



A study on the motivational aspects of information management practice

Yujong Hwang^{a,b,*}, William J. Kettinger^c, Mun Y. Yi^d

^a School of Accountancy and MIS, DePaul University, Chicago, United States

^b College of International Studies, Kyung Hee University, Republic of Korea

^c Management Information Systems Department, The University of Memphis, United States

^d Department of Knowledge Service Engineering, Korea Advanced Institute of Science and Technology, Republic of Korea

ARTICLE INFO

Article history:

Available online 9 October 2012

Keywords:

Information management
Motivation
Information sharing
Information proactiveness
Information transparency
Information formality
Measure development

ABSTRACT

This research investigates the motivational aspects of information management practice by developing and performing an initial test of the theorization on the components and structural properties of a new variable, called information management motivation (IMM). Based on a synthesis of the motivation and information processing literature in the information systems, psychology, management, and information technology training fields, we theorize IMM as a second order construct composed of formative sub-constructs of proactiveness, sharing, transparency, and formality. New measures were developed for the constituent constructs of IMM and refined through two studies involving 120 knowledge workers. The model of IMM was tested, confirming the proposed structural relationships between the constituent constructs and IMM. The study findings provide important insights on understanding and improving individual knowledge workers' information management activities.

© 2012 Elsevier Ltd. All rights reserved.

1. Introduction

Information technologies are increasingly being used to facilitate the efficient and effective personal use of information. However, there is no specific study focusing on the motivational aspects of information management. Drawing upon the extant literature on motivation across the relevant literatures in IS, psychology, management, and IT training, this paper proposes a new construct called *information management motivation (IMM)*, which is targeted at capturing the motivational aspects of a knowledge worker's information management practice. The objective of this research is to develop and perform a test of our theorization on the components and structural properties of IMM, as a second order construct composed of formative sub-dimensions of proactiveness, sharing, transparency, and formality. In doing so we hope to offer a relevant set of measures that will be beneficial to scholars and practitioners.

2. Literature review

Psychological studies have continuously demonstrated that motivational aspects are important determinants of human

information processing and use, by operationalizing motivation in various forms (e.g., effort, desire, need, attention). For example, Kanfer and Ackerman (1989) showed the relationship among individual differences in self-regulatory processes of motivation and information processing demands in three field-based laboratory experiments conducted with 1010 US Air Force trainees. They argued that any subject's management performance could be represented as a function of the proportion of the subject's total attentional resources allocated to the task. Sackett, Gruys, and Ellingsin (1998) also found that motivational aspects were distinct and important determinants of information management practice. Witt and Burke (2002) investigated the applicability of motivational personality in the performance of IT professionals, indicating that conscientiousness contributed unique variance to the explanation of the management effectiveness of such knowledge workers. These overall results suggest that such motivational aspects are fundamental determinants of management practices across various domains, including students, military trainees, managers, executives, and IT professionals.

Locke (1991, 2001) summarized and classified various work motivations that were used over the past 25 years in the psychological literature. He discussed cognitive self-regulation theories in relation to other work motivation theories and integrated needs and values. According to Locke (1991), the motivation sequence begins with needs, which is the basic and the primary mechanism of an individual's social behavior. Needs can be partially satisfied, whether voluntarily or involuntarily, and exist even if the individual is not aware of them. Maslow's need hierarchy model

* Corresponding author at: School of Accountancy and MIS, DePaul University, Chicago, United States. Tel.: +1 312 362 5487; fax: +1 312 362 6208.

E-mail addresses: yhwang1@depaul.edu, yujongh@yahoo.com (Y. Hwang), wjkttngr@memphis.edu (W.J. Kettinger), dr.munyi@gmail.com (M.Y. Yi).

(1968) suggests that some needs take precedence over others and noted five layers of needs, such as physiological, safety, belonging, esteem, and self-actualization. According to the need hierarchy model (Maslow, 1968), people try to satisfy the various needs following a specific hierarchical pattern. Needs are the fundamental reason why a person acts and, thus, are essential to a full understanding of motivation (Locke, 1991).

The next motivation concept in the motivation sequence is values. Values are what people want or consider beneficial to their welfare (Locke, 1991). In contrast to needs, which people may or may not have knowledge of, values are consciously chosen. Value theory posits that different individuals may attach different values to an object based on how it can satisfy their needs. Value theory posits that needs and values are separate constructs among motivation factors. The implication of this theory is that the same object may be judged as relatively more important by one individual over another, depending on the extent to which the object is perceived as able to fulfill what the individual needs. One of the generalized value models is expectancy theory (Vroom, 1964), which argues that people act to maximize their expected pleasure or satisfaction and use foresight to choose among courses of action, based on the values (expectation) that they believe each course of action will lead to. Expectancy theory is not limited to any particular domain or set of values and proposes that it is important to measure all the values that people believe in the situation in question to predict actions.

In the IS literature, two kinds of motivation, namely intrinsic and extrinsic motivation, have been emphasized in the context of the belief of IT adoption. Intrinsic motivation refers to “an activity for no apparent reinforcement rather than the process of performing the activity per se” (Davis, Bagozzi, & Warshaw, 1992; Ghani & Deshpande, 1994; Ghani, Supnick, & Rooney, 1991). Flow, the holistic sensations that people feel when they act with total involvement (Csikszentmihalyi, 1975, 1977; Csikszentmihalyi & Csikszentmihalyi, 1988), has been applied to intrinsic motivation in online consumer behavior research (Koufaris, 2002). Conceptually, intrinsic motivation can be posited as an antecedent of values in the motivation sequence model (Locke, 1991). In contrast, extrinsic motivation refers to an activity that is perceived to be instrumental in achieving valued outcomes that are distinct from the activity itself. Perceived usefulness, the degree to which a person believes that using a particular system would enhance his or her job performance, is an example of extrinsic motivation (Davis, 1989; Venkatesh, 2000; Venkatesh & Davis, 1996). Davis et al. (1992) explained the role of these beliefs, suggesting that user intention to adopt a new IT is affected by both extrinsic and intrinsic motivation.

Self-determination theory (Deci & Ryan, 1985) also showed that all individuals have natural, innate, and constructive tendencies to develop an ever more elaborate and unified sense of self. It focuses on how individuals develop a coherent sense of self through regulation of their behavioral actions that may be self-determined, controlled, or motivated. Malhotra and Galleta (2005) argued that the tacit perspective of human behavior should be managed and controlled mainly by intrinsic motivation (perceived enjoyment), rather than by formal controls based on self-determination theory. Perceived enjoyment refers to the extent to which the activity of using a computer system is perceived to be personally enjoyable in its own right aside from the instrumental value of the technology (Davis et al., 1992; Yi & Hwang, 2003). Davis et al. (1992) emphasized perceived enjoyment as a type of intrinsic motivation, which is a type of need in the motivation sequence (Locke, 1991), and an important factor in determining values according to self-determination theory. There may be potential crowding-in and crowding-out effects between the intrinsic and extrinsic types of motivation (Deci & Ryan, 1985). Crowding-out effects refer to

instances whereby the introduction of extrinsic motivations shifts the locus of causality from internal to external, and consequently displaces intrinsic motivations for performing a behavior. In contrast, crowding-in refers to instances whereby the introduction of extrinsic motivations enhances an individual's intrinsic motivations.

An individual's work motivation determines the direction of attentional effort, the proportion of total attentional effort directed to the task, and the extent to which attentional effort toward the task is maintained over time (Campbell & Pritchard, 1976; Kanfer, 1987). Kanfer and Ackerman (1989) have presented a resource allocation model of motivation that builds on earlier theories of information processing (Kahneman, 1973; Navon & Gopher, 1979; Norman & Bobrow, 1975). In this model, cognitive effort (motivation) is defined as the level of attentional resources allocated to self-regulatory activities and task activities. Naylor, Pritchard, and Ilgen (1980) viewed motivation as the proportion of personal resources devoted to a task. They suggested that individual differences create differences in total resource availability. These studies agree that motivation directs the action, and should be maintained for the target task in human information processing.

The IT training literature explores the motivational aspects of learning, which is an accumulated outcome of information processing activities (e.g., Bostrom, Olfman, & Sein, 1990; Martocchio & Judge, 1997). Studies cover both the cognitive aspect of information processing activities in the learning process (Cheney, Mann, & Amoroso, 1986) and the knowledge transfer methodology to increase the effectiveness of training (Gist, Rosen, & Schwoerer, 1988; Gist, Schwoerer, & Rosen, 1989; Simons, Grover, Teng, & Witcomb, 1996; Simons & Werner, 1996). Several studies in IT training support the view that computer self-efficacy and individual motivation (Compeau & Higgins, 1995; Yi & Davis, 2003) are important determinants of training effectiveness and task performance. Yi and Davis (2003) used the motivational aspect (self-efficacy) and ability (declarative knowledge) of IT as determinants of learning performance. This research stream illuminates how the motivational aspects of information processing influence the complex process of IT skill acquisition.

In addition to IT training, several studies in the IS field focused on the motivational aspects of information processing and use. For example, Staples and Jarvenpaa (2000) found that perceived information usefulness of an individual was strongly associated with the person's use of electronic media and information sharing activities. They suggested that it would be important to motivate sharing via individually held attitudes and beliefs. Individuals can be reluctant to share information for the fear of losing ownership and power or they may be unwilling to engage in information sharing activities that consume time and resources. Lack of motivation can result in information passivity, secrecy, blockage, withholding, or distortion.

The Information orientation model (Kettinger & Marchand, 2011; Marchand, Kettinger, & Rollins, 2000, 2001, 2002) is an important framework to understand the motivational sub-dimensions of information management practice. Marchand et al. (2000, 2001, 2002) conducted a survey of 1009 senior managers in 22 countries and 25 industries examining how an “information orientation” of an organization determines business performance. While Marchand et al. focused on senior manager's perceptions regarding information use at the organizational level, their conceptualization of information orientation in general and information behaviors/values in specific have important implications for the present research in defining the structural properties of IMM. Marchand et al. (2000, 2001, 2002) define information management behaviors/values as “a company's competence to instill and promote behaviors and values in its people for effective use of

information” (p. 72) and include proactiveness, sharing, transparency, formality, and control as its sub-dimensions.¹

Marchand et al.’s (2001) theory of information behaviors/values is grounded on the human resources and management control literature (e.g., Becker, 1998; Davis, 1967; Johnson, 1992; Kouzes & Posner, 1993; Rogers & Agarwala-Rogers, 1976), which is applicable equally to the organizational and individual level studies. Further, the organizational values determine their employees’ information behaviors, and individual employees’ motivation or values are the major forces underlying the collective action of an organization. Thus, we apply the Marchand et al.’s conceptualization of information behaviors/values to the individual level, postulating the components of IMM as a central mechanism linking individual values to information behaviors (Locke, 1991).

3. Research hypotheses

We define IMM as a *person’s perceived willingness to make effective use of information*, which is manifested via proactiveness, sharing, transparency, and formality on the basis of Marchand et al.’s work (2001) and its supporting literature (e.g., Becker, 1998; Davis, 1967; Johnson, 1992; Kouzes & Posner, 1993; Rogers & Agarwala-Rogers, 1976). The model proposed in the current research views these sub-dimensions as distinct dimensions of IMM, which is viewed as a multidimensional second-order construct. The relationships between IMM and its sub-dimensions are seen as formative rather than reflective in our study (Bollen & Lennox, 1991; Edwards, 2001). That is, because we theorize that an increase in any one of the dimensions in isolation will increase the total overall magnitude of motivation related to the information management practice without necessarily affecting the other three dimension, we specify it as a formative and aggregate (as opposed to reflective) second order factor (Chin, 1998; Edwards, 2001).

Information proactiveness. We define information proactiveness as a *person’s perceived willingness to actively use information for his job*. Proactive information use involves how a person is motivated to think about using information to create or enhance products and services, actively seek out information about business conditions to test these ideas, and respond quickly to this information. There is research evidence that suggests the existence of a behavioral predisposition toward information scanning and looking for meaning and new knowledge (Vandenbosch & Huff, 1997). For example, a person who is more proactive in his information usage behavior is motivated to think about, seek out, and respond to new information for his job. Such proactive information behavior would also drive more effective information management practice as a person has the better understanding of the information required for performing his job. We suggest that information proactiveness provides the preconditions of information usage motivation necessary for people to better define new information needs, allowing better fit of information technology (IT) to decision-making and problem solving. More effective decision-making tools reinforce proactive information behavior, creating an energized information environment to make decisions accurately and rapidly (Ashford & Black, 1996). Further, information proactiveness influences the motivation to learn (Colquitt, LePine, & Noe, 2000) and motivation to act (Greenberger & Strasser, 1986). Thus, we hypothesize that:

H1. Information proactiveness is a formative first-order factor of information management practice.

Information sharing. We define information sharing as a *person’s perceived willingness to distribute objective information in a collaborative fashion*. Information sharing is dependent on a person’s perceived degree of dependence or interdependence among members of the organization or outsiders such as suppliers and customers. Sharing is associated with perceptions of gain or loss from sharing information and the degree of mutuality in sharing between people. A person has his own information sharing values that will influence the overall information usage motivation for his job. Information sharing is also an important factor for information transaction in online business (Bhattacharjee, 2002). Motivation to share information has been emphasized by network researchers (Ibarra, 1993; Tichy, 1981) and organizational structure researchers (Galbraith, 1973) in connection with reducing uncertainty. Information sharing may facilitate uncertainty reduction among group members. Benefits of information sharing to reduce uncertainty are also applicable at the individual level (Smith & Kozlowsky, 1995) and may lead to a heightened sense of being in control. Staples and Jarvenpaa (2000) showed that the motivation to share information via individual-held beliefs of information usefulness might enhance one’s effective use of electronic media. Thus, taken together we hypothesize that:

H2. Information sharing is a formative first-order factor of information management practice.

Information transparency. We define information transparency as a *person’s perceived willingness to disclose negative information about his job experience to other people so they will learn*. Marchand et al. (2002: p. 111) noted “Transparency is associated with four characteristics. First, transparency means being candid with one’s thoughts – free from bias and accepting the views of others. Second, transparency implies basic fairness – a person will be honest, impartial, and fair in dealing with decisions and situations that arise. Third, transparency, like sharing, requires trust between people – a sense of confidence that another person will not use your thoughts or information against you. Finally, transparency requires openness to other people’s thoughts and concerns when the news is negative or not good.” Thus, transparency is a separate formative factor of information usage motivation with the focus of negative information. Heneman (1986) proposed a directedness construct in the self-monitoring scale, similar to information transparency but more focused on personality characteristics rather than information use behavior. A directed person hides information including failure or mistakes to be perceived as a better person than he really is. People who are transparent in information use openly disclose mistakes to others because they believe this will be beneficial to them eventually. Transparent information use helps to acquire appropriate skills and role behaviors and gain a sense of organizational procedures (Morrison, 1993; Reichers, 1987). It builds friendship networks and social support (Nelson & Quick, 1991) that influence effective information use. Transparent information use also results in more effective management of relationships and higher performance in IT-related jobs (Witt & Burke, 2002). Thus, we hypothesize that:

H3. Information transparency is a formative first-order factor of information management practice.

Information formality. We define information formality as a *person’s perceived willingness to readily use official sources of information*. Formal patterns of communication and information use are generally considered more stable and predictable over time (Rogers & Agarwala-Rogers, 1976). Knowledge workers will generally use formal information sources and systems to assure efficiency in their jobs. They will also rely, to some extent, on formal information usage for management decision making and innovation, if they believe that the information is reliable, relevant, and

¹ The present model does not include the information control dimension from the information orientation model (Marchand et al., 2000), because this dimension focuses on the effectiveness of organizational level control systems and their related organizational practice in the company, which is not applicable to an individual-level model.

Table 1
Final measurement items and reliabilities.

| Indicator | Items | Item-to-total | Cronbach's alpha |
|-----------------|---|---------------|------------------|
| Proactiveness 1 | I enjoy learning ways to improve the use of information with respect to my job. | .55 | .71 |
| Proactiveness 2 | I am comfortable asking people for information that would help me to do my job better. | .53 | |
| Proactiveness 3 | I have to know all the facts before making a decision in my job. | .52 | |
| Sharing 1 | I feel it is my duty to share information with others. | .65 | .81 |
| Sharing 2 | I always pass information to my co-workers to help them do better. | .71 | |
| Sharing 3 | Sharing information to help others do well is as important as finishing my own work. | .61 | |
| Transparency 1 | People view me as an open person who volunteers information about my mistakes on the job. | .68 | .89 |
| Transparency 2 | People come to me for information because I am willing to discuss my mistakes to help them learn. | .72 | |
| Transparency 3 | Even if I report my mistakes, people will not lose respect for me. | .69 | |
| Transparency 4 | I communicate my mistakes to other people because they can learn from my mistakes. | .80 | |
| Transparency 5 | I communicate my mistakes to other people because I can learn from their feedback. | .76 | |
| Formality 1 | When the information provided by the organization is easily accessible, I will use it instead of my own informal information. | .69 | .91 |
| Formality 2 | When the organization's formal information systems are good, I use them over my own informal sources. | .84 | |
| Formality 3 | When I have a choice, I prefer using formal information over informal information for my job. | .83 | |
| Formality 4 | My job performance will be best when I rely on information provided by the organization rather than informal sources. | .74 | |
| Formality 5 | When the organization's information fits the need, I will definitely use it over my own informal sources. | .74 | |

trustworthy. Use of formal information over informal information sources may increase willingness to use information effectively by providing easier access to information and knowledge (Nonaka & Takeuchi, 1995; Rogers & Agarwala-Rogers, 1976). Motivation to effectively use formal information over informal information may also be explained by the tendency to reduce environmental uncertainty by the formal information guaranteed by the organization. Given that surprise and uncertainty are thought to be an adverse state (Louis, 1980), knowledge workers will use formal information sources that are attributed and proven to reduce these uncertainties. Increased feedback-seeking behavior using formal sources may help to reduce uncertainties and increase information ownership. Thus, we hypothesize that:

H4. Information formality is a formative first-order factor of information management practice.

4. Methods and results

4.1. Measure development

Following standard measure development procedures (e.g., Churchill, 1979; Moore & Benbasat, 1991), scales were developed through iterative steps including specifying the domain of the constructs, generating a sample of items, pilot-testing and refining the items, collecting additional data, and assessing the reliability and validity of the measure. Based on the conceptual definitions of the sub-dimensions of IMM and Marchand et al. (2000, 2001, 2002) information orientation model, we generated 6 items for each dimension of IMM (proactiveness, sharing, transparency, and formality), resulting in 24 items. The initial set of items was refined in two studies with data collected from a total number of 120 (i.e., 50 in Study 1 and 70 in Study 2) part-time MBA students who were also working as knowledge workers.

Five researchers (three authors and two Ph.D. candidates) participated in the initial item generation of IMM by creating and discussing the new items. The initial scale was six items for each dimension of IMM, which resulted in twenty-four items. After the initial scale item generation, four Ph.D. students participated in a card sorting method for enhancing reliability and construct validity as suggested by Moore and Benbasat (1991). Cohen's kappa was 89.8% and the average of degree of inter-judge agreement was 92%, indicating that items were generally appropriately placed. Because the Cohen's kappa was over 65%, and the inter-judge agreement was over 90% (Moore & Benbasat, 1991), reliability and validity of the items was supported.

Study 1 was conducted to test the measurement items from the initial scale and refine them. Fifty MBA students with the various knowledge worker job backgrounds were chosen randomly. The participants averaged more than 5 years job experience ranging from system designer, financial analyst, general manager, teacher, and librarian. The main objective of Study 1 was to refine the items by rewording the initial items based on the reliability measured by Cronbach's alpha. Items with lower reliability were revised to provide a clearer meaning based on participants' suggestions as well as to achieve higher reliability. After revising and rewording the items, the items were further tested in Study 2.

In Study 2, two rules were used to select the final items: (1) Cronbach's alpha should be more than .70 (Moore & Benbasat, 1991); and (2) item-to-total correlations should be more than .50 (Bearden, Netemeyer, & Mobley, 1993). The sample included 70 MBA students who had been knowledge workers for more than 5 years with the job titles of senior manager, financial analyst, secretary, and technical manager, who were not the participants of Study 1. By eliminating low reliability (less than .70) and item-to-total correlation (less than .50) items, the item numbers were reduced into sixteen. The reliabilities as well as item-to-total correlations of the 16 items are shown in Table 1. All the retained items showed desirable reliability properties with high Cronbach's alpha scores and satisfactory item-to-total correlations.

Table 2
Reliabilities, convergent and discriminant validities, and correlations.

| | ICR | (1) | (2) | (3) | (4) |
|-------------------|------------|------------|------------|------------|------------|
| (1) Proactiveness | .83 | .80 | | | |
| (2) Sharing | .92 | .60 | .91 | | |
| (3) Transparency | .94 | .53 | .64 | .86 | |
| (4) Formality | .93 | .47 | .40 | .33 | .84 |

Note. ICR: internal consistency reliability, which should be 0.70 or higher. Diagonal elements are the square roots of average variance extracted (AVE) by latent constructs from their indicators. Bold values denote $p < .001$.

Throughout the scale development processes, considerable efforts were made to ensure the content validity of the study variables and to make distinctions among the four sub-dimensions of IMM. Further construct validation was conducted using the final set of 16 items from Study 2.

4.2. Measure validation

Measure validation and model testing were conducted using Partial Least Square (PLS) Graph Version 2.91.03.04 (Chin & Frye, 1998), a structural equation-modeling tool that utilizes a component-based approach to estimation, using the samples of 70 from Study 2. PLS makes few assumptions about measurement scales, sample size, and distributional assumptions (Chin, 1998; Fornell & Bookstein, 1982). In general, PLS is better for explaining complex latent variables, as it avoids two problems: inadmissible solutions and factor indeterminacy (Fornell & Bookstein, 1982). PLS is appropriate for an exploratory research model, which is the case in our study, compared with covariance-based SEM tools such as LISREL and EQS (Chin, 1998; Fornell & Bookstein, 1982).

Before testing the hypothesized structure model, we first evaluated the psychometric properties of the study variables through confirmatory factor analysis using a measurement model in which the first-order latent variables were specified as correlated variables with no causal paths. The measurement model was assessed by using PLS to examine internal consistency reliability and convergent and discriminant validity² (Chin, 1998). Table 2 shows internal consistency reliabilities, convergent and discriminant validities, and correlations among latent constructs. The internal consistency reliabilities were at least 0.83, exceeding the minimal reliability criteria (i.e., 0.70). Also, satisfying convergent and discriminant validity criteria: (1) the square root of the AVE was greater than 0.707 (at least 0.80) and greater than the correlation between that construct and other constructs without exception and (2) the factor structure matrix (Table 3) shows that all items exhibited high loadings (>0.707) on their respective constructs without exceptions and no items loaded higher on constructs that they were not intended to measure. Collectively, the psychometric properties of the study variables were considered excellent and sufficiently strong to support valid testing of the proposed structural model.

4.3. Test of model and hypotheses

The PLS structural model and hypotheses were assessed by examining path coefficients and their significance levels. Following Chin (1998), bootstrapping (with 500 resamples) was performed on the model to obtain estimates of standard errors for testing the sta-

² Internal consistency reliabilities of 0.7 or higher are considered adequate. Two criteria are generally applied to assess convergent and discriminant validity: (1) the square root of the average variance extracted (AVE) by a construct should be at least 0.707 (i.e., $AVE > 0.50$) and should exceed that construct's correlation with other constructs and (2) item loadings should be at least 0.707 and an item should load more highly on the one it is intended to measure than on any other construct.

Table 3
Factor structure matrix of loadings and cross-loadings.

| | Proactiveness | Sharing | Transparency | Formality |
|-----------------|---------------|-------------|--------------|-------------|
| Proactiveness 1 | 0.81 | 0.46 | 0.37 | 0.38 |
| Proactiveness 2 | 0.80 | 0.54 | 0.49 | 0.38 |
| Proactiveness 3 | 0.76 | 0.42 | 0.38 | 0.34 |
| Sharing 1 | 0.54 | 0.90 | 0.58 | 0.42 |
| Sharing 2 | 0.59 | 0.93 | 0.61 | 0.35 |
| Sharing 3 | 0.51 | 0.87 | 0.55 | 0.31 |
| Transparency 1 | 0.43 | 0.53 | 0.86 | 0.32 |
| Transparency 2 | 0.44 | 0.55 | 0.85 | 0.26 |
| Transparency 3 | 0.43 | 0.46 | 0.81 | 0.32 |
| Transparency 4 | 0.48 | 0.59 | 0.90 | 0.30 |
| Transparency 5 | 0.48 | 0.63 | 0.83 | 0.29 |
| Formality 1 | 0.38 | 0.35 | 0.28 | 0.85 |
| Formality 2 | 0.40 | 0.33 | 0.28 | 0.88 |
| Formality 3 | 0.38 | 0.31 | 0.31 | 0.87 |
| Formality 4 | 0.38 | 0.30 | 0.28 | 0.82 |
| Formality 5 | 0.43 | 0.39 | 0.31 | 0.82 |

Note. Loadings on their respective constructs are highlighted (all greater than 0.707).

tistical significance of path coefficients using the t -test. Because PLS Graph (Version 2.91.03.04) does not directly support second-order latent constructs, the information management practice conceptualized as second-order constructs in the proposed model were represented by factor scores derived from the confirmatory factor analysis (Chin, 1998). The sub-dimensions of IMM were modeled as formative.

As shown in Table 4, all the four hypotheses (Hypotheses 1–4), each of which corresponds to a formative path from the first order factor to its latent construct, were supported within the 0.001 significance level. The Variance Inflation Factor (VIF) index (Hwang & Kim, 2007) indicates that multicollinearity is not a problem when it is less than 10. VIF of sub-dimensions were below 10, which showed that multicollinearity was not a problem in this model.

5. Discussion

5.1. Summary

This study has developed and conducted an initial test of the theorization on the components and structural properties of a new construct, named information management motivation (IMM). All hypotheses of the sub-dimensions of IMM were supported within the 0.001 significance level, supporting the model with high confidence. From the knowledge-based view of the firm, the effectiveness of the individual knowledge worker's information management has been emphasized as the core resource of a company (Grant, 1996; Kogut & Zander, 1992; Nonaka, 1994). Given that knowledge originates with individuals (Grant, 1996), the extent to which a person is motivated to use information effectively is crucial to the success of a firm. As individual performance is an essential building block of organizational effectiveness, understanding the motivational aspect of information management provides initial empirical evidence in establishing the linkage between individual workers' motivation for information management and organizational effectiveness.

5.2. Implications for practice

The practical contribution of this research is to identify the motivational aspects of information management practice and provide validated measures of those aspects. The scales of the motivational aspects of information management developed by this study can be used to directly assess how motivated a knowledge worker is in contributing to a company's information management processes and which aspects of personal information management need

Table 4
Sub-dimensions of information management motivation and paths.

| Latent construct | Sub-dimension | Definition | Paths |
|---|---------------|--|--------|
| Information management motivation (IMM) | Proactiveness | A person's perceived willingness to actively use information for his job. | .35*** |
| | Sharing | A person's perceived willingness to distribute objective information in a collaborative fashion. | .35*** |
| | Transparency | A person's perceived willingness to disclose negative information about his job experience to other people so they will learn. | .33*** |
| | Formality | A person's perceived willingness to readily use official sources of information. | .26*** |

*** $p < .001$.

further improvement through training. A training program might be developed to enhance the specific dimensions rather than ignoring or targeting at the very general level of motivation.

The scales may also be used to compare the collective effectiveness of information management between organizational units or monitor the effectiveness of information flows across the organization. For example, group gatekeepers in an organization, acting as links between two groups, should have high motivation to effectively transfer the organizational knowledge into performance. The gatekeeper in the group could be identified as a person who has a high level of information management motivation – proactiveness, sharing, transparency and formality. Our theorization supports the overall understanding of these phenomena and the direct measurement methods in this situation. The validated formative measures of IMM should be useful in developing practical guidance on how information management practices may be improved for a company.

5.3. Implications for research

An interesting future research area involves assessing the relationships among the current model of information management motivation and other organizational interventions, such as incentive systems, cultural changes, social network support (close or weak ties), as well as the role of information systems in organizational learning. Further research is also needed to specifically examine the relationships among the motivational aspects and other individual characteristic constructs.³ These further tests would be helpful to understanding how individuals are likely to manage information differently regardless of technology support and what training or other organizational interventions are most effective in changing their information management practices.

Future research on information management by knowledge workers will need to carefully consider the potential effects of all the sub-dimensional constructs of information management motivation, proposed by this study. Prior studies suggested that several control mechanisms, such as quantitative or qualitative control, could be applied to the organizational intervention for an individual's performance (Ouchi, 1979). The influence of these different control mechanisms or organizational culture on the motivational aspects of information management warrants further investigation.

6. Conclusion

In conclusion, effective information management is a fundamental driver of a firm's competitiveness and value. As an organization is constantly faced with changes in the business environment, its ability to acquire appropriate information and

reduce uncertainty in its decision making is an essential basis for its competitive advantage. The present research proposes and tests the motivational aspects of information management practices, representing an initial yet important step toward bridging the gap between individual information management activities and organizational information management success. Further, the current research suggests underlying formative sub-dimensions that constitute information management motivation and develops measurement scales, enabling organizations to directly assess the strengths and weaknesses of an individual's motivation regarding the use of information.

Acknowledgements

This research was partially supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education, Science and Technology (2012-0008523).

References

- Ashford, S. J., & Black, J. S. (1996). Proactivity during organizational entry: The role of desire for control. *Journal of Applied Psychology*, 81(2), 199–214.
- Bearden, W. O., Netemeyer, R. G., & Mobley, M. F. (1993). *Handbook of marketing scales: Multi-item measures for marketing and consumer behavior research*. Newbury Park, CA: Sage Publications.
- Becker, T. E. (1998). Integrity in organizations: Beyond honesty and conscientiousness. *Academy of Management Review*, 23(1), 154–161.
- Bhattacharjee, A. (2002). Individual trust in online firms: Scale development and initial test. *Journal of MIS*, 19(1), 211–241.
- Bollen, K. A., & Lennox, R. (1991). Conventional wisdom on measurement: A structural equation perspective. *Psychological Bulletin*, 110, 302–314.
- Bostrom, R. P., Olfman, L., & Sein, M. K. (1990). The importance of learning style in end-user training. *MIS Quarterly*, 14, 101–117.
- Campbell, J., & Pritchard, D. (1976). Motivation theory in industrial and organizational psychology. In *Handbook of industrial and organizational psychology*. Chicago: Rand McNally, pp. 63–130.
- Cheney, P. H., Mann, R. L., & Amoroso, D. L. (1986). Organizational factors affecting the success of end-user computing. *Journal of MIS*, 3(1), 65–80.
- Chin, W. W. (1998). The partial least squares approach to structural equation modeling. In G. A. Marcoulides (Ed.), *Modern methods for business research* (pp. 195–336). Lawrence Erlbaum Associates: Mahwah, NJ.
- Chin, W. W., & Frye, T. A. (1998). PLS-Graph, Version 2.91.03.04.
- Churchill, G. (1979). A paradigm for developing better measures of marketing constructs. *Journal of Marketing Research*, 16(1), 64–73.
- Colquitt, J. A., LePine, J. A., & Noe, R. A. (2000). Toward an integrative theory of training motivation: A meta-analytic path analysis of 20 years of research. *Journal of Applied Psychology*, 85(5), 678–707.
- Compeau, D., & Higgins, C. (1995). Computer self-efficacy: Development of a measure and initial test. *MIS Quarterly*, 19(2), 189–210.
- Csikszentmihalyi, M. (1975). Play and intrinsic rewards. *Humanistic Psychology*, 15, 41–63.
- Csikszentmihalyi, M. (1977). *Beyond boredom and anxiety*. San Francisco, CA: Jossey-Bass.
- Csikszentmihalyi, M., & Csikszentmihalyi, I. S. (1988). *Optimal experience: Psychological studies of flow in consciousness*. Cambridge, UK: Cambridge University Press.
- Davis, F. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13, 319–340.
- Davis, F., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace. *Journal of Applied Psychology*, 22(14), 1111–1132.
- Davis, K. (1967). *Human relations at work: The dynamics of organizational behavior*. New York: McGraw-Hall.

³ The relationships between other individual characteristic constructs such as personal innovativeness in IT (Hwang, 2009), learning goal orientation (Yi & Hwang, 2003) and the motivational aspects deserve further exploring.

- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.
- Edwards, J. R. (2001). Multidimensional constructs in organizational behavior research: An integrative analytical framework. *Organizational Research Methods*, 4(2), 144–192.
- Fornell, C., & Bookstein, L. (1982). The structural equation models: LISREL and PLS applied to consumer exit-voice theory. *Journal of Marketing Research*, 19, 440–452.
- Galbraith, J. (1973). *Designing complex organization*. Reading, MA: Addison-Wesley Publishing.
- Ghani, J. A., & Deshpande, S. P. (1994). Task characteristics and the experience of optimal flow in human–computer interaction. *The Journal of Psychology*, 128(4), 381–391.
- Ghani, J. A., Supnick, R., & Rooney, P. (1991). The experience of flow in computer mediated and face-to-face groups. In J. I. DeGross, I. Benbasat, G. DeSanctis, & C. M. Beath (Eds.), *Proceedings 12th international conference on information systems* New York, (pp. 229–237).
- Gist, M., Rosen, E., & Schwoerer, B. C. (1988). The influence of training method and trainee age on the acquisition of computer skills. *Personnel Psychology*, 41, 255–265.
- Gist, M. E., Schwoerer, C., & Rosen, B. (1989). Effects of alternative training methods on self-efficacy and performance in computer software training. *Journal of Applied Psychology*, 74(6), 884–891.
- Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal*, 17(10), 109–122.
- Greenberger, D. B., & Strasser, S. (1986). Development in application of a model of personal control in organizations. *Academy of Management Review*, 11, 164–177.
- Heneman, R. (1986). The relationship between supervisory ratings and result-oriented measures of performance: A meta-analysis. *Personnel Psychology*, 39, 811–826.
- Hwang, Y. (2009). The impact of uncertainty avoidance, social norms and innovativeness on trust and ease of use in electronic customer relationship management. *Electronic Markets*, 19(2), 89–98.
- Hwang, Y., & Kim, D. (2007). Understanding affective commitment, collectivist culture, and social influence in relation to knowledge sharing in technology mediated learning. *IEEE Transactions on Professional Communication*, 50(3), 232–248.
- Ibarra, H. (1993). Personal networks of women and minorities in management: A conceptual framework. *Academy of Management Review*, 18, 56–87.
- Johnson, T. (1992). *Relevance regained: From top-down control to bottom-up empowerment*. New York: The Free Press.
- Kahneman, D. (1973). *Attention and effort*. Englewood Cliffs, NJ: Prentice Hall.
- Kanfer, R. (1987). Task-specific motivation: An integrative approach to issues of measurement, mechanisms, processes, and determinants. *Journal of Social and Clinical Psychology*, 5, 237–264.
- Kanfer, R., & Ackerman, P. (1989). Motivation and cognitive abilities: An integrative/aptitude-treatment interaction approach to skill acquisition. *Journal of Applied Psychology*, 74(4), 657–690.
- Kettinger, W. J., & Marchand, D. A. (2011). Information management practices (IMP) from the senior manager's perspective: An investigation of the IMP construct and its measurement. *Information Systems Journal*, 21(5), 385–406.
- Kogut, B., & Zander, U. (1992). Knowledge of the firm combinative capabilities, and the replication of technology. *Organization Science*, 3(3), 383–397.
- Koufaris, M. (2002). Applying the technology acceptance model and flow theory to online consumer behavior. *Information Systems Research*, 13(2), 205–223.
- Kouzes, J. M., & Posner, B. Z. (1993). *Credibility: How leaders gain and lose it and why people demand it*. San Francisco, CA: Jossey-Bass.
- Locke, E. A. (1991). The motivation sequence, the motivation hub and the motivation core. *Organizational Behavior and Human Decision Processing*, 50, 289–299.
- Locke, E. A. (2001). Self-set goals and self-efficacy as mediators of incentives and personality. In M. Erez, U. Kleinbeck, & H. Thierry (Eds.), *Work motivation in the context of a globalizing economy*. NJ: Lawrence Erlbaum Associates.
- Louis, M. R. (1980). Surprising and sense-making: What new comers experience in entering unfamiliar organization settings. *Administrative Science Quarterly*, 25, 226–251.
- Malhotra, Y., & Galletta, D. (2005). A multidimensional commitment model of voluntary systems adoption and usage behavior. *Journal of MIS*, 22(1), 117–151.
- Marchand, D. A., Kettinger, W. J., & Rollins, J. D. (2000). Information orientation: People, technology and the bottom line. *Sloan Management Review*, 41(4), 69–80.
- Marchand, D. A., Kettinger, W. J., & Rollins, J. D. (2001). *Making the invisible visible: How companies win with the right information, people and IT*. Chichester, NY: John Wiley and Sons.
- Marchand, D. A., Kettinger, W. J., & Rollins, J. D. (2002). *Information orientation: The link to business performance*. Oxford, UK: Oxford University Press.
- Martocchio, J. J., & Judge, T. A. (1997). Relationship between conscientiousness and learning in employee training: Mediating influences of self-deception and self-efficacy. *Journal of Applied Psychology*, 82(5), 764–773.
- Maslow, A. (1968). *Toward a psychology of being*. NJ: D. Van Nostrand Company.
- Moore, G., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research*, 2(3), 192–221.
- Morrison, E. W. (1993). Longitudinal study of the effects of information seeking on newcomer socialization. *Journal of Applied Psychology*, 78, 173–183.
- Naylor, J. C., Pritchard, R. D., & Ilgen, D. R. (1980). *A theory of behavior in organizations*. New York: Academic Press New York, Holt.
- Navon, D., & Gopher, D. (1979). On the economy of the human processing system. *Psychological Review*, 86, 214–255.
- Nelson, D. L., & Quick, J. C. (1991). Social support and newcomer adjustment in organization: Attachment theory at work. *Journal of Organizational Behaviour*, 12, 543–554.
- Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science*, 5(1), 14–36.
- Nonaka, I., & Takeuchi, H. (1995). *The knowledge creating company*. New York: Oxford University Press.
- Norman, D. A., & Bobrow, D. B. (1975). On data-limited and resource-limited processes. *Cognitive Psychology*, 7, 44–64.
- Ouchi, W. G. (1979). A conceptual framework for the design of organizational control mechanisms. *Management Science*, 25(9), 833–848.
- Reichers, A. E. (1987). An interaction perspective on newcomer socialization rates. *Academy of Management Review*, 12, 278–287.
- Rogers, E. M., & Agarwala-Rogers, R. (1976). *Communication in organizations*. New York: The Free Press.
- Sackett, P., Gruys, S., & Ellingsin, J. (1998). Ability-personality interactions when predicting job performance. *Journal of Applied Psychology*, 83(4), 545–556.
- Simons, S., Grover, V., Teng, J., & Witcomb, K. (1996). The relationship of information system training methods and cognitive ability to end-user satisfaction, comprehension, and skill transfer: A longitudinal field study. *Information Systems Research*, 7, 466–490.
- Simons, S., & Werner, J. (1996). Computer training through behavior modeling, selfpaced, and instructional approaches: A field experiment. *Journal of Applied Psychology*, 81, 648–659.
- Smith, E. M., & Kozlowsky, S. W. (1995). Newcomer socialization: The effect of learning strategies and role relationships on learning outcomes. In *Proceedings of annual conference of society for industrial and organizational psychology* Orlando, FL.
- Staples, D. S., & Jarvenpaa, S. L. (2000). Using electronic media for information sharing activities: A replication and extension. In *Proceedings of international conference on information systems* (pp. 117–133).
- Tichy, N. M. (1981). Networks in organizations. In P. C. Nystrom, & W. H. Starbuck (Eds.), *Handbook of organizational design* (pp. 225–248). New York: Oxford University Press.
- Vandenbosch, B., & Huff, S. (1997). Searching and scanning: How executives obtain information from executive information systems. *MIS Quarterly*, 21(1), 81–108.
- Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information Systems Research*, 11(4), 342–365.
- Venkatesh, V., & Davis, F. D. (1996). A model of the antecedents of perceived ease of use: Development and test. *Decision Sciences*, 27(3), 451–481.
- Vroom, V. H. (1964). *Work and motivation*. New York: Wiley.
- Witt, L. A., & Burke, L. A. (2002). Selecting high-performing information technology professionals. *Journal of End User Computing*, 14(4), 37–51.
- Yi, M. Y., & Davis, F. D. (2003). Developing and validating an observational learning model of computer software training and skill acquisition. *Information Systems Research*, 14(2), 146–169.
- Yi, M. Y., & Hwang, Y. (2003). Predicting the use of web-based information systems: Self-efficacy, enjoyment, learning goal orientation, and the technology acceptance model. *International Journal of Human-Computer Studies*, 59(4), 431–449.

Yujong Hwang is Associate Professor of Accountancy and MIS in the Driehaus College of Business at DePaul University in Chicago and International Scholar at Kyung Hee University in Korea. He was Visiting Professor in the Kellogg School at Northwestern University and received his Ph.D. in Business Administration from the University of South Carolina. His research focuses on e-commerce, accounting information systems, and human–computer interaction. He was listed as one of top 50 productive researchers in the world in 2005–2008 based on the top 6 IS journal counts. He has published over 25 articles in the refereed journals including *Journal of MIS*, *European Journal of Information Systems*, *IEEE Transactions*, *Communications of ACM*, *Information & Management*, *Decision Support Systems*, and *International Journal of Electronic Commerce*. He is Program Co-Chair for AMCIS 2013 and on the AMCIS executive committee in 2012–2014. He is Associate Editor for *European Journal of Information Systems*, *Behaviour & IT*, and *Journal of Electronic Commerce Research*.

William J. Kettinger is a Professor and the FedEx Endowed Chair in MIS at the Fogelman College of Business and Economics at The University of Memphis. Dr. Kettinger previously served as Professor of Management Science and Moore Foundation Fellow at University of South Carolina. Bill has also taught at IMD in Lausanne Switzerland, Wirtschaftsuniversität Wien, Vienna Austria and at the Tecnológico de Monterrey in Mexico. He has published 4 books and numerous articles in such journals as *MIS Quarterly*, *JMIS*, *Decision Sciences*, *CACM*, *SMR*, *JAIS*, *EJIS*, *DataBase*, and *Long Range Planning*. He currently serves, or has served, on the editorial boards of *MIS Quarterly*, *ISR*, *JAIS*, and *MISQ Executive* and has twice served as a special guest editor for *JMIS*. He has been the recipient on numerous awards such as the Society of Information Management's best paper award. He consults with such companies as enterpriseIQ, IBM, and Accenture.

Mun Y. Yi is an Associate Professor at KAIST (Korea Advanced Institute of Science and Technology) and at University of South Carolina (on leave). He earned his Ph.D. in information systems from University of Maryland, College Park. His current research focuses on knowledge management, information technology adoption and diffusion, computer training, and human–computer interaction. His work has been published

in such journals as *Information Systems Research*, *Decision Sciences*, *Information & Management*, *International Journal of Human–Computer Studies*, and *Journal of Applied Psychology*. He is a former editorial member of *MIS Quarterly* and a current Associate Editor for *International Journal of Human-Computer Studies* and *AIS Transactions on Human-Computer Interaction*.