g., Avlonitis & Salavou, 2007; Song & Swink, 2009). Empirical research is limited and especially in relation to professional service firms. Studies of the relationship between new service development and firm performance are beginning to emerge (e.g., Ettlie & Rosenthal, 2011; Storey & Kahn, 2010), but the link is still understudied. Nonetheless, firms that engage in various innovative behaviors, such as the development of new products, services, and solutions, can realize positive performance outcomes.

H4. Innovative behaviors positively influence firm performance.

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4. Method

4.1. Survey procedure and sample

Law firms within a large geographic area that included the metropolitan hub of Sydney, Australia and several regional centers define the population of interest. The authors obtained contact details for principals of law firms within this area from publicly listed information (i.e., industry association lists, company websites, and directory sources). The final mailing list consisted of 658 firm principals. Using senior managers, such as principals of law firms, as key informants is consistent with previous research on organizational culture because of their macro perspective of an organization's activities and culture (e.g., Gregory et al., 2009; Zheng et al., 2010). Each law firm's principal received a survey packet including a cover letter from the researchers, a self-completion questionnaire, and a postage-paid return envelope. A second mail out four weeks after the initial mailing was conducted to improve the response rate. Five questionnaires were discarded due to unacceptable levels of missing data. We obtained 91 usable questionnaires in total for a response rate of approximately 14%.

There is wide variation in respondent's demographic characteristics. Respondents range in age from 24 to 81 years (mean = 50.7, std. dev. = 10.8). Seventy-eight percent of respondents are male, 46% of respondents are managing partners, and 31% are partners, with the remainder holding senior lawyer and senior management positions such as vice-president of marketing or vice-president of human resources. The average number of years sampled firms have been established is 41 (range = 1 to 150, std. dev. = 39.7). The number of lawyers within the sampled firms ranges from 1 to 800 (mean = 35.6, std. dev. = 113.4). The average number of employees in total per firm is 84 (range = 2 to 2,000, std. dev. = 271.1). Thirty-three percent of firms are located in the metropolitan hub and 23% of firms are located in its immediate suburbs. The remaining firms (43%) reside in regional centers across the geographic region studied. Although the sample of 91 observations is a modest one, it is comparable to other studies in this research setting (cf. Gregory et al., 2009; Loi, Hang-Yue, & Foley, 2006). Simulation studies produce consistent and reliable estimates of model parameters in samples as small as 50 observations (Gerbing & Anderson, 1992). This result is specific to the latent variable structural equation modeling techniques used subsequently for data analyses.

The extrapolation procedures that Armstrong and Overton (1977) describe were used to test for the presence of non-response bias. Categorizing responses to the first and second mailing as early and late maximizes the potential differences across early and late waves of respondents, with late respondents postulated to be relatively disinterested respondents, similar in nature to non-respondents (Armstrong & Overton, 1977). Tests of differences in means and proportions across a range of organizational and respondent demographic variables as well as the theoretical variables of interest were conducted. No significant differences in the gender, age, or role of organizational participants across waves of early versus late respondents are present. Similarly, early and late responses were the same in terms of organizational location (i.e., metropolitan versus regional), years of operation, and firm size (measured by number of lawyers and total number of employees). Further, no differences in the measured variables across waves of early and late respondents are present. These findings suggest that non-response bias may not be a problem.

4.2. Measure development

Measures for the constructs of the empirical model were adapted from established scale items used in previous studies of organizational culture. However, some of the constructs are new to the context of professional service firms and additional refinement of scale items was necessary. As a starting point, semi-structured interviews with six lawyers from a large corporate law firm helped to set the scene for the research. The participants included partners, senior lawyers, and junior lawyers. Convenience and the first author's knowledge of the firm determined the selection of interviewees. The aims of the semi-structured interviews were to explore qualitatively the plausibility of the empirical model and to allow for refinement of the measurement instrument. The qualitative interviews suggested that something like the constructs and relationships specified in the model of Fig. 2 might actually exist. Minor changes to the scale items yielded measures that better reflect a professional service firm setting. See the Appendix A for a complete listing of the measures.

4.2.1. Values and norms

As appearing in Table 1, a review of literature identified eight organizational values consistently associating with an organizational culture supporting innovative behaviors. Three items measure each of the eight dimensions. Example items in relation to values of success, appreciation of employees, and risk-taking, for example, are “we place great value on our performance,” “taking time to celebrate the achievements of employees is valued in this firm,” and “the firm values a willingness to challenge the status quo,” respectively. All items for these measures are captured on five-point Likert-type scales anchored from “1 = strongly disagree” to “5 = strongly agree.”

The measures for organizational norms naturally follow on from the measures for values. For each organizational value, there is a corresponding organizational norm. Thus, the hypothesized measurement structure for organizational norms parallels that for the measurement of values; that is, three items measure each of the underlying dimensions previously identified for organizational values. However, the measures for norms have a specific focus on expected behaviors relating to innovative behaviors, whereas values are more general in nature. A sample item for the norm success in innovation is, “striving to be successful with new ways of doing things is expected within this firm.” It is important to recognize the subtle but meaningful distinction between values and norms. Pretest qualitative interviews and subsequent empirical work support this important distinction. Organizational values underpin norms or expectations of behaviors. Values are general social principles and standards, whereas norms are accepted, expected, and encouraged behaviors that characterize specific organizational routines and practices.

4.2.2. Artifacts

Defining characteristics of artifacts supporting an innovative culture are stories, arrangements, rituals, and language (Bartel & Garud, 2009; Elsbach & Bechky, 2007; Gibson & Zellmer-Bruhn, 2001; Gundry & Rousseau, 1994; Higgins & McAllaster, 2002; O'Reilly, 1989; Trice & Beyer, 1984). We developed new scales for artifacts indicating the presence of innovative behaviors following a review of literature and the semi-structured interviews. The measurement approach is broadly consistent with Homburg and Pflesser's (2000) measurement of organizational artifacts. Eight items measured the four components of artifacts supporting innovative behaviors: stories about heroes of innovation, physical arrangements for innovation, rituals of innovation, and language supporting innovation. Illustrative items in relation to physical arrangements and rituals, for example, are “there are discussion areas within our firm where employees can meet to discuss new and useful ideas” and “we have made an effort within this firm to celebrate the adoption of new practices and processes,” respectively. Five-point Likert-type scales anchored from “1 = strongly disagree” to “5 = strongly agree” were used as response formats.

4.2.3. Innovative behaviors

Innovative behaviors were measured using the multi-item scale developed by Hogan et al. (2011), which was developed specifically for measuring innovation in professional service firms. Hence, the appropriateness of the scale to the context of law firms studied here. Three dimensions are measured; that is, innovative behaviors in relation to a

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client-focus, marketing-focus, and technology-focus. Five items measure perceptions of behaviors relating to client-focused innovation, and four items each measure marketing-focused and technology-focused innovation behaviors. All items for the measures of innovative behaviors are captured on five-point Likert-type scales anchored from "1 = poor" to "5 = excellent".

4.2.4. Firm performance

Six items each assess market and financial performance, following Morgan and Piercy (1998). Market performance relates to the degree to which an organization attracts and retains customers for its products and services. Financial performance is the degree to which an organization achieves economic outcomes. Illustrative items include "achieving client satisfaction" (Anderson, Fornell, & Lehmann, 1994; Banker, Potter, & Srinivasan, 2000) and achievements in "overall profitability" (Fornell, 1992), respectively. All items for the measures of firm performance are captured on five-point Likert-type scales anchored from "1 = poor" to "5 = excellent".

In addition, the study includes two objective measures of performance for a check of the self-reported measures. The objective measures were "total revenues" and "total profits" for the previous 12 months. The self-reported financial and objective performance measures were positively and significantly correlated ($r = .30$, $p < .01$). This result is important because it helps to establish the validity of the self-reported performance measures.

5. Results

The analysis reported subsequently is generally consistent with the "two-step" approach to estimating structural equation models with latent variables described by Anderson and Gerbing (1988). That is, the study explores measurement models before estimating substantive model(s).

The measurement and structural models here are based on the modeling and analysis of composite variables or indicators. That is, a composite measure represents each of the subscales used to measure the dimensions of the theoretical constructs. The composites are averages for each respondent, the responses to each set of subscale items.

The analyses include creating 25 composite variables—a composite variable for each subscale. The use of composite variables here has several advantages. The composite variables help to simplify the structure of the data while still allowing for the rigorous assessment of the measurement properties of the theoretical constructs. Further, the use of composite variables allows the theoretical variables of interest representation as first-order variables with "measured" indicators, and therefore the focus shifts to the theoretical issues of substantive interest.

For completeness, the subscales were subject to rigorous analysis before the creation of the composite variables (e.g., the specification and testing of higher-order structures). This analysis is available from the first author upon request. Table 2 reports the means and standard deviations of the composite variables and their correlations.

5.1. Measurement model

The estimation of the restrictive or confirmatory factor analysis (CFA) models, and all subsequent models, uses version 8.8 of the LISREL estimation software (Jöreskog & Sörbom, 1996). Sample covariances of the 25 composite indicators were inputs and the study uses diagonally weighted least squares (DWLS) estimator to solve for the unknown parameters. The DWLS estimator is a variation on the default maximum likelihood (ML) estimator and offers the advantage of robustness to non-normality under the ML assumption. The inspection of a range of descriptive statistics suggested non-normality was not excessive. Nonetheless, a more robust estimator allows for greater precision in hypothesis tests.

With this background, the specification and estimation of the measurement model(s) is straightforward. The CFA model specifies five latent variables. Each latent variable corresponds to one of the five theoretical variables of interest: firm performance, innovative behaviors, artifacts, norms, and values. Norms and values are measured with eight composite indicators each, artifacts with four composite indicators, and innovative behaviors and firm performance with three and two composite indicators each, respectively. The CFA has a "simple structure." That is, each composite indicator relates only to its posited theoretical (latent) variable. Further note that the theoretical variables correlate freely. This specification is the basis for the tests of the validity and reliability of the composite indicators. These measurement tests are important before considering the substantive questions of interest.

Estimating the theorized CFA model (measurement model 1) yielded a significant chi-squared value ($\chi^2 = 648.86$, d.f. = 270, $p < .05$). However, other measures of model fit are indicative of good model fit to the sample data (e.g., root mean square error of approximation [RMSEA] = .00, comparative fit index [CFI] = 1.0, goodness-of-fit index [GFI] = .97, and adjusted goodness-of-fit index [AGFI] = .96). Table 3 reports the parameter estimates for the effects of the theoretical variables on their respective composite indicators. All of the regression coefficients for the effects of the theoretical variables on the composite indicators are positive and statistically significant ($p < .05$). This result is important because it establishes the convergent validity of the composite indicators; that is, each of composite indicators converges on its posited construct. For each of the theoretical variables, the average value of the (standardized) parameter estimates are .68 (values), .78 (norms), .73 (artifacts), .61 (innovative behaviors), and .76 (firm performance). Squaring these values yields reliability scores for each theoretical construct in the range of .50, which implies more theoretical variance than measurement error is evident in the composite indicators. Hence, evidence supports the validity and reliability of the composite measures per the hypothesized measurement structure.

A second CFA model was examined for a stronger test of measure validity and reliability. This model adds a "common method" factor to measurement model 1. That is, each of the composite indicators is now a function of its posited theoretical variable, a method factor that is common to all composite variables, and a random error (uniqueness). The common method factor represents a latent source of shared variation. Examining the possibility of a common method factor is important for several reasons (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

The use of a single method of data collection can produce inflation or attenuation in parameter estimates (or indeed, inflation in some estimates and attenuation in others). Hence, the second CFA model (measurement model 2) provides a more robust test of the validity and reliability of the composite indicators as deemed necessary by the design.

Estimating the re-specified CFA model with a common method factor (measurement model 2) produces a significant chi-squared value ($\chi^2 = 493.55$, d.f. = 240, $p < .05$). Other measures are indicative of good fit (e.g., RMSEA = .00, CFI = 1.0, GFI = .98, and AGFI = .98). Note that, as indicated by a chi-squared difference test, the common method factor model achieves a significant improvement in fit vis-à-vis the original CFA model ($\chi^2\,\Delta = 155.31$, d.f. = 30, $p < .05$). The interpretation of this result is that a common method factor is evident. Hence, a reinterpretation of the parameter estimates is necessary with a particular emphasis on checking for attenuation (or inflation) in the measurement model parameters. Table 3 reports the parameters for the common method factor model (measurement model 2).

Evidence supports a very slight attenuation in the regression coefficients for the effects of the theoretical variables on the composite indicators. However, this attenuation is minor and is never to the point of non-significance. In some instances, there is evidence of inflation (but this too is minor). Furthermore, few if any of the effects of the common method factor on the composite indicators achieve significance. To summarize, there is evidence of a common method factor, but

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Table 2
Means, standard deviations, and correlations of composite indicators.

	Mean	Std. Dev.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.
1.	3.84	.55	1.00																								
2.	3.19	.85	.51	1.00																							
3.	3.53	.89	.56	.27	1.00																						
4.	2.94	1.28	.41	.31	.51	1.00																					
5.	3.40	1.07	.34	.07	.37	.22	1.00																				
6.	2.65	1.29	.17	.26	.52	.46	.12	1.00																			
7.	2.73	1.25	.30	.06	.60	.38	.16	.49	1.00																		
8.	2.97	1.11	.43	.17	.69	.50	.33	.55	.63	1.00																	
9.	3.26	.95	.30	.09	.56	.44	.30	.46	.51	.61	1.00																
10.	3.25	1.04	.45	.23	.67	.62	.44	.49	.46	.73	.61	1.00															
11.	3.99	.79	.30	.07	.56	.41	.34	.32	.38	.61	.55	.72	1.00														
12.	3.62	.92	.34	.22	.53	.46	.41	.44	.26	.53	.50	.63	.67	1.00													
13.	3.63	.90	.25	.05	.52	.33	.28	.40	.37	.61	.46	.61	.63	.51	1.00												
14.	3.95	.88	.27	.09	.41	.21	.25	.27	.38	.55	.39	.44	.62	.62	.62	1.00											
15.	3.62	.91	.29	.17	.51	.46	.29	.50	.32	.62	.40	.63	.57	.60	.58	.56	1.00										
16.	3.40	.99	.41	.27	.53	.48	.23	.51	.46	.72	.46	.67	.56	.58	.45	.56	.63	1.00									
17.	2.90	1.02	.23	.15	.56	.52	.32	.51	.43	.69	.49	.77	.65	.59	.64	.48	.70	.66	1.00								
18.	4.50	.69	.39	.16	.36	.33	.28	.16	.36	.50	.37	.51	.57	.50	.51	.66	.30	.46	.37	1.00							
19.	4.37	.73	.37	.16	.35	.29	.29	.16	.27	.48	.42	.51	.62	.56	.33	.48	.54	.52	.46	.53	1.00						
20.	4.16	.83	.37	.18	.30	.30	.27	.17	.13	.36	.28	.47	.47	.62	.18	.41	.44	.54	.33	.42	.69	1.00					
21.	4.55	.66	.26	.09	.31	.15	.14	.12	.33	.42	.41	.41	.59	.43	.52	.62	.30	.35	.31	.78	.58	.40	1.00				
22.	3.96	1.03	.40	.30	.36	.36	.12	.27	.30	.43	.33	.44	.51	.57	.35	.61	.37	.51	.41	.60	.55	.63	.56	1.00			
23.	4.38	.71	.38	.18	.25	.23	.30	.12	.15	.31	.25	.32	.53	.61	.27	.55	.48	.44	.34	.46	.66	.61	.47	.55	1.00		
24.	3.79	.92	.35	.20	.40	.48	.13	.29	.30	.48	.40	.50	.43	.57	.23	.44	.50	.71	.50	.43	.55	.61	.40	.55	.51	1.00	
25.	3.45	.95	.35	.24	.56	.49	.39	.38	.43	.60	.42	.74	.58	.52	.46	.32	.53	.59	.69	.38	.49	.41	.25	.29	.33	.53	1.00

Note: 1 = MrktPerf, 2 = FinPerf, 3 = ClntInn, 4 = MrktInn, 5 = TechInn, 6 = ArtStor, 7 = ArtArr, 8 = ArtRit, 9 = ArtLan, 10 = NorSucc, 11 = NorOpn, 12 = NorComm, 13 = NorCpf, 14 = NorIfc, 15 = NorRes, 16 = NorApp, 17 = NorRis, 18 = ValSucc, 19 = ValOpn, 20 = ValComm, 21 = ValCpf, 22 = ValIfc, 23 = ValRes, 24 = ValApp, 25 = ValRis.

its effects on measurement model parameters, if any, are small. Nonetheless, the consideration of a common method factor warrants consideration in relation to the specification and interpretation of subsequent model forms (i.e., in tests of structural model relationships).

A third and final CFA model follows. Specifying this measurement model (measurement model 3) is necessary for the purposes of testing the dimensionality and assessing the discriminant validity of the theoretical constructs. Correlations among the theoretical constructs per

Table 3
Measurement model parameter estimates.

	Measurement Model 1 (Theorized CFA model)		Measurement Model 2 (CFA plus method factor)		Measurement Model 3 (One-factor model)	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Firm performance						
MrktPerf	.55	8.76	.54	6.73	.29	14.57
FinPerf	.44	8.53	.45	7.66	.24	8.28
Innovative behaviors						
ClntInn	.69	11.07	.68	5.66	.66	17.50
MrktInn	.81	11.38	.82	5.32	.76	14.61
TechInn	.47	10.91	.45	8.61	.45	11.22
Artifacts						
ArtStor	.78	14.37	.82	3.15	.66	13.15
ArtArr	.79	14.67	.79	7.04	.68	13.10
ArtRit	1.06	18.21	1.03	17.01	.92	18.40
ArtLan	.70	16.51	.68	14.52	.62	15.36
Norms						
NorSucc	.91	23.48	.94	8.58	.90	20.09
NorOpn	.64	22.29	.63	5.19	.63	17.97
NorComm	.74	21.67	.72	4.18	.73	16.96
NorCpf	.60	18.52	.61	10.73	.59	16.08
NorIfc	.59	18.03	.57	2.29	.57	15.08
NorRes	.69	21.15	.69	18.68	.68	16.89
NorApp	.80	20.80	.80	17.19	.79	16.63
NorRis	.82	22.41	.85	5.95	.80	19.21
Values						
ValSucc	.46	14.72	.44	2.58	.41	12.75
ValOpn	.53	14.51	.49	2.29	.46	12.58
ValComm	.53	13.39	.48	1.97	.47	11.19
ValCpf	.38	12.77	.36	1.77	.33	10.84
ValIfc	.72	15.14	.66	2.27	.63	13.53
ValRes	.42	12.71	.39	1.38	.37	10.81
ValApp	.66	15.52	.62	6.30	.59	13.52
ValRis	.74	18.89	.76	3.42	.69	16.12

Note: Unstandardized parameter estimates.

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the estimates of measurement models 1 and 2 are in the range of .40 to .90. Correlations of this magnitude may warrant concerns that the theoretical constructs are not sufficiently distinct, at least empirically. Stated differently, showing the theoretical constructs are not the same construct is important. Following Homburg and Pflesser, measurement model 3 specifies a single latent variable as the source of variation in the 25 composite variables. The specification of measurement model 3 implies that there is no empirical separation (discriminant validity) among the theoretical variables (cf. the Harmen one-factor test). Compare this specification with measurement model 1. Measurement model 1 implies that the five theoretical variables are indeed empirically distinct, though correlated. Significant correlations are expected, because the theoretical variables are part of the same underlying nomological net. However, empirically discriminating among the constructs is still necessary.

Estimating the single-factor model (measurement model 3) yields a large and significant chi-squared value ($\chi^2 = 870.99$, d.f. = 275, $p < .05$). Other measures are indicative of acceptable fit to the sample data (e.g., RMSEA = .00, CFI = 1.0, GFI = .96, and AGFI = .95). However, a chi-squared difference test establishes that the single-factor model represents a significant decrement in fit vis-à-vis the theorized five-factor CFA model ($\chi^2\ \Delta = 155.31$, d.f. = 30, $p < .05$). Though all of the parameter estimates in the single-factor model achieve significance ($p < .05$, see Table 3), the theorized five-factor measurement structure is a more plausible representation of the data than is the single-factor specification. The single factor model imposes the assumption that the theoretical variables are the same variables (i.e., lacking in discriminant validity), but is insufficient for representing the patterns of variation in the composite indicators. By implication, the theoretical variables are empirically distinct.

Tests of the theoretical model of interest are now possible, given that the five theoretical variables appear to be empirically distinct. However, the measurement model(s) results reported here show that it may still be necessary to consider the impacts of a common method factor; even if its impact on measurement model relationships are minor and generally not significant.

5.2. Hypothesis testing

The next step is estimating the theoretical model of interest (structural model 1) as illustrated in Fig. 2 for a substantive test of the research hypotheses. The same measurement structure as for the theorized measurement model applies; that is, five latent variables and 25 indicator variables with each composite indicator related only to its posted theoretical variable. Estimating the hypothesized structural model produced a significant chi-square value ($\chi^2 = 681.12$, d.f. = 270, $p < .05$). However, a range of other fit statistics provides evidence of good model fit to the data (e.g., RMSEA = .00, CFI = 1.0, GFI = .97, and AGFI = .96). Table 4 reports the parameter estimates for structural model 1. The pattern of results is consistent with the hypothesized relationships.

As H_1 predicts, the relationship between values supporting innovation and norms for innovation is positive and significant ($\gamma_{41} = 0.86$, $t = 18.85$). Consistent with H_{2a}, the relationship between norms for innovation and innovative behaviors is positive and significant ($\beta_{24} = 0.45$, $t = 2.99$). As H_{2b} predicts, the relationship between norms for innovation and artifacts of innovation is positive and significant ($\beta_{34} = 0.81$, $t = 13.26$). Consistent with H_3, the relationship between artifacts of innovation and innovative behaviors is positive and significant ($\beta_{23} = 0.47$, $t = 3.15$).

Finally, consistent with H_4, evidence supports a strong positive relationship between innovative behaviors and firm performance ($\beta_{12} = 0.58$, $t = 16.46$). Consider the R^2 values for each of the theoretical variables as further evidence of model fit (norms = 74%, artifacts = 66%, innovative behaviors 76%, and firm performance = 34%). This analysis supports the hypothesized structure but further model forms warrant consideration.

Table 4
Structural model parameter estimates.

Path	Estimate	*t*-value	Hypothesis
Structural model 1 (Hypothesized structural model)			
Values → norms	.86	18.85	H_1 (Supported)
Norms → innovative behaviors	.45	2.99	H_{2a} (Supported)
Norms → artifacts	.81	13.26	H_{2b} (Supported)
Artifacts → innovative behaviors	.47	3.15	H_3 (Supported)
Innovative behaviors → firm performance	.58	16.46	H_4 (Supported)
Structural model 2 (Hypothesized structural model plus method factor)			
Values → norms	.98	1.66	H_1 (Supported)
Norms → innovative behaviors	.43	2.22	H_{2a} (Supported)
Norms → artifacts	.76	2.13	H_{2b} (Supported)
Artifacts → innovative behaviors	.38	.77	H_3 (Not supported)
Innovative behaviors → firm performance	.64	1.80	H_4 (Supported)
Structural model 3 (Hypothesized structural model plus direct effects)			
Values → norms	.86	18.60	H_1 (Supported)
Values → innovative behaviors	.28	1.13	–
Values → artifacts	−.32	−1.23	–
Values → firm performance	.21	2.74	–
Norms → innovative behaviors	.02	.03	H_{2a} (Not supported)
Norms → artifacts	1.12	3.55	H_{2b} (Supported)
Artifacts → innovative behaviors	.66	2.47	H_3 (Supported)
Innovative behaviors → firm performance	.37	3.45	H_4 (Supported)

Note: Unstandardized parameter estimates.

Tests of the measurement structure were clearly indicative of a common method factor. Hence, testing the robustness of the structural model parameters to a common method factor is required. Structural model 2 therefore adds a common method factor to the specification of structural model 1. Following the measurement model tests, the composite indicators are now a function of both the theoretical variables and the common method factor (and uniqueness). This specification introduces the common method factor and tests the robustness of the structural model parameters to possible common method effects. Fitting this re-specified structural model (structural model 2) to the data produces a significant chi-squared value ($\chi^2 = 508.36$, d.f. = 245, $p < .05$). Other measures indicate good fit to the sample data (RMSEA = .00, CFI = 1.0, GFI = .98, and AGFI = .98).

The common method model (structural model 2) achieves a better fit to the sample data than does the hypothesized structural model ($\chi^2\ \Delta = 172.76.09$, d.f. = 25, $p < .05$). This is an important result because, like the measurement model tests earlier, it shows that a common method factor is evident (and warrants a re-examination of the structural model parameters). The parameter estimates of the structural model are generally robust to the common method (see Table 4). There is, however, one important exception. In the common method factor specification, the predicted relationship between artifacts of innovation and innovative behaviors is not significant. Hence, H_3 is not supported. Other parameter estimates are not greatly attenuated or inflated, which points to the robustness of the general process implied by the model of Fig. 1. Nonetheless, other model forms may be necessary to test.

The final model specification considered here is the specification of structural model 3. If the results of structural model 1 (the hypothesized structural model) are generally accepted then a process of complete mediation is implied; that is, the effect of values supporting innovation on firm performance is mediated by norms for innovation, artifacts of innovation, and innovative behaviors (values → norms → artifacts → behaviors → performance). This "causal chain" or process model seems to be a plausible representation of the data and is parsimonious. However, explicit testing of possible direct effects of values supporting innovation on artifacts, innovative behaviors, and firm performance is necessary (if the implied process

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of mediation is to be supported). Therefore, the specification of structural model 3 explicitly includes the possible direct effects of values on performance, behaviors, and artifacts. Estimating structural model 3, a structural model with direct effects from values to performance, yields a significant chi-squared value ($\chi^2 = 668.19$, d.f. = 267, $p < .05$). Other measures imply good fit to the sample data (RMSEA = .00, CFI = 1.0, GFI = .97, and AGFI = .96).

Testing the mediating hypothesis requires a direct comparison of structural models 1 and 3. A chi-squared difference test establishes that structural model 3 achieves better fit to the sample data than does structural model 1 ($\chi^2\,\Delta = 12.93$, d.f. = 3, $p < .05$). This significant difference does not support the process of complete mediation (at least one of the three possible direct effects are significant). Table 4 reports parameter estimates for structural model 3. A review of the parameter estimates shows that the estimated values are generally consistent with structural model 1. However, the direct effect of values supporting innovation on organizational performance is positive and significant ($\gamma_{11} = .21$, $t = 2.74$). Note that the effect of innovative behaviors on organizational performance is more strongly positive than that of values supporting innovation. Furthermore, note that norms for innovation and artifacts completely mediate the effects of values supporting innovation on innovative behaviors. In summary, reflecting now on all three structural models, the analysis generally supports the process model of Fig. 2. The core paths (hypotheses) of Fig. 2 are generally robust to common method effects, although a common method factor is evident. Norms for innovation completely mediate the effects of values on other layers of organizational culture, but values are so strong a theoretical variable that they have a possible direct effect on performance.

6. Discussion

Innovation is a prerequisite for success in increasingly dynamic and competitive markets. In the service economy of the 21st century, firms compete on their service products and processes, and on their solutions, strategies, and service delivery. In professional service firms in particular, a culture of innovation is a crucial precursor to the types of innovative behaviors that can sustain organizations and foster organizational renewal. Organizations are social as well as physical constructions and therefore an understanding of organizational culture can help to shape the process of innovation and firm performance. Schein's model provides a framework for thinking about organizational culture and fostering cultures of innovation. Building on this framework, this study establishes an empirical model for how distinct layers of organizational culture can support the types of innovative behaviors that are so crucial to firm performance. The tests reported here are generally supportive of the core hypotheses; that is, the distinct layers of organizational culture (partially) mediate the effects of values that support innovation on firm performance.

6.1. Implications for theory

The current study contributes to theory development of organizational culture and innovation in several important ways. First, this study empirically tests Schein's (1992) multilayered model, and in doing so, highlights the importance of the indirect process from cultural values to firm performance. Importantly, the findings of this study suggest that values supporting innovation alone do not lead to increased performance. It appears that the process from values to performance outcomes is in part dependent on norms for innovation, artifacts of innovation, and innovative behaviors. Although organizational values provide a broad foundation, norms serve an important function in guiding specific expected behaviors within organizations (Heide & John, 1992; O'Reilly, 1989). In particular, norms, or explicit expectations of behaviors for innovation, appear in stories, the physical architecture, rituals and language supporting innovative behaviors. Where management expect employees to generate new ideas and to try out new ways of doing things, organizational artifacts that communicate and facilitate these expectations are important to eliciting such behaviors. Frequently, innovative behaviors depend on norms and artifacts that support such behaviors.

Second, empirical support for a direct link between artifacts of innovation and innovative behaviors is mixed. This finding challenges earlier empirical work (cf. Homburg & Pflesser, 2000). To be sure, the effect size for the relationship between artifacts of innovation and innovative behaviors is consistently positive and in the range of .40 to .50. However, the method factor attenuates this effect to the point of non-significance. One line of speculation, consistent with this result, is organizations differ greatly in the processes linking artifacts and behaviors. Classifying organizations by artifacts of innovation and identifying salient group differences warrants immediate research attention.

As indicated in Table 4, the findings of the current study highlight the critical role of artifacts in eliciting valued and expected behaviors. Management may profess to value, and expect certain behaviors of employees. Innovative behaviors are unlikely to occur unless these values and norms are manifest in the stories, physical layout, rituals, and language of the organization. For example, innovative behaviors may be stifled unless an organization facilitates expected behaviors through the provision of workplace facilities that enable employees the opportunity to discuss and share ideas openly, as well as to work, think, and develop ideas on their own. Moreover, as Barnes et al. (2006) and Beyer and Trice (1987) suggest, rituals are critical to these behaviors being repeated and emulated by other employees. Awards ceremonies, for example, help build such valued behaviors because they provide clear signals and public recognition of employees' accomplishments.

Finally, despite a substantial body of work in the areas of both organizational culture, and innovation, limited research on these topics exist within the context of professional service firms. Human actors alone create the service delivery processes that characterize professional services (Løwendahl et al., 2001). This highlights the importance of managing individuals and professionals in ways that support innovative enterprise. In particular, the results of this research highlight the importance of an organizational culture that values, expects and facilitates calculated risk-taking and a willingness to challenge the status quo, appreciation and acknowledgement of employees' accomplishments and efforts, inter-functional cooperation, success, openness and flexibility, and internal communication. These cultural dimensions appear to be crucial values that will in turn support norms for innovation. This further highlights the need for research to determine which value dimensions are the most fundamental to the innovation process. The learning literature highlights the importance of wide information dissemination (e.g., Baker & Sinkula, 1999; Hurley & Hult, 1998); however, there is a need for much more theoretical development in this area in order to integrate research on innovation, in particular, with work on organizational learning.

6.2. Implications for practice

The results of the current study hold a number of immediate implications for practitioners; and an organizational culture that encourages new and novel approaches to addressing the requirements of clients' needs creates an opportunity for service firms to differentiate their organizational processes, products and services from their competitors. First, this research points to the importance of underlying organizational values that motivate and foster innovative behaviors among employees. Organizational culture shaped by management through organizational values, norms, and artifacts encourages and supports innovative behaviors. In particular, leadership behaviors such as showing respect for employees (e.g., considering their input into decisions that affect them) and showing an appreciation of employees (e.g., recognizing the

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contribution of employees towards organizational goals) are crucial. Organizational leaders have the ability to promote and lead innovation within organizations (Hunt, Stelluto, & Hooijberg, 2004; Mumford et al., 2002); thus, leaders also have an opportunity to create a culture where employees can generate, pursue, and implement new ideas and processes.

Second, embedding values and norms in organizational artifacts would assist higher levels of innovation. Artifacts can be a powerful mechanism for communicating and endorsing values that support innovation. In this way, senior managers can set assessable standards and guidelines for behavior that employees can follow. Additionally, the physical arrangement of an organization can support innovation by providing employees with opportunities to exchange new ideas, share information between functional areas, and co-ordinate and integrate work across groups and organizational divisions. Artifacts, the physical manifestation of norms, are important because of their direct link to innovation and subsequent performance outcomes. Managers should seek to understand this process.

6.3. Limitations and research directions

The current study suffers several limitations, mostly relating to the nature of the design and sample. One is particularly noteworthy. The sample of respondents, mostly principals of law firms, is overwhelmingly male (78%). The number of females working at higher levels within the legal profession is increasing as more and more women earn professional qualifications in law. Nonetheless, a lack of gender diversity within the very senior ranks of law firms may limit the perspective(s) offered by this particular study. Gender differences are not the focus of the current study, but experimental research in this area is suggestive of possible differences in relation to risk and decision-making (see, e.g., Eckel & Grossman, 2008). These types of differences in calculating risk, if more general than the experimental results, may be indicative of different pathways to building organizational values that support innovation. One, for example, might think that the current study, with its male bias, may overstate the importance of risk-taking. A review of the parameter estimates for values and norms in relation to each of the eight composite indicators does indeed show risk-taking is consistently the most important of the eight values/norms studied here. Other values and norms might be of equal or greater importance in a different sample. But these differences still could be explored within the context of the process model of Fig. 2.

A substantive opportunity for future research relates to the role of leader–managers in establishing values and norms that support innovation. That is, how do the dimensions establish themselves within organizations, and how do organizations come to place emphasis on some dimensions and not others? To be sure, leaders and managers play an important part in facilitating innovation (Redmond, Mumford, & Teach, 1993; Scott & Bruce, 1994); however, a better understanding of actionable leader behaviors that promote innovation will only come about through a sustained research effort in this direction (Hunt et al., 2004; Mumford et al., 2002). In particular, the role of leaders in the positive framing of values and norms warrants study. For example, leaders have a crucial role in encouraging the display of behaviors that are valuable, appropriate, and desirable and discouraging behaviors that are not valued and considered inappropriate and undesirable. An assumption of the current study is that the values, norms, and artifacts have a "positive" framing. Nonetheless, one could imagine an organizational setting in which stories of failed attempts at innovation circulate. Building on the model of Fig. 2, future research could more fully explore leader behaviors and management practices that influence the development and adoption of values and norms that support innovation. We offer the model as a starting point for further, substantive investigations.

Appendix A. Measurement items

Firm performance
Financial performance

1. Overall profitability,
2. Profitability per employee,
3. Profit growth,
4. Overall cash flow,
5. Cash flow per employee,
6. Growth in cash flow.

Market performance

1. Achieving client satisfaction,
2. Providing value for clients,
3. Keeping current clients,
4. Attracting new clients,
5. Attaining desired growth,
6. Securing desired market share.

Innovative behaviors
Client-focused innovation-related behaviors

1. Provide clients with services/products that offer unique benefits superior to those of competitors.
2. Solve clients' problems in very innovative ways.
3. Provide innovative ideas and solutions to clients.
4. Present innovative solutions to our clients.
5. Seek out novel ways to tackle problems.

Marketing-focused innovation-related behaviors

1. Develop "revolutionary for the industry" marketing programs for our services/products.
2. Adopt novel ways to market our firm.
3. Innovate our marketing programs to stay ahead of the market.
4. Implement innovative marketing programs.

Technology-focused innovation-related behaviors

1. Innovate with new software.
2. Innovate with new technology.
3. Introduce new integrated systems and technology.
4. Adopt the latest technology in the industry.

Artifacts of innovation
Stories about "heroes" of innovation

1. There are well known stories in this firm about employees who have developed new and useful ideas.
2. There are stories in this firm about employees who have strongly encouraged the implementation of new practices and processes.

Physical arrangements for innovation

1. There are meeting areas and discussion rooms within our firm where employees can meet to discuss new ideas and ways to implement them.
2. We have set aside space within our office layout where employees can meet and talk informally about new ideas and novel ways to solve problems.

Rituals of innovation

1. We have made an effort within this firm to celebrate the adoption of new practices and processes.
2. We make an effort within this firm to acknowledge and reward the implementation of new services and ways of doing things.

Language supporting innovation

1. "We could probably get some benefit from looking at this problem from a different perspective".

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2. "Could we develop a new approach to solving this problem or are there other ways we could go about resolving this issue?"

Norms for innovation
Success in innovation

1. Striving to be successful with new ways of doing things is expected within this firm.
2. We are encouraged to be the most creative and innovative firm in our market.
3. Striving to be successful with generating new ideas within this firm is expected.

Openness and flexibility for innovation

1. We expect employees to be open to new ideas and responsive to them.
2. We expect employees to be flexible in dealing with new ideas and in their approach to solving problems.
3. A willingness to try new ideas is encouraged within this firm.

Internal communication supporting innovation

1. Open communication of new ideas and practices is expected to be second nature within this firm.
2. Information about new ideas and new ways of doing things is expected to be communicated throughout the firm.
3. We expect the quality of internal communication related to new ideas and processes to be high.

Competence and professionalism supporting innovation

1. We expect creativity and innovation to be part of the professional skill set of employees within this firm.
2. We expect employees within this firm to have a high level of competence in developing and implementing new ideas.
3. High levels of knowledge supporting innovation are expected within this firm.

Inter-functional co-operation supporting innovation

1. We expect people throughout the firm to work together to implement new processes.
2. We encourage teams throughout the firm to work together in order to develop new ideas and practices.
3. We expect people within this firm to work collaboratively in order to implement new ways of doing things.

Responsibility of employees for innovation

1. We encourage employees to take responsibility for new ways of doing things in their work.
2. We expect employees to use their initiative in developing new ideas and ways of dealing with work tasks.
3. We expect employees to take an active role in trying out new ways of doing things.

Appreciation of employees supporting innovation

1. Recognizing and rewarding employees who implement new ideas within this firm is the norm.
2. Taking the time to acknowledge employees' efforts when they solve problems in novel ways is encouraged within this firm.
3. Appreciating the efforts of employees who bring new practices into being is expected within this firm.

Risk-taking for innovation

1. We expect employees to challenge the status quo in order to come up with new ideas and ways of doing things.
2. We encourage employees to experiment with new ideas and new ways of solving problems.
3. Taking calculated risks with new ideas and practices is encouraged in this firm.

Basic values
Success

1. We value success in this firm.
2. We aspire to be the best firm in our market.
3. We place great value on our performance.

Openness and flexibility

1. We value openness and responsiveness in this firm.
2. We place great value on being flexible in our approach to problems.
3. A willingness to show flexibility and openness is valued within this firm.

Quality of internal communication

1. Open communication is valued highly within this firm.
2. We place great value on excellent internal communication within this firm.
3. Maintaining high quality internal communication is valued within this firm.

Competence and professionalism

1. We place great value on professional knowledge and skills.
2. We aspire to a high level of competence and professionalism.
3. Upholding the highest levels of professionalism is valued within this firm.

Inter-functional co-operation

1. Cooperation among different work teams is valued highly.
2. This firm values integration and sharing among teams throughout the firm.
3. We place great value on co-ordination among different work teams.

Responsibility of employees

1. We place great value on every employee being proactive in his (or her) role.
2. This firm values employees using their initiative.
3. We value employees taking responsibility for their work.

Appreciation of employees

1. We place great value on recognizing and rewarding employees' accomplishments.
2. Taking time to celebrate employees' work achievements is valued in this firm.
3. We place great value on showing our appreciation for the efforts of each employee.

Risk-taking

1. This firm values a willingness to challenge the status quo.
2. This firm values a willingness to experiment with new ideas.
3. Valuing calculated risk-taking helped this firm get to where it is today.

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