

Survey role of knowledge sharing (KS) on Intellectual capital management of employeesMajid Amouzad Khalili¹, Seyyed Mohsen Abbarin²¹ Master of public administration, Payam noor university, Iran² Master of Economics, Payamnoor University, IranEmail: Ayandehsaz.40@gmail.com

Abstract: Knowledge sharing is of vital importance to organizations, enabling them to develop skills and competences, increase value, and sustain their competitive advantage. Knowledge is a firm's most valuable resource because it embodies intangible assets, routines, and creative processes that are difficult to imitate. Thus in this study we have investigated the role of Knowledge sharing as facilitator Intellectual capital management of employees in the organizations. This study mainly probes Knowledge sharing as a tool which is able to manage, store, and transmit structural knowledge. It can support us in our efforts to make the knowledge stored in the human brain or in documents available to all employees of an organization. Also we present Intellectual capital management for convenient knowledge sharing as a successful case studies in management.

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1. Introduction

Due to the knowledge management (KM) revolution and advancements of the Internet, the value of knowledge assets has been greatly enhanced. Many companies are building knowledge management system (KMS) in order to manage organizational learning and business knowhow. The main purpose of such a policy is to help knowledge workers to create important business knowledge, to organize it, and to make it available whenever and wherever it is needed in the companies (O'Brien & Marakas, 2006).

The advent of internet-related information technology such as intranets, extranets, and intelligent agents has contributed significantly to the increased interest in knowledge management: Organizations are beginning to connect themselves in ways that they hadn't planned for or expected... Groups, departments, and teams suddenly find themselves being able to share information that they hadn't been able to share before.

The highest value of IT to KM is in allowing the expansion and universalization of the scope of knowledge and in increasing the speed of transferability. Additionally using IT, we are able to retrieve and store knowledge in individual or groups, which allows this knowledge to be shared with other divisions in the same organization or business partners in the world. Furthermore, IT contributes to the integration of knowledge or even to the

stimulation of new knowledge (Davenport & Prusak, 1998).

Today, the competitiveness of the firm relies less on traditional factors (capital, land, and labor) than was true in the past. Knowledge now appears to be replacing these traditional factors. Moreover, knowledge will become not just a source of competitive advantage but the only source of it (P.F. Drucker, 1993).

However, many companies have faced various kinds of difficulties in implementing KMS. First, if knowledge is merely accumulated in workers' brains, there is no way of recording it systematically.

Second, even though knowledge is recorded and recorded in documents, it is very complicated to search for, retrieve, or review it, a problem which erects barriers to the diffusion of knowledge. Thus, In past times, even though managers knew how important KM was, it was very difficult to implement it successfully (Bradley, Paul, & Seeman, 2006).

Within KM, maturity and the use of information technology (IT) development facilitates new methods and applications (such as groupware, online databases, intranets, etc.) ; It allows firms to deliver products and services better in quality and thus to achieve competitive advantage and profit (P.H.J. Hendriks, 1999, C.W. Holsapple, 2002, G.S. Lynn, R.R. Reilly, 2000, J.B. Quinn, J.J. Baruch 1999).

Thus, the growth of KM has been closely tied to information and communication technology (Chumer, Hull, & Prichard, 2000). Therefore, it is found that IT plays a major role in the implementation of KMS (Hislop, 2002). Nevertheless, few studies explore the role and effect of information technologies in the KMS. Hence, the purpose of this study is to investigate the role and effect of IT in sharing knowledge in the KMS as a factor of success in knowledge management project, and introducing new and effective method for it.

To deal with this issue more effectively, we focus on a key question:

- How can information technology facilitate knowledge sharing in organization?

The research indicates an important issue of KM. that, IT is an indispensable enabler of KM. while IT-enabled knowledge management goes beyond mere automation to play an 'informating' role in organizations by facilitating knowledge sharing.

2. Definitions (Knowledge, Knowledge management and Intellectual capital management)

2.1. Knowledge

Knowledge, learning and cognition are classical terms that have been rediscovered in the context of the information technology and knowledge management revolutions. Beckman (1998) compiled a number of useful and relevant definitions of knowledge and organizational knowledge:

- Knowledge is organized information applicable to problem solving (Woolf, 1990).
- Knowledge is information that has been organized and analyzed to make it understandable and applicable to problem solving or decision-making (Turban, 1992).
- Knowledge encompasses the implicit and explicit restrictions placed upon objects (entities), operations, and relationships along with general and specific heuristics and inference procedures involved in the situation being modeled (Sowa, 1984).
- Knowledge consists of truths and beliefs, perspectives and concepts, judgments and expectations, methodologies and knowhow (Wiig, 1993).
- Knowledge is the whole set of insights, experiences, and procedures which are considered correct and true and which therefore guide the thoughts, behaviors, and communication of people (van der Spek and Spijkervet, 1997).

- Knowledge is reasoning about information to actively guide task execution, problem-solving, and decision-making in order to perform, learn, and teach (Beckman, 1997).

- Organizational knowledge is the collective sum of human-centered assets, intellectual property assets, infrastructure assets, and market assets (Brooking, 1996).

- Organizational knowledge is processed information embedded in routines and processes which enable action. It is also knowledge captured by the organization's systems, processes, products, rules, and culture (Myers, 1996).

A number of other authors have also proposed knowledge typologies. Nonaka and Takeuchi (1995) have divided knowledge accessibility into two categories: tacit and explicit. Beckman (1998) identifies three stages of accessibility: tacit, implicit, and explicit.

- Tacit (human mind, organization)—accessible indirectly only with difficulty through knowledge elicitation and observation of behavior.

- Implicit (human mind, organization)—accessible through querying and discussion, but informal knowledge must first be located and then communicated.

- Explicit (document, computer)—readily accessible, as well as documented into formal knowledge sources that are often well-organized.

2.2. Knowledge management

Knowledge management is defined as: "the systematic, explicit, and deliberate building, renewal, and application of knowledge to maximize an enterprise's knowledge-related effectiveness and returns from its knowledge assets" (Wiig, 1993).

Sveiby (1998) defines knowledge management is 'the art of creating value from an organization's intangible assets. Moreover, he identifies two main tracks of knowledge management activities: one track focuses on knowledge management as the management of information and the other track as the management of people.

Other researches show; Linking the individual perspective of knowledge to the organizational level, organizational knowledge creation theory is concerned with the processes which make available individual knowledge to the organizational knowledge system (Nonaka and von Krogh, 2009). This knowledge processes consist of several steps, starting with the creation of knowledge

followed by the use of knowledge, the transfer and sharing of knowledge, and the storage and retrieval for further use (Seufert et al. 2004). A crucial and difficult step in the organizational knowledge process is the conversion of tacit knowledge into explicit knowledge. As we explain before; Tacit (implicit) knowledge is unarticulated and rooted in experience and intuition and tied to the senses and explicit knowledge is uttered, can be formulated in sentences, has a universal character and is accessible through consciousness (Nonaka and von Krogh, 2009). Only explicit knowledge can be integrated in the organizational knowledge base. To support the transformation of tacit to explicit knowledge and to facilitate the remaining steps of the organizational knowledge process, the discipline of knowledge management has evolved since the early 1990s (Nonaka 1999; Spender 1996). Knowledge management (KM) involves all practices of an organization to create, store, use and share knowledge (Probst et al. 1998).

3. Literature review

Knowledge sharing is the behavior of an individual dispersing his or her obtained knowledge and information to other colleagues within an organization (Ryu, Ho, & Han, 2003).

Knowledge sharing involves a process of communication whereby two or more parties are involved in the transfer of knowledge. Hence, knowledge sharing is defined as a process of communication between two or more participants involving the provision and acquisition of knowledge (Usoro, Sharratt, Tsui, & Shekhar, 2007).

Recently, researchers have highlighted the various factors that affect an individual's willingness to share knowledge, such as information and communication technologies, costs and benefits, incentive systems, extrinsic and intrinsic motivation, social capital, social and personal cognition, organization climate, and management championship (Alavi & Leidner 1999; Bock & Kim, 2002; Bock et al., 2005; Chiu et al., 2006; Hsu et al., 2007; Kankanhalli et al., 2005; Koh & Kim, 2004; Orlikowski 1996; Purvis et al., 2001; Wasko & Faraj, 2005). Therefore, we could presume that individuals' behavior for knowledge sharing is affected by the contextual factors and personal perceptions of the knowledge sharing in which they partake in. Social cognitive theory (SCT) (Bandura, 1982, 1986, 1997)

is a widely accepted model for validating individual behavior (Compeau & Higgins, 1995).

The norm of reciprocity and trust are treated as two major contextual factors influencing personal perceptions and a member's behavior. Knowledge sharing self-efficacy, perceived relative advantage, and compatibility are seen as predictors of personal factors since they are all considered as the main influences shaping users' behavior (Bandura, 1982, 1986, 1997; Igbaria & Iivari, 1995; Rogers, 2003; Sia, Teo, Tan, & Wei, 2004; Verhoef & Langerak, 2001).

Having looked at the purpose and resources for knowledge sharing, we now turn to the process of knowledge sharing by looking at the formal and informal settings in which knowledge sharing occurs and looking at the content of knowledge shared. Bartol and Srivastava (2002) define knowledge sharing as the action by which employees disseminate relevant information to others across the organization. According to Bock and Kim (2002), knowledge sharing is the most important part of knowledge management (KM). Apart from Bartol and Srivastava's operational definition a more social definition suggested by Helmstadter (2003, p. 257) characterizes knowledge sharing in terms of "voluntary interactions between human actors through a framework of shared institutions, including ethical norms, behavioral regularities and so on.

In general, social psychologists consider that knowledge sharing motivation has two complementary aspects: egoistic and altruistic (E.L. Deci, 1975). The first was based on economic and social exchange theory. It includes economic rewards empirically; Bock and Kim combined the two theories with social cognitive theory to propose expected rewards, expected social associations and expected contribution as. The major determinants of an individual's knowledge sharing attitudes.

Moreover, Bock et al. applied these two theories to produce two antecedents of sharing attitude: anticipated extrinsic rewards and anticipated reciprocal relationships. The second, altruistic motive, assumes that an individual is willing to increase the welfare of others and has no expectation of any personal returns. This resembles organization citizenship behavior (OCB), which is discretionary individual behavior that is not directly or explicitly recognized by a formal reward system, and promotes the effective functioning of the organization (C.A. Smith, D.W. Organ, 1983).

In addition, according to researches; Knowledge sharing requires collaboration between the users of knowledge; namely the collaborators. This task cannot be accomplished simply by storing knowledge in the repository. It also requires a mechanism, which helps people find the collaborators with relevant knowledge. Collaboration over the Internet communities has characterized itself by heavily relying on interaction among the collaborators (Bistro m, 2005; Eikemeier and Lechner, 2003). Collaborators can be any virtual users who interact to achieve the goals of resources discovery, access, knowledge sharing, group communication and discussion. The collaboration for knowledge sharing should be enacted without spatial and temporal limitations. In addition, it should take place over medium such as the Internet and therefore beyond the geographical boundaries.

3.2. Role of knowledge sharing on Intellectual capital management of employees

The means by which knowledge is shared within organizations and the factors that facilitate knowledge sharing/transfer are core issues in knowledge management. Advances in technology have facilitated the recent growth in systems designed for managing organizational knowledge, IT is comprehensively utilized by members in organization, IT is comprehensively constructed in organization, top management is capable of applying IT, members in organization apply IT to search and use current organizational knowledge, and members in an organization apply IT to create new knowledge (Peter J. Sher & Vivid C. Lee, 2003)

The Internet, one of the IT tools, gives rise to virtual communities that aim at facilitating collaboration by providing an environment for mutual sharing and interaction. A collaborative process in such an environment involves intensive online knowledge discovery and knowledge sharing between collaborators, such as knowledge consumers and knowledge contributors. (Stephen J.H. Yang, Irene Y.L. Chen, 2007)

Butler et al. (2007) indicate that effective, i.e., successful, KMS are constituted by highly accessible and wellintegrated webbased Intranet technologies that facilitate knowledge sharing on tasks/processes and/or generic/infrastructures among general and/or specific communities of practice. Benbya (2006, p. 4) also argues that effective knowledge sharing technologies (i.e., core IT

artefacts) are integrative, highly accessible, and searchable, because “integration is a strong predictor of KMS effectiveness, the ability of a system to integrate knowledge from a variety of sources and present it in a manner that enables easy access and reuse is associated with both knowledge quality and knowledge usage.” IT artefacts, such as email, datamining and learning tools, are important, but noncore, as they are generally not wellintegrated and do not provide a focal point or node for effective knowledge sharing (cf. Benbya, 2006) then we need a system can manage knowledge integrity.

In the process of KM, the absorption, creation, arrangement, storage, transfer and diffusion of knowledge are all dependent on assistance provided by IT. Khandelwal and Gottschalk (2003) pointed out that the application of IT to the support of KM apparently influences the results of knowledge collaboration within the organization. There are some example of using information technology for implementing KMS and sharing knowledge in organization:

HewlettPackard (HP), a company competing in the market of computers, peripheral equipment and other electronic equipment developed CONNEX (<http://www.carrozza.com/connex>), a PeopleFinderKMS (T Carrozza, phone interview and followup email with developer of CONNEX at HP Labs, September 16, 1999). The goal of the project was to build a network of experts, available online, to provide a guide to human knowledge within HP. CONNEX consists of a centralized database of user knowledge profiles, with a Web browser interface that allows users to find profiles in multiple ways. User's profiles contain a summary of their knowledge and skills, affiliations, education and interests, as well as contact information. CONNEX users can easily find experts within HP by searching the database by any combination of profile fields or by browsing through the different areas of knowledge, geographies and/or names.

To support a large user base with high volume of transactions, CONNEX was built using Sybase database and Verity's Topic search engine, on an HP platform. The National Security Agency (NSA) has also taken a step towards the implementation of a system to locate experts for using their knowledge in critical situations (A. Wright, W. Spencer, 1999). The NSA is part of the Intelligence Community, and their two missions are Foreign Signals Intelligence and National Information System Security. The goal of

the implementation of the knowledge and skills management system (KSMS), a PeopleFinder KMS, is to catalog the talent pool within the agency to allow the precise identification of knowledge and skills, and to take advantage of information technology. The NSA went through the development of the system by applying database engineering in order to solve the complexities of implementing an adequate, workable and successful KMS. They also divided the execution of this project into several Work Tasks and developed knowledge taxonomy applicable to their workforce.

4. Methodology

Research methods can be generally divided into two types: quantitative research and qualitative research. The main objective of this research is to explore the roles and effects of IT on successful knowledge sharing on knowledge management project, (Berg, 2000; Hammersley, 1996). In that case, the characteristics of the qualitative research method make it better suited to be applied here. Therefore, there is a design phase involved, which possesses distinct methodology.

The phase involved voluminous review of the literature and indepth interviews with senior managers in roads management center, both of which were aimed at collecting data. Interviews are one of the most extensively used methods of data collection (Bryman & Burgess, 1999). The individual indepth interviews conducted in this study are of a faceto face, which is one of the most common approaches in qualitative research. This type of interview involves asking a number of predetermined questions and special topics. Under such circumstances, respondents are able to determine the direction and content of the interview within a broader framework provided by the interviewer. After the interview at each manager had been completed, the results were assembled, transcribed and emailed to the respondents for their review and approval in order to prevent any misinterpretations. This process is expected to provide this study with a richer and more holistic appreciation of the problems regarding KMS.

There is a list of questions in interviews?

- What is the different between new technology and previous technology for knowledge sharing in your organization?
- What are the advantages of wiki technology?
- How can this new technology help client in better knowledge sharing in organization?

- Is there any limitation in using of new technology?
- Is it critical for your organization to get appropriate knowledge sharing?

5. Case Study

The roads management center, in Ministry of Road & Transportation of Iran, has implemented Knowledge Management System by focusing on creating, gathering, organizing and disseminating an organization's knowledge as opposed to 'information' or 'data'. The development of KMS, in this center, demands that knowledge be obtained, produced, shared, regulated and leveraged by a steady conglomeration of individuals, processes, information technology applications and a knowledge sharing organizational culture. For getting this target, they use new technology to make appropriate condition for fascinating knowledge sharing in organization because the Ministry of Road & Transportation had been used the technology for knowledge sharing in knowledge management project already and it was not proper for this goal. New technology is Wiki technology, as one of the advantages of web.۲, has many good points in sharing knowledge such as in customer/client collaboration, documentation, and developing an online community. The information is often added to wiki but not deleted when no longer relevant or accurate or updated when changed. Wiki offers an excellent way to manage documents and knowledge integrity.

In wiki, foremost is the fact that documents are edited in a very visible way, which adds accountability and Members of organization have to justify the changes because everybody can see it. Also, each of members can edit or add new information to other knowledge or information that has been written by other members, previous technology did not have this feature and it was the main weakness of that. This faint was the reason of employee's discontent.

Wiki's inherent version control means organization never have to worry about losing a document again. The use of wiki can also save time by letting organization and its clients share documents for collaborative editing and quicker approval. A technical advantage of wiki over other document management tools is that there are plenty of good open source versions available at little or no cost. Plus, wiki is usually extensible, so organization can customize them to its needs and doesn't need an

expert administrator or extra hardware resources. Despite wiki's benefits, the success of wiki in KMS depends on how dedicated the participants are in using the wiki and checking in regularly and wiki platforms have a bit of a learning curve. With training members in organization the usage of wiki reveals obviously. The advantages of wiki technology help roads management center for making proper condition between clients to share their knowledge more than before.

6. Conclusion

In this paper, we have analyzed the role of the information technology as facilitator of knowledge sharing in organization. We considered IT as a tool which is able to manage, store, and transmit structural knowledge is a critical solution for implementing impressive knowledge management. Also we realized the type of the It's tools are so important in quality of knowledge sharing. And we proposed new technology for better knowledge sharing that it is wiki technology. We understood wiki has more benefits than the rest of technologies that had been used for knowledge sharing in organization. The roads management center, as a successful case, with using the wiki technology has made suitable condition for their clients in knowledge sharing.

7. Limitation

Every researches has limitations, in our research the main limitation was making an appointment with senior managers of roads management center for interview, because they have crucial roles in this center and most of the time, they are in different meeting about business issues.

8. Recommendation

Our recommendations for other organizations in implementing a successful knowledge management project is that before any actions in this case first realize their organization needs and select an appropriate information technology as fascinating way in knowledge sharing. Wiki is tested as proper technology among other as a tool for sharing knowledge.

9. For future researches

- Identification & Assessment impressive cultural factors in using introduced technology on sharing knowledge in organization

Corresponding Author:

Majid AmouzadKhalili

Master of public administration, Payam noor university, Iran

Email: Ayandehsaz.40@gmail.com

10. References

- [1] Alavi, M., & Leidner, D. E. (1999). Knowledge management systems: Issues challenges and benefits. *Communication of Association for Information Systems*, 1, 1–28
- [2] Bandura, A. (2002). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: PrenticeHall.
- [3] Bandura, A. (2008). *Selfefficacy: The exercise of control*. New York: W.H. Freeman and Company.
- [4] Bartol, K. M., & Srivastava, A. (2002). Encouraging knowledge sharing: The role of organizational reward systems. *Journal of Leadership and Organizational Studies*, 9(1), 64–76.
- [5] Beckman, T., 1998. Knowledge management: a technical review. GWU Working Paper.
- [6] Beckman, T., 1997. AA methodology for knowledge management. International Association of Science and Technology for Development (IASTED) AI and Soft Computing Conference. Banff, Canada.
- [7] Benbya, H., 2006. Mechanisms for Knowledge Management Systems effectiveness: empirical evidence from the silicon valley. In: *Proceedings of the Academy of Management Conference*, paper 1–6. Berg, B. L. (2000). *Qualitative Research Methods for the Social Science* Boston: Allyn and Bacon.
- [8] Bistrom, J., 2005. Peertopeer networks as collaborative learning environments. In: *Paper Presented at HUT T110.551 Seminar on Internetworking*.
- [9] Bock, G. W., & Kim, R. G. (2002). Breaking the myths of rewards: An exploratory study of attitudes about knowledge sharing. *Information Resources Management Journal*, 15 (214–21).
- [10] Bock, G. W., Zmud, R. W., Kim, Y. G., & Lee, J. N. (2005). Behavioral intention information in knowledge sharing: Examining the roles of extrinsic motivators, socialpsychological forces, and organizational climate. *MIS Quarterly*, 29(1), 87–111.
- [11] Brooking, A., 1996. *Introduction to intellectual capital*. The Knowledge Broker Ltd., Cambridge, England. Bryman, A., & Burgess, R. G. (1999). *Qualitative Research*. Thousand Oaks, CA: Sage Publication.

- [12] C.A. Smith, D.W. Organ, J.P. Near,(2010), Organizational citizenship behavior: Its nature and antecedents, *Journal of Applied Psychology* 68, pp. 653–663
- [13] Chiu, C. M., Hsu, M. H., & Wang, Eric T. G. (2006). Understanding knowledge sharing in virtual communities: An integration of social capital and social cognitive theories. *Decision Support Systems*, 42,1872–1888.
- [14] Chumer, M., Hull, R., & Prichard, C. (2000). Introduction: Situating discussions about “Knowledge”. In C. Prichard, R. Hull, M. Chumer, & H. Willmott (Eds.), *Managing knowledge: Critical investigations of work and learning*. Basingstoke: MacMillan.
- [15] Compeau, D. R., & Higgins, C. A. (1995). Computer selfefficacy development of a measure and initial test. *MIS Quarterly*, 19(2), 189–211.
- [16] C.W. Holsapple, K.D. Joshi,2010, Knowledge manipulation activities: results of a Delphi study, *Information and Management* 39 (6), pp. 477–490.
- [17] Davenport, T. H., & Prusak, L. (2011). *Working Knowledge: How Organizations Manage What They Know*. Boston: Harvard Business School Press.
- [18] Eikemeier, C., Lechner, U., 2003. Introducing domain specific adhoc collaboration: the peertopeer tool iKnow. In: *Proceedings of the 12 th IEEE International Workshops on Enabling Technologies: Infrastructure for Collaborative Enterprises (WETICE’03)*.
- [19] G.S. Lynn, R.R. Reilly, A.E. Akgun, (2011). Knowledge management in new product teams: practices and outcomes, *IEEE Transactions on Engineering Management* 47 ,pp. 221–231.
- [20] Helmstadter, E. (2003). The institutional economics of knowledge sharing: Basic issues. In E. Helmstadter (Ed.), *The economics of knowledge sharing: A new institutional approach* (pp. 11–38).
- [21] Hsu, M. H., Ju, T.L., Yen, C.H., & Chang, C. M. (2007). Knowledge sharing behavior in virtual communities: The relationship between trust, selfefficacy, and outcome expectations. *International Journal of Human–Computer Studies*,65, 153–169.
- [22] Kankanhalli, A., Tan, B. C. Y., & Wei, K. K. (2005). Contributing knowledge to electronic knowledge repositories: An empirical investigation. *MIS Quarterly*, 29(1), 113–143.
- [23] Koh, J., & Kim, Y. G. (2004). Knowledge sharing in virtual communities: An ebusiness perspective. *Expert Systems with Applications*, 26(2), 155–166.
- [24] Nonaka, I., & Takeuchi, H. (1995). *The knowledgecreating company*. New York: Oxford University Press.
- [25] Nonaka, I., von Krogh, G., (2009). Tacit knowledge and knowledge conversion: controversy and advancement in organizational knowledge creation theory. *Organization Science* 20 (3), 635–652.
- [26] O’Brien, J.A., & Marakas,(2006). *Management Information Systems (7nd ed.)*. McGrawHill, International.
- [27] Orlikowski, W.J. (1996). Learning from notes: Organizational issues in groupware implementation. In R. Kling (Ed.), *Computerization and controversy* (pp. 173–189). New York: Academic Press.
- [28] Ryu, S., Ho, S. H., & Han, I. (2003). Knowledge sharing behavior of physicians in hospitals. *Expert Systems with Applications*, 25(1), 113–122.
- [29] Seufert, A., Back, A., von Krogh, G., Enkel, E., 2004. Knowledge networks building blocks. In: von Krogh, G., Back, A., Seufert, A., Enkel, E. (Eds.), *Putting Knowledge Networks into Action. A Methodology for Developing and Maintaining Knowledge Networks*. Springer, Berlin, pp. 17–96.
- [30] Sia, C. L., Teo, H. H., Tan, B. C. Y., & Wei, K. K. (2004). Effects of environmental uncertainty on organizational intention to adopt distributed work arrangements. *IEEE Transaction on Engineering Management*, 51(3), 253–267.
- [31] Verhoef, P. C., & Langerak, F. (2009). Possible determinants of consumers’ adoption of electronic grocery shopping in the Netherlands. *Journal of Retailing and Consumer Services*, 8(5), 275–285.

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