INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

A STUDY ON RELATIONSHIP BETWEEN COGNITIVE ABSORPTION, DEEP STRUCTURE USE AND JOB PERFORMANCE AMONG BANK EMPLOYEES

Management

Oyyappan D Research Scholar, BSMED, Bharathiar University, Coimbatore, India.

Dr. Ajoy Mathew* Professor & Research Supervisor, Bharathiar University, Coimbatore, India. *Corresponding Author

ABSTRACT

The key purposes of this study were to identify the relationship between rich use of knowledge management systems namely cognitive absorption and Deep structure use on Job performance among bank employee. We found that employees' performance was affected by the extent to which they engage in rich use of a KMS and the use–performance relationship was dependent on task nonroutineness, absorptive capacity, and transformational leadership. This work thus contributes to the KMS literature by developing a better understanding of the relationship between KMS use and job performance as well as providing guidance to organizations and employees on how to enhance employees' job performance through effective use of KMSs.

KEYWORDS

Rich Use Of Kms: Cognitive Absorption, Deep Structure Use And Job Performance.

Introduction

In the context of a KMS implementation, this work adopts a rich use perspective to conceptualize KMS use that examines cognitive absorption (i.e., the extent to which employees are in a state of deep attention and engagement with the system; e.g., Agarwal and Karahanna 2000), and deep structure use (i.e., the extent to which the right features of the system are used to support relevant tasks; e.g., Burton-Jones and Straub 2006). As discussed in greater detail in the next section, this work adopts a rich use perspective because it better represents the interaction between users and a KMS by capturing important factors related to a KMS implementation, such as the key purpose of a KMS implementation and some important characteristics of a KMS. In such a case, the use-performance link can be better understood. In addition, although Burton-Jones and Straub (2006) examined the relationship between rich use and task performance, the question of whether rich use affects job performance in the context of a KMS implementation needs to be studied.

According to context theorizing, inclusion of mediators and/or boundary conditions via moderators in theory development and validating the new theory in the right setting have been noted as an important way to move research forward and make substantial theoretical contributions (e.g., Bamberger 2008; Whetten 2008; for an example, see Venkatesh et al. 2010). Given that prior literature indicates performance gains in the context of technology implementations are contingent on the fit among task, system, and user (e.g., Burton-Jones and Straub 2006; Fuller and Dennis 2009), task nonroutineness, perceived support for contextualization, and absorptive capacity are incorporated as contingency factors that correspond to task, system, and user to shed light on our understanding of the relationship between KMS use and job performance. Another important contingency factor is related to top management. In the context of technology implementations, leaders can play an important role in affecting the success of the implementations (e.g., Enns et al. 2003; Kettinger et al. 2011). Thus, leadership, transformational leadership, in particular, is incorporated into the model. Leadership has been mainly conceptualized at the individual and the business unit levels (e.g., Hofmann et al. 2000; Piccolo and Colquitt 2006). Conceptualizing it at the business unit level will help us understand whether and how leadership will affect KMS implementation success. As an example, one study found that transformational leadership, conceptualized at the business unit level, was positively related to employees' commitment to a change initiative, such as an implementation of new technology (Herold et al. 2008).

Conceptualization of Rich Use of KMS

There are different conceptualizations of technology use that can be categorized into two types: lean use and rich use (e.g., Burton-Jones and Straub 2006; Venkatesh et al. 2008). Lean use considers the technology being investigated as a whole and captures technology use in terms of duration, frequency, or intensity (e.g., Venkatesh 2000; Venkatesh et al. 2008). The conceptualization of rich use refers to cognitive absorption and deep structure use. Cognitive absorption describes the interaction between a user and a technology, here a KMS (see Agarwal and Karahanna 2000; Burton-Jones and Straub 2006). It has five dimensions: temporal dissociation, focused immersion, heightened enjoyment, control, and curiosity (Agarwal and Karahanna 2000). Based on Agarwal and Karahanna (2000), when users interact with a system (here, a KMS) (1) they feel that they can manage the interaction (control); (2) they have a strong sense of inquisitiveness (curiosity); (3) they feel great pleasure in using it (heightened enjoyment); (4) they occupy themselves totally with it (focused immersion); and (5) they may not realize how much time they have spent on it (temporal dissociation). The concept of cognitive absorption is rooted in the theory of flow that aims to understand the optimal experience, a state when people feel in control of their actions, as a master of their own fate, a sense of exhilaration and a deep sense of enjoyment (Csikszentmihalyi 1990). The control of actions is achieved by control of consciousness (i.e., the ability to focus attention at will and to be oblivious to distractions; Csikszentmihalyi 1990). When people enter a state of cognitive absorption, they also become more sensitive to and more curious about things on which they focus (Trevino and Webster 1992). Such sensitivity and curiosity will drive them to seek answers to various issues in which they are interested or about which they are uncertain, such as getting to know the pros and cons of different features of a system. In a state of optimal experience, people voluntarily stretch their bodies and minds to their limits to accomplish something challenging (Csikszentmihalyi 1990).

Deep structure use is the extent to which system features pertinent to the task have been deployed with respect to the breadth of use (i.e., number of features used) and depth of use (i.e., use the right features for the core aspects of the tasks). Although employees may not need to learn all the features, it is important to develop proficiency in using certain features that are relevant and critical to get their jobs done. Such features should capture the core aspects of the job tasks, defined as the critical components of the job tasks or the critical paths that determine whether the job tasks can be successfully completed (e.g., Davis and Heidorn 1971). The core aspects of job tasks are likely to vary depending on the nature of task and job. Deep structure use describes the use of the system at the feature level (Burton-Jones and Straub 2006). When employees engage in deep structure use, they are likely to get familiar with different features and leverage the features more effectively (Jasperson et al. 2005).

A KMS is a class of information system coupled with knowledge sharing practices that support and enhance organizational knowledge management effort (Alavi and Leidner 2001). The IS literature has mainly categorized KMS into two types: codification-based systems that emphasize knowledge reuse through access to codified expertise and personalization-based systems that emphasize knowledge exchange among employees (Kankanhalli et al. 2005; Ko and Dennis 2011). Although the prior KMS literature has mainly taken a lean use perspective to understand the relationship between use and performance, in this study it is argued that a rich use perspective is more appropriate in the context of a KMS implementation for two reasons. First, a key purpose of a KMS is to facilitate the processes of knowledge storage, retrieval, sharing, and application, and such processes require users to learn a large and complex system (Alavi and Leidner 2001). If users pay more attention when using a system, they are likely to develop a better understanding of the system that may help them better leverage the system to complete job tasks. Therefore, it is important to capture users' level of involvement with a KMS when conceptualizing KMS use. Given that cognitive absorption captures not only frequency of use, but also a degree of attention, it adequately represents users' level of involvement with a KMS. Second, lean use considers the technology as a whole and we do not know which features or functions of the technology will contribute positively to job performance. Most of the large-scale systems, such as a KMS, come with numerous functions and features. Given that the conceptualization of breadth of use and depth of use underscores the specific features of the system that are closely related to job task completion, the use-performance link will be better explained by a rich conceptualization of use than by a lean conceptualization of use (see Burton-Jones and Straub 2006).

Cognitive Absorption

When users enjoy using a system, they will be less likely to feel bored or tired and they will be more likely to work harder and longer, thus resulting in higher productivity. This argument is supported by prior research that indicates the amount of effort and the degree of persistence, driven by the motivational process of goal setting, have a significant impact on performance outcomes (e.g., Mitchell 1997). In addition, when users occupy themselves totally with a system, they will be less likely to be distracted by other non-work-related problems that might slow down their progress or cause them to make more mistakes. Prior research has demonstrated the detrimental effects of divided attention on performance (Naveh-Benjamin et al. 2007). Moreover, cognitive absorption is a situational intrinsic motivator (Agarwal and Karahanna 2000), an important driver of performance (Vallerand 1997). Mitchell (1997) found that the strength of motivation was strongly related to performance. To summarize, if users are cognitively absorbed by using a KMS to accomplish their jobs, they will be likely to perform their work more efficiently and effectively, resulting in better job performance.

Deep Structure Use

A system may have many features to support the underlying structure of a particular task. When employees engage in deep structure use of a KMS, they will likely be aware of the differences between these features, know the pros and cons of using these features, and become more proficient in using these features. They will also be likely to understand the complementarity among these features and leverage these features to get their jobs done. For example, a KMS may have two features that store knowledge. One could be similar to a traditional knowledge store5 where different types of knowledge (e.g., computer knowledge and business knowledge) are well-categorized and well-structured. Another one could be an electronic bulletin board or online discussion forum where employees post their thoughts and ideas. Knowledge stored in an electronic bulletin board or online discussion forum is less organized and structured because it is embedded in the content of the discussion and it is more informal. An employee may learn from the traditional knowledge store that "MyDoom" is a computer virus spread via e-mail and installs some form of the backdoor component on a target machine. If the employee also uses an online discussion forum, he or she may find out more information about "MyDoom" posted by other employees who may have been affected by the virus. These employees could provide more information about the virus (e.g., what backdoor components "MyDoom" will install, what functions of the computer will not operate properly when infected, and how to remove the virus). In this case, the online discussion forum complements the traditional knowledge store by helping employees better understand and leverage knowledge.

If the features used to support the task, employees will be likely to perform better (Burton-Jones and Straub 2006; Goodhue and Thompson 1995). This argument is based on the task-technology fit (TTF). The tenets of TTF suggest that when capabilities of a technology (system) match the tasks, it will be more likely to have a positive impact on individual performance (Goodhue and Thompson 1995) because when there is a fit between a task and technology (system), users do not need to spend extra time and effort modifying the system to support the task. Consequently, they can utilize their cognitive resources to concentrate on completing the task. In contrast, when a technology (system) does not support a particular task, users may need to allocate additional mental resources to increase the fit between the task and the technology (system). For instance, prior studies have indicated that decision-making performance was dependent on the fit between the data presentation format and the task (e.g., Benbasat et al. 1986), and a misfit would slow down the decision-making processes (e.g., Vessey 1991). Given that employees who engage in deep structure use will be likely to benefit from the complementarity of various features and use the right features to support their tasks, they will be likely to perform better.

Research Methodology

The present study was carried out among banking professionals in Coimbatore, India. Banking professionals' fall into the following jobs for the purpose of this study: Finance and Budgeting, Accounting, Personal, Customer Management, Sales, Advertising and Public Relations, Government Liaison, The data for this study were collected through a questionnaire administrated to Banking professionals of the 500 distributed surveys, 450 were returned and 435 were found to be used for further analysis. Multi-stage sampling is used as a sampling method. All statements in the questionnaire used a five-point – Likert-scale in which the response ranged from strongly disagrees to strongly agree.

Table 1. Socio-demographic details of the respondents – (n = 435)

General Information	Characteristics	Frequency	Percentage
Gender	Male	267	61.4
	Female	168	38.6
Age	Below 25	69	15.9
	25 – 35	110	25.3
	36 – 45	119	27.4
	46 – 55	85	19.5
	Above 55	52	12.0
Designation	Junior Level	137	31.5
	Middle Level	190	43.7
	Senior Level	108	24.8
Educational Qualification	Diploma	16	3.7
	Under Graduate	312	71.7
	Post Graduate	107	24.6
Work Experience	1 - 5 Years	74	17.0
	6 - 10 Years	98	22.5
	11 - 15 years	107	24.6
	16 - 20 Years	92	21.1
	Above 20 Years	64	14.7
Income	Below 20000	59	13.6
	20000 - 30000	110	25.3
	31000 - 40000	94	21.6
	41000 - 50000	79	18.2
	Above 50000	93	21.4

From the above table it is clear that there are 435 respondents have been chosen for this study, 267 (61.4%) were male respondents and the remaining 168 (38.6%) were female respondents. The age of the respondents 15.9% (69 respondents) were with the age of less than 25 years, 25.3% (110 respondents) were between the age group of 25 – 35 years, 27.4% (119 respondents) were between the age group of 36 –45 years, 19.5% (85 respondents) were between the age group of 46-55, and the remaining 12.0% (52 respondents) were above 55 years. The designation of the respondents 31.5% (137 respondents) were at the junior level, 43.7% (190 respondents) were at the middle level, and the remaining 24.8% (108 respondents) were at the senior level. From the total respondents, 3.7% (16 Respondents) were qualified with the Diploma, 71.7% (312 Respondents) were qualified with the Undergraduate, and the remaining 24.6% (107 Respondents) were qualified with the Post Graduate Degree. Work experience of the employees have been categorised into 5 groups there are 17.0% (74 respondents) have work experience 1-5 years, 22.5% (98 respondents) have work experience 6-10 years, 24.6% (107 respondents) have work experience 11-15 years, 21.1% (92 respondents) have work experience 16-20 years, 14.7% (64 respondents) have above 20 years of work experience. Employee's income level, 13.6% (59 respondents) are earnings below 20000 per month, 25.3 (110 respondents) are earnings 20000 to 30000 thousand, 21.6% (94 respondents) are earnings 31000 to 40000 thousand, 18.2% (79 respondents) are earnings 41000 to 50000 thousand, and the remaining 21.4% (93 respondents) are earnings above 50000 thousand.

Pearson correlation between factors influencing

Factors		Cognitive Absorption	Deep Structure Use	Job Performance
Cognitive Absorption	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	435		
Deep Structure Use	Pearson Correlation	.331**	1	
	Sig. (2-tailed)	.000		
	N	435	435	
Job Performance	Pearson Correlation	.792**	.321**	1
	Sig. (2-tailed)	.000	.000	
	N	435	435	435
**. Correlation is significant at the 0.01 level (2-tailed).				

From the above table it is inferred that the factors Cognitive absorption, Deep structure use, positively correlated. The probability value less than 0.05, hence the correlation values are found to be significant.

Suggestions and Conclusions:

Given that cognitive absorption captures not only frequency of use, but also degree of attention, it adequately represents users' level of involvement with a KMS. Second, lean use considers the technology as a whole and we do not know which features or functions of the technology will contribute positively to job performance. Most of the large-scale systems, such as a KMS, come with numerous functions and features. Given that the conceptualization of breadth of use and depth of use underscores the specific features of the system that are closely related to job task completion, the use–performance link will be better explained by a rich conceptualization of use than by a lean conceptualization of use (see Burton-Jones and Straub 2006).

When people enter a state of cognitive absorption, they also become more sensitive to and more curious about things on which they focus (Trevino and Webster 1992). Such sensitivity and curiosity will drive them to seek answers to various issues in which they are interested or about which they are uncertain, such as getting to know the pros and cons of different features of a system. In a state of optimal experience, people voluntarily stretch their bodies and minds to their limits to accomplish something challenging (Csikszentmihalyi 1990).

Given that employees who engage in deep structure use will be likely to benefit from the complementarity of various features and use the right features to support their tasks, they will be likely to perform better. If employees engage in deep structure use of a KMS when performing a nonroutine task, they will be likely to have higher performance gains given that a nonroutine task may require employees to explore various features and understand the fit between a feature and a task.

When employees understand the pros and cons of different features and the relationships between these features and different tasks, they will be more likely to identify optimal solutions, resulting in better job performance. Solving a routine problem only requires employees to follow prescribed procedures. Spending a lot of time on exploring many features may distract employees, such as diverting their attention and energy from completing their job tasks, resulting in decreased job performance. Likewise, when employees engage in deep structure use, they will be likely to encounter more questions or problems arising from using various features. To resolve various problems, they may need to learn new knowledge, compare it with existing knowledge, or integrate different knowledge. This is easier for employees who are more capable of learning and applying new knowledge, such as the strengths and weaknesses of various features. The more features they explore, the more likely they will learn and apply new knowledge in completing job tasks. Consequently, they can leverage these features to enhance their job performance.

REFERENCES:

1. Agarwal, R., and Karahanna, E. 2000. "Time Files When You're Having Fun: Cognitive Absorption and Beliefs about Information Technology Usage," MIS Quarterly (24:4), pp. 665-694.
2. Alavi, M., and Leidner, D. E. 2001. "Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues," MIS Quarterly (25:1), pp. 107-136.
3. Bamberger, P. 2008. "From the Editors beyond Contextualization: Using Context Theories to Narrow the Micro-macro Gap in Management Research," Academy of Management Journal (51:5), pp. 839-846.
4. Benbasat, I., Dexter, A. S., and Todd, P. 1986. "An Experimental Program Investigating Color-enhanced and Graphical Information Presentation: An Integration of the Findings," Communications of the ACM (29:11), pp. 1094-1105.
5. Burton-Jones, A., and Straub, D. W. 2006. "Reconceptualizing System Usage: An Approach and Empirical Test," Information Systems Research (17:3), pp. 228-246.
6. Csikszentmihalyi, M. 1990. Flow: The Psychology of Optimal Experience, New York: Harper and Row.
7. Davis, E. W., and Heidorn, G. E. 1971. "An Algorithm for Optimal Project Scheduling under Multiple Resource Constraints," Management Science (17:2), pp. B803-B816.
8. Enns, H. G., Huff, S. L., and Higgins, C. A. 2003. "CIO Lateral Influence Behaviors: Gaining Peers' Commitment to Strategic Information Systems," MIS Quarterly (27:1), pp. 155-176.
9. Fuller, R. M., and Dennis, A. R. 2009. "Does Fit Matter? The Impact of Task–Technology Fit and Appropriation on Team Performance in Repeated Tasks," Information Systems Research (20:1), pp. 2-17.
10. Goodhue, D. L., and Thompson, R. L. 1995. "Task–Technology Fit and Individual Performance," MIS Quarterly (19:2), pp. 213- 36.
11. Herold, D. M., Fedor, D. B., Caldwell, S., and Liu, Y. 2008. "The Effects of Transformational and Change Leadership on Employees' Commitment to a Change: A Multilevel Study," Journal of Applied Psychology (93:2), pp. 346-357.
12. Hofmann, D. A., Griffin, M. A., and Gavin, M. B. 2000. "The Application of Hierarchical Linear Modeling to Organizational Research," in Multilevel Theory, Research and Methods in Organizations, K. J. Klein, and S. W. Kozlowski (eds.), San Francisco: Jossey-Bass, pp. 467-511.
13. Jasperson, J., Carter, P. E., and Zmud, R. W. 2005. "A Comprehensive Conceptualization of Post-Adoptive Behaviors Associated with Information Technology Enabled Work Systems," MIS Quarterly (29:3), pp. 525-557.
14. Kankanhalli, A., Tan, B. C. Y., and Wei, K. 2005. "Contributing Knowledge to Electronic Knowledge Repositories: An Empirical Investigation," MIS Quarterly (29:1), pp. 113-143.
15. Kettinger, W., Zhang, C., and Marchand, D. 2011. "CIO and Business Executive Leadership Approaches to Establishing Company- Wide Information Orientation," MIS Quarterly Executive (10:4), pp. 157-174.
16. Ko, D.-G., and Dennis, A. R. 2011. "Profiting from Knowledge Management? The Impact of Time and Experience," Information Systems Research (22:1), pp. 134-152.
17. Mitchell, T. R. 1997. "Matching Motivational Strategies with Organizational Contexts," Research in Organizational Behavior (19), pp. 57-149.
18. Naveh-Benjamin, M., Guez, J., and Sorek, S. 2007. "The Effects of Divided Attention on Encoding Processes in Memory: Mapping the Locus of Interference," Canadian Journal of Experimental Psychology (61:1), pp. 1-12.
19. Piccolo, R., and Colquitt, J. 2006. "Transformational Leadership and Job Behaviors: The Mediating Role of Core Job Characteristics," Academy of Management Journal (49:2), pp. 327-340.
20. Trevino, L. K., and Webster, J. 1992. "Flow in Computer-Mediated Communication Electronic Mail and Voice Mail Evaluation and Impacts," Communication Research (19:5), pp. 539-573.
21. Vallerand, R. J. 1997. "Toward a Hierarchical Model of Intrinsic and Extrinsic Motivation," Advances in Experimental Social Psychology (29), pp. 271-360.
22. Vessey, I. 1991. "Cognitive Fit: A Theory-Based Analysis of the Graphs Versus Tables Literature," Decision Sciences (22:2), pp.
23. 219-240.
24. Venkatesh, V., Bala, H., and Sykes, T. A. 2010. "Impacts of Information and Communication Technology Implementations on Employees' Jobs in India: A Multi-Method Longitudinal Field Study," Production and Operations Management (19:5), pp.591-613.