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Abstract

The knowledge-intensive nature of healthcare enables health literacy playing a key role on the quality of healthcare. This study aims at understanding the factors that affect the effectiveness of health knowledge transfer in online healthcare communities. The findings can be used as guidelines for the development and management of the online healthcare communities to improve user experience, and to provide a means to disseminate healthcare information, to enhance healthcare education, and to facilitate a wide range of interactions between patients and healthcare delivery system.

Research Problem:

➤ What are the factors that affect the effectiveness of health knowledge transfer in online healthcare communities?

Research Objectives:

➤ To identify the factors that may affect the knowledge transfer in online healthcare communities.

➤ To formalize and test hypotheses regarding to factors that affect the effectiveness of knowledge transfer in online healthcare communities.

➤ To provide suggestions on improving public health literacy through the online healthcare communities.

1. Introduction

The past decade has witnessed rapidly developed and tremendous growth in health-related social media services, such as patient blogs, social websites, and online communities [1]. One of the most important reason is that Internet-based healthcare service can be used by both healthcare providers and receivers for information dissemination/acquisition and/or knowledge exchange [2, 3]. Studies [4-6] show that 60% to 80% American adults with Internet access reported using online healthcare services to looking for advices or information of their health conditions, and the number is increasing every year. The Internet-based healthcare services appear to be a means to disseminate healthcare information, enhance communication and education, and facilitate a wide range of interactions between patients and healthcare delivery system [4]. Especially, when more and more healthcare providers realized patients are central to healthcare delivery [7], the using of online healthcare communities becomes an important channel for improving health literacy and health care. This study aims at understanding the factors that affect the effectiveness of health knowledge transfer in online healthcare communities. The findings can be used as guidelines for the development and management of the online healthcare communities to improve the user experience of obtaining knowledge.

2. Literature review

As a composite term to describe a range of outcomes to health education and communication activities [8], health literacy [9] has been used in health literature very often in past two decades. Health Literacy [10] refers to the ability to obtain, read, understand and use healthcare information to make appropriate health decisions and follow instructions for treatment. Low health literacy compromises patient safety, quality healthcare, and desired health outcomes. This is because low health literacy is associated with decreased knowledge of one's medical condition, failed to follow treatment plans, poor self-care behaviors, compromised physical and mental health, greater risk of hospitalization, and increased mortality. E-Health literacy [10, 11] describes the ability of an individual to search for, successfully access, comprehend, and appraise desired health information from electronic sources and to then use such information to attempt to address a particular health problem. Researchers and practitioners are grappling with evidence that reading ability of the average adults falls well below the reading level of educational materials, directives, forms, and informed-consent documents commonly used in the health field [9]. It is a primary threat to effective communication and efficacious care between the healthcare providers and patients.

A range of literature aimed at public health education have been found on eHealth literacy [10, 12, 13], nursing education [14, 15], vocabulary domain and resources [16-18], knowledge repositories and education [19], [20] and other education programs [21, 22]. Norman et al. [23] developed a CoNEKTR model by deploying complexity science, design thinking, social learning theories, systems thinking and eHealth technologies together to enhance capabilities of knowledge generation, learning and action in health professionals. These studies focus on methods and tools on health literacy on relatively formal study form with the purpose of accessing information from education institution or tools or system for education purpose. However, people don't usually have the sense to get official health education on purpose unless they have an urgent need, for example awareness of certain disease, or taking health care as a career. On the other hand, those educational programs and training opportunities are not always available for everyone. Therefore, can online healthcare community be an appropriate and fair channel to improve health education will be a question that needs to be answered through this study.

Online communities, also called Internet groups and collectives [24], was known as the platform where dispersed groups of computer users share similar interests. With the term online community being loosely used to refer to various types of computer-mediated human interaction, fairly rich literature on online communities has been generated. The impact of online communities permeates almost every aspect of our daily life, from the economy and marketing to the social and education [25, 26]. Most individuals participate in online communities in specific domain depending on their interest or need. For example, people who have a certain type of disease tend to seek help from online health communities/forums [3]. Online healthcare community is a professional community [26] that members can share healthcare knowledge and experience. The Social Cognitive Theory believes that people who come to an online community not only seek information and knowledge, but also want to meet people, to look for support, friendship and a sense of belongingness [26, 27]. It argues that a person's behavior is partially shaped and controlled by the influences of social network and the person's cognition [26]. Previous studies interested in understanding the motivations prompting people of sharing knowledge or participating in virtual communities have shown the importance of social influences. In this light, we attempt to understand what factors affect the effectiveness of knowledge transfer in online healthcare communities.

Differ from most existing studies which are focusing on the motivations of users to share their knowledge [28-30], we are focusing on how the users obtain knowledge from online healthcare communities. We argue that the knowledge sharing is the first and a very important step of knowledge transfer. However, without acceptance and assimilation by the receivers, knowledge is not necessarily transferred. The absorptive capacity refers to the degree to which a user understands new information and knowledge, and absorbs them [31]. In this paper, we consider the absorptive capability as an important factor since it determines how fast a person learns knowledge in the online healthcare communities, and it is also part of the health literacy [8]. We suggest that the duration of the disease may affect the impact of absorptive capacity as a moderator. Our research question on what are the factors that affect the effectiveness of health knowledge transfer in online healthcare communities, also investigate the capability of user obtaining knowledge and transforming knowledge to usable skills.

3. Theoretical model

3.1. Theory building

Knowledge transfer refers to the ability to transfer knowledge from one unit to another. The benefit of knowledge transfer has been found to contribute to the organizational performance of firms in both manufacturing [32] and service sectors [33]. The ability of knowledge transfer has been seen as a basis for competitive advantage [34]. As such, a rich set of literature has focused on studying knowledge transfer within organization or among organizations within strategic alliance [34-38]. However, even though knowledge transfer is often found laborious, time consuming and difficult, extant research remains anchored on a basic conception of transferring knowledge as "a one-shot, costless and instantaneous act that aims to reproduce precisely a quantum of knowledge that is known perfectly at its source" [39]. As a consequence, one key issue in the process of knowledge transfer has negligible systematic attention, being conceiving of knowledge transfer as a process other than an act. Previous studies on knowledge transfer mostly investigated it from the perspective of motivation and intention on knowledge sharing. However, knowledge transfer process involves two parties - the sender and the receiver, and two stages - knowledge sharing and knowledge gain. Knowledge sharing focuses on the intention of the senders to provide knowledge, while the knowledge gain refers to

the ability of the receivers to understand and digest knowledge.

Knowledge sharing has long been studied from multiple perspectives, including Technology Acceptance Model (TAM) [40-42], Social Capital and Social Cognitive Theory (SCT) [26, 28, 43] and Theory of Reasoned Action (TRA) [44]. Many studies have confirmed that TAM and SCT are reliable to explain knowledge sharing behavior in/among organizations. Some studies have integrated multiple theories such as TAM, Social Capital and SCT to explore and explain knowledge sharing behavior [44, 45]. In this study, we also believe the key factors that affect the knowledge sharing behavior can be explained by perceived ease of use and perceived usefulness from the TAM, and outcome expectations, trust and sense of belonging from the SCT. However, the knowledge sharing is the first step of knowledge transfer. By explaining the motivation and intention of knowledge sharing, we have learned why participants are willing to share. Next step need to examine how the shared knowledge can be transferred to the receivers.

In the knowledge-based view of the competitive advantage, the survival and prosperity of social actors essentially lie in their capacity to acquire information and create knowledge [46]. Absorptive capacity has been examined from various angles, such as an actor's receptivity to technological changes, the ability to use external knowledge, and the capacity to learn and solve problems [47, 48]. Studies show that absorptive capacity enables firms to acquire, analyze, process, interpret, and understand stocks of knowledge [49]. We believe that absorptive capacity will affect the effectiveness of obtaining knowledge of the receiver of knowledge transfer process. Additionally, the duration of a member being diagnosed to have a certain disease may affect the impact of absorptive capacity on knowledge gain. If a patient lived with a health condition with a relative long time span, he/she may get used to live with such condition, and thereby, lose interest and attention to learn more knowledge in this specific area.

Knowledge transfer considers a dynamic process of knowledge conveying from the sender to the receiver. Besides of the two nodes - knowledge sharing of the sender and knowledge gain of the receiver, the path (social interaction ties) between those two nodes will also affect the results. The effective of knowledge transfer depends to some extent on the strength of the tie between them [50]. The social interaction ties are reflected in the ease of communication and on the intimacy of the overall relationship between knowledge sender and receiver [39].

3.2. Conceptual model

The theoretical constructs involved in the study include: perceived ease of use [51], perceived usefulness [51], outcome expectations [26], trust [52], sense of belonging [52], knowledge sharing [53], social interaction ties [54], absorptive capability [31], and knowledge transfer [55].

Perceived ease of use: The degree to which a member believes that using the online healthcare community is free from effort [51]. In this study, the effectiveness of knowledge transfer of the online healthcare community is impacted by the members' perceive of the convenience and facility of using the online community.

Perceived usefulness: The degree to which a member believes that using the online community enhances their job performance [51]. In this study, the members of the online healthcare community are likely and willing to use the community to share and learn knowledge if they believe the knowledge that they obtained can help them either for the job performance or for other aspects of their lives.

Outcome expectations: The degree to which an individual's belief that task accomplishment leads to a possible outcome [26]. In this study, the members' expectations or judgments on the likely consequences that his/her knowledge sharing behavior in the online healthcare community will produce to himself or herself, is related to their willingness of knowledge sharing, which affects the effectiveness of knowledge transfer.

Trust: The degree to which a member believes that the community is honest and reliable, acting in their best interest, and knowledgeable and competent [52]. Trust has been viewed as a set of specific beliefs dealing primarily with the integrity, benevolence, and competent. In this study, the trust amongst members will enhance the group performance on knowledge sharing and transfer.

Sense of belonging: The degree to which a member feels a sense of belonging in a community [52]. In this study, the effectiveness of online healthcare community knowledge transfer is associated with the members' sense of belonging in the community.

Knowledge sharing: An instance of a response to an online request for assistance whereby a member contributes what they know [53]. In this study, the knowledge sharing is associated with all the aforementioned constructs.

Social interaction ties: The network ties that work as channels for information and resource flows [54]. The tie strength represents strength of relationship, and the amount of time spent, and communication frequency among members of the online healthcare

community [26]. In this study, the social interaction ties show the relationships amongst members.

Absorptive capability: The degree to which a member understands new information and knowledge, and absorbs them [31]. The absorptive capacity in this study refers to how the members of the online healthcare community can understand the terminologies and the knowledge that others shared in the community. It involves the process of acquire, assimilate, transform and exploit knowledge to produce a dynamic capability.

Duration of disease: The duration in days that a member has been diagnosed to have the disease.

Knowledge transfer: The process how knowledge acquired in one situation applies to another [55]. In this study, the knowledge transfer refers to how the members of the online healthcare community deliver and obtain their healthcare knowledge from the online healthcare community.

Hypothesis 1: The members' perceived ease of use of the online healthcare community has a positive relationship with knowledge sharing in the community.

Hypothesis 2: The members' perceived usefulness of the online healthcare community has a positive relationship with knowledge sharing in the community.

Hypothesis 3: The members' outcome expectations of sharing knowledge on the online healthcare

community have a positive relationship with knowledge sharing in the community.

Hypotheses 4: The members' trust of the online healthcare community and other members has a positive relationship with knowledge sharing in the community.

Hypothesis 5: The members' sense of belonging of the online healthcare community has a positive relationship with knowledge sharing in the community.

Hypothesis 6: The knowledge sharing capacity in the online healthcare community has a positive relationship with the effectiveness of knowledge transfer in the community.

Hypothesis 7: The social interaction ties strength has a positive relationship with the effectiveness of knowledge transfer in the online healthcare community.

Hypothesis 8: The members' absorptive capability of new knowledge has a positive relationship with the effectiveness of knowledge transfer in the online healthcare community.

Hypothesis 9: The duration of disease of a member may decrease the impact of the member's absorptive capability on effectiveness of knowledge transfer in the online healthcare community.

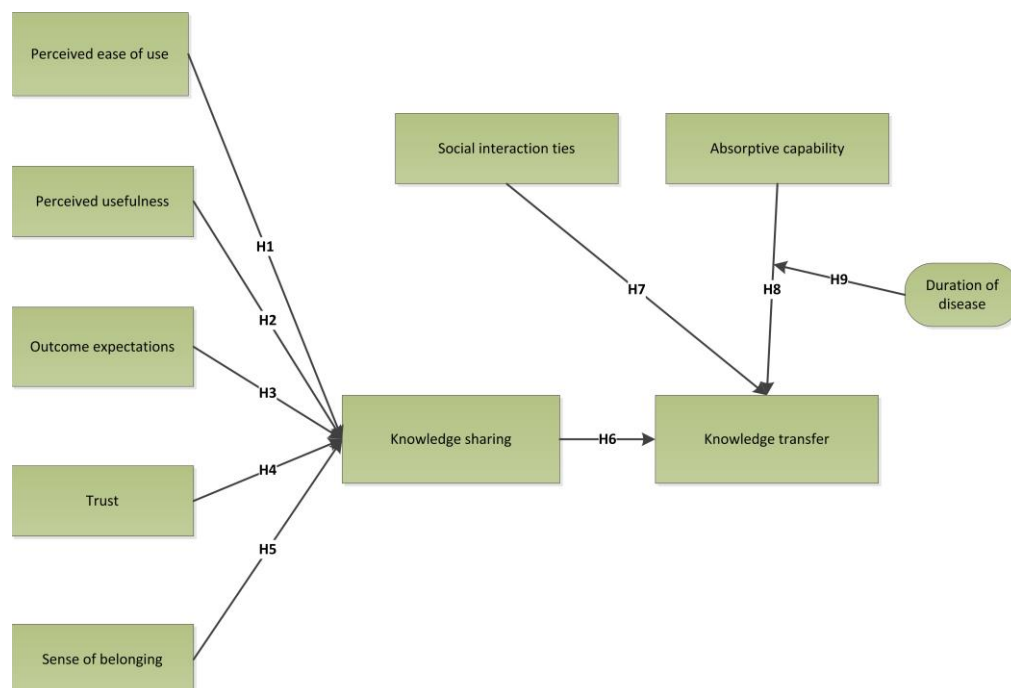


Figure 1. The conceptual research model

4. Study Design

A cross-sectional study, also known as one-shot or status study is the most commonly used design in the medical research and social science. This design is best suited to studies aimed at finding out the prevalence of a phenomenon, situation, problem, attitude or issue, by taking a cross-section of the population. Given the research problem is focused on study the prevalence of effectiveness of knowledge transfer in the online healthcare community, the cross-sectional study design is deployed in this research.

With the prosperity of online healthcare services, there are tremendous of online healthcare communities with varieties of health conditions, such as drug use, breast cancer, mental health, diabetes, and obesity and so forth. Data will be collected from an online healthcare community with relatively high user activeness and large volume of content generated. A survey will be sent to all the members of the chosen healthcare community. In general, the response rate for a survey is approximately 10%. The respondents can be contacted through email of their member account. The respondents are encouraged to contact researcher through email if they have any questions according to the questionnaire. In order to encourage online healthcare community members to participate in the study, I may contact the moderator of the community to offer some privileges for members who respond to the questionnaire. The answer can be submitted both through email or the website page connected to our database.

The ethical issues in data collection will also be considered. All the members of the online healthcare community where the data are collected will be acknowledged this study and be asked for their willingness of the questionnaire. The first hand data will be collected by questionnaires sent out through email. A database will be built to store all the data collected for this study.

4.1. Instrument

All the theoretical constructs in this study will be measured in 7 Likert Scale, where 1 represents strongly disagree and 7 represent strongly agree. The measurements for each construct are adapted from literature [26, 31, 56].

Measurements for perceived ease of use online healthcare community are adapted from Davis [56]:

1. I rarely make errors when I do some activities in the online healthcare community.
2. I don't make much mental effort when I interact with the online healthcare

community or request service from the online healthcare community.

3. I feel that it is flexible to interact with the online healthcare community.

Measurements for perceived usefulness of using the online healthcare community are adapted from Davis [56]:

1. Using the online healthcare community makes it easier to find the information that I needed.
2. Using the online healthcare community improves my knowledge on healthcare and wellness.
3. Using the online healthcare community saves my time of searching healthcare information.
4. Using the online healthcare community enhances my life quality.
5. Using the online healthcare community is very useful to my life.

Measurements for outcome expectations of sharing knowledge on online healthcare community are adapted from Chiu, et al. [26]:

1. Sharing my knowledge on the online healthcare community will help me to make friends with other members.
2. Sharing my knowledge on the online healthcare community will give me a feeling of happiness.
3. Sharing my knowledge on the online healthcare community will build up my reputation amongst members of the healthcare community.
4. Sharing my knowledge on the online healthcare community will enable me to gain better cooperation from the outstanding members in the community.
5. Sharing my knowledge on the online healthcare community will enrich knowledge of the community and help it grow.

Measurements of trust on the online healthcare community are adapted from Chiu, et al. [26]:

1. Members in online healthcare community will not take advantage of others even when the opportunity arises.
2. Members in the online healthcare community will always keep the promises they make to another.
3. Members in the online healthcare community will not knowingly do anything to disrupt the conversation.
4. Members in the online healthcare community behave in a consistent manner.
5. Members in the online healthcare community are truthful in dealing with one another.

Measurements of sense of belonging of the online healthcare community are adapted from Chiu, et al. [26]:

1. I feel a sense of belonging toward the online healthcare community.
2. I have the feeling of togetherness or closeness in the online healthcare community.
3. I have a strong positive feeling toward the online healthcare community.
4. I am proud to be a member of this online healthcare community.

Measurements of knowledge sharing in online healthcare community adapted from Chiu, et al. [26]:

1. How much of the average volume of knowledge I shared per month (converted to seven-point scale).
2. The knowledge shared by members in the online healthcare community is relevant to the topic.
3. The knowledge shared by members in the online healthcare community is easy to understand.
4. The knowledge shared by members in the online healthcare community is reliably.

Measurements of social interaction ties in the online healthcare community adapted from Chiu, et al. [26]:

1. I maintain close social relationships with some members in the online healthcare community.
2. I spend a lot of time interacting with some members in the online healthcare community.
3. I know some members in the online healthcare community on a personal level.
4. I have frequent communication with some members in the online healthcare community.

Measurements of absorptive capability on knowledge adapted from Reagans and McEvily [31] and Chiu et al.[26]:

1. I understand and use common terms in healthcare settings.
2. I understand the communication pattern during the discussion in the online healthcare community.
3. I can easily understand and absorb the knowledge posted in the online healthcare community.

Measurements of effectiveness of knowledge transfer for online healthcare community adapted from [31]:

1. It would be easy for me to explain to others a key idea, concept, or theory of the healthcare area.
2. The members' expertise makes it easy for me to explain a key idea, concept, or theory in the healthcare area.

3. It would be easy for anyone to explain a key idea, concept, or theory to others in the healthcare area.

4. I can explain easily to anyone in a healthcare area of expertise a key idea, concept, or theory.

5. It would be easy for me to explain to others new developments and knowledge in the healthcare area.

4.2. Data analysis model

All the collected data will be stored in a database. Both exploratory factor analysis and confirmatory factor analysis methods are used in this study.

The exploratory factor analysis is used to make sure that the measures associated with each factor load significantly only on one factor, and insignificantly on other factors, in the case of an indicator cross load on two or more factors. And such indicator becomes a candidate for deletions and dropped from subsequent analysis steps. To this end, the factor analysis is used since it is an interdependence technique, whose primary purpose is to define the underlying structure among the variables in the analysis.

The confirmatory factor analysis (CFA) will then be used to measure the structural model of the study. A covariance-based structural equation modeling (SEM) technique will be used to analyze the data. The SEM is a family of statistical models that seeks to explain the relationships among multiple variables. In doing so, it examines the structure of interrelationships expressed in a series of equations, similar to a series of multiple regression equations. Therefore, the structural equation modeling technique will be deployed in this study.

4.3. Validity

To achieve construct validity, both discriminant validity and convergent validity need to be examined through the factor loadings and correlations. Factor loadings of each indicator on the corresponding construct should be equal or greater than 0.7. The square root of the AVE of each construct must be greater than the correlation of the specific construct with any of the other constructs in the model, and all need to be greater than 0.5.

External validity refers to generalizing. There are three threats to external validity – people, places or times [57]. A random sampling process will be used in this study to assure that people are not a threat to external validity. Testing the results from this study in different groups or different settings is another

useful approach to ensure external validity, since it could exclude the influence of specific people, or places, or times.

Internal validity is the approximate truth about inferences regarding cause-effect or causal relationship. The key question in internal validity is whether observed changes can be attributed to the program or intervention and not to other alternative explanations. In this study, most indicators of their corresponding constructs are adapted from previous studies and established theory, therefore, the internal validity has been assured.

5. Lessons learned

5.1. Research-question-specified issues

Firstly, this study identifies several factors that affect knowledge retrieval from the online healthcare community. With the understanding of all the factors, community members may find a way to improve their efficiency for obtaining information and knowledge through online healthcare communities

Secondly, as the user improving their experience of the online healthcare community, it may enhance members' activeness and quality. As such, the online community can be more successful.

Thirdly, the conceptual model indicates the relationships amongst several factors to knowledge transfer. As such, online healthcare community can be recognized an important informal channel to improve health literacy. This may also shed light on the model of health literacy.

5.2. Domain-related issues

As a knowledge-intensive domain, the quality of healthcare service lies on the knowledge background of the care receiver. In order to provide a better care, the healthcare providers are struggling on population health education. This study suggests a model to understand the knowledge transfer process. It will not only help healthcare providers manage the Internet-based service channel, but also benefit off-line face-to-face service by providing a means of health literacy.

6. Conclusion

This paper studies how healthcare knowledge transfer through an online healthcare community with the purpose of understanding the factors that affect the effectiveness of knowledge transfer and

improving health literacy from an informal and widely used channel. It can help online community users with a better user experience and improve the activeness and successfulness of an online healthcare community. However, the study has some limitations. Firstly, survey is our only data source for this study. Yin [58] suggested that data source triangulation is a good way to reduce research bias and enhance reliability for academic research. Future studies may attempt to obtain from multiple sources using different methods.

Secondly, the conceptual model captures the static relationship of each construct. However, the knowledge transfer is a dynamic process that needs to be tracked overtime. Future study can focus on how to capture the dynamic process of knowledge transfer in online healthcare communities.

References

- [1] Y. Shang and J. Liu, "Users' Continuance Participation in the Online Peer-to-peer Healthcare Community: A Text Mining Approach," in *Proceedings of the 21st Americas Conference on Information Systems*, Puerto Rico, 2015.
- [2] G. Umeffjord, G. Petersson, and K. Hamberg, "Reasons for consulting a doctor on the Internet: Web survey of users of an Ask the Doctor service," *Journal of Medical Internet Research*, vol. 5, 2003.
- [3] Y. J. Lu, P. Z. Zhang, J. F. Liu, J. Li, and S. S. Deng, "Health-Related Hot Topic Detection in Online Communities Using Text Clustering," *Plos One*, vol. 8, Feb 2013.
- [4] L. Baker, T. H. Wagner, S. Singer, and M. K. Bundorf, "Use of the internet and e-mail for health care information," *JAMA: the journal of the American Medical Association*, vol. 289, pp. 2400-2406, 2003.
- [5] N. SUNDAY, "The online health care revolution: How the Web helps Americans take better care of themselves," *Pew Internet & American Life Project*, 2000.
- [6] P. R. Helft, R. E. Eckles, C. S. Johnson-Calley, and C. K. Daugherty, "Use of the internet to obtain cancer information among cancer patients at an urban county hospital," *Journal of Clinical Oncology*, vol. 23, pp. 4954-4962, 2005.
- [7] R. Rozenblum and D. W. Bates, "Patient-centred healthcare, social media and the internet: the perfect storm?," *BMJ quality & safety*, vol. 22, pp. 183-186, 2013.
- [8] D. Nutbeam, "Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century," *Health promotion international*, vol. 15, pp. 259-267, 2000.

- [9] R. E. Rudd, B. A. Moeykens, and T. C. Colton, "Health and literacy: a review of medical and public health literature," *Office of Educational Research and Improvement*, 1999.
- [10] C. D. Norman and H. A. Skinner, "eHealth literacy: essential skills for consumer health in a networked world," *Journal of Medical Internet Research*, vol. 8, 2006.
- [11] C. D. Norman and H. A. Skinner, "eHEALS: the eHealth literacy scale," *J Med Internet Res*, vol. 8, p. e27, 2006.
- [12] C. D. Norman and H. A. Skinner, "eHEALS: The eHealth Literacy Scale," *Journal of Medical Internet Research*, vol. 8, Oct-Dec 2006.
- [13] C. Norman, "eHealth Literacy 2.0: Problems and Opportunities With an Evolving Concept," *Journal of Medical Internet Research*, vol. 13, Oct-Dec 2011.
- [14] M. Maag, "The potential use of "blogs" in nursing education," *Cin-Computers Informatics Nursing*, vol. 23, pp. 16-24, Jan-Feb 2005.
- [15] A. Macabasco-O'Connell and E. K. Fry-Bowers, "Knowledge and Perceptions of Health Literacy Among Nursing Professionals," *Journal of Health Communication*, vol. 16, pp. 295-307, 2011.
- [16] T. B. Patrick, H. K. Monga, M. C. Sievert, J. H. Hall, and D. R. Longo, "Evaluation of Controlled Vocabulary Resources for Development of a Consumer Entry Vocabulary for Diabetes," *Journal of Medical Internet Research*, vol. 3, 2001.
- [17] S. Bakken, K. E. Campbell, J. J. Cimino, S. M. Huff, and W. E. Hammond, "Toward vocabulary domain specifications for Health Level 7-coded data elements," *Journal of the American Medical Informatics Association*, vol. 7, pp. 333-342, Jul-Aug 2000.
- [18] M. J. Grant, "Health, sport and nutritional information: tailoring your approach," *Health Information and Libraries Journal*, vol. 29, pp. 87-89, Jun 2012.
- [19] C. Burchill, L. L. Roos, P. Fergusson, L. Jebamani, K. Turner, and S. Dueck, "Organizing the Present, Looking to the Future: An Online Knowledge Repository to Facilitate Collaboration," *Journal of Medical Internet Research*, vol. 2, 2000.
- [20] K. J. Leonard and A. Grant, "An education-based approach to promote population health and patient awareness," *Journal of the American Medical Informatics Association*, pp. 869-869, 1997.
- [21] P. W. O'Carroll, W. A. Yasnoff, and W. Wilhoite, "Public health informatics: A CDC course for public health program managers," *Journal of the American Medical Informatics Association*, pp. 472-476, 1998.
- [22] M. Bazavan and R. Dimitriu, "Medical informatics training programme to support the Romanian health care management information system," *International Journal of Medical Informatics*, vol. 50, pp. 145-150, Jun 1998.
- [23] C. D. Norman, J. Charnaw-Burger, A. L. Yip, S. Saad, and C. Lombardo, "Designing health innovation networks using complexity science and systems thinking: the CoNEKTR model," *Journal of Evaluation in Clinical Practice*, vol. 16, pp. 1016-1023, Oct 2010.
- [24] S. M. Wilson and L. C. Peterson, "The anthropology of online communities," *Annual review of anthropology*, pp. 449-467, 2002.
- [25] H.-H. Teo, H.-C. Chan, K.-K. Wei, and Z. Zhang, "Evaluating information accessibility and community adaptivity features for sustaining virtual learning communities," *International Journal of Human-Computer Studies*, vol. 59, pp. 671-697, 2003.
- [26] C.-M. Chiu, M.-H. Hsu, and E. T. Wang, "Understanding knowledge sharing in virtual communities: An integration of social capital and social cognitive theories," *Decision support systems*, vol. 42, pp. 1872-1888, 2006.
- [27] Y. Zhang and S. R. Hiltz, "Factors that Influence Online Relationship Development in a Knowledge Sharing Community," in *AMCIS*, 2003, p. 53.
- [28] M. M. Wasko and S. Faraj, "Why should I share? Examining social capital and knowledge contribution in electronic networks of practice," *MIS quarterly*, pp. 35-57, 2005.
- [29] P. Hendriks, "Why share knowledge? The influence of ICT on the motivation for knowledge sharing," *Knowledge and process management*, vol. 6, pp. 91-100, 1999.
- [30] M. J. Rosenberg, *E-learning: Strategies for delivering knowledge in the digital age* vol. 3: McGraw-Hill New York, 2001.
- [31] R. Reagans and B. McEvily, "Network structure and knowledge transfer: The effects of cohesion and range," *Administrative science quarterly*, vol. 48, pp. 240-267, 2003.
- [32] D. Epple, L. Argote, and K. Murphy, "An empirical investigation of the microstructure of knowledge acquisition and transfer through learning by doing," *Operations Research*, vol. 44, pp. 77-86, 1996.
- [33] J. A. Baum and P. Ingram, "Survival-enhancing learning in the Manhattan hotel industry, 1898-1980," *Management Science*, vol. 44, pp. 996-1016, 1998.
- [34] L. Argote and P. Ingram, "Knowledge transfer: A basis for competitive advantage in firms," *Organizational behavior and human decision processes*, vol. 82, pp. 150-169, 2000.
- [35] W. Tsai, "Knowledge transfer in intraorganizational networks: Effects of network position and absorptive capacity on business unit innovation and performance," *Academy of management journal*, vol. 44, pp. 996-1004, 2001.

- [36] D. C. Mowery, J. E. Oxley, and B. S. Silverman, "Strategic alliances and interfirm knowledge transfer," 1996.
- [37] L. Argote, P. Ingram, J. M. Levine, and R. L. Moreland, "Knowledge transfer in organizations: Learning from the experience of others," *Organizational behavior and human decision processes*, vol. 82, pp. 1-8, 2000.
- [38] M. Osterloh and B. S. Frey, "Motivation, knowledge transfer, and organizational forms," *Organization science*, vol. 11, pp. 538-550, 2000.
- [39] G. Szulanski, "The process of knowledge transfer: A diachronic analysis of stickiness," *Organizational behavior and human decision processes*, vol. 82, pp. 9-27, 2000.
- [40] C.-L. Hsu and J. C.-C. Lin, "Acceptance of blog usage: The roles of technology acceptance, social influence and knowledge sharing motivation," *Information & management*, vol. 45, pp. 65-74, 2008.
- [41] W. Money and A. Turner, "Application of the technology acceptance model to a knowledge management system," in *System Sciences, 2004. Proceedings of the 37th Annual Hawaii International Conference on*, 2004, p. 9 pp.
- [42] Y. Hwang, "Investigating enterprise systems adoption: uncertainty avoidance, intrinsic motivation, and the technology acceptance model," *European Journal of Information Systems*, vol. 14, pp. 150-161, 2005.
- [43] W. S. Chow and L. S. Chan, "Social network, social trust and shared goals in organizational knowledge sharing," *Information & Management*, vol. 45, pp. 458-465, 2008.
- [44] G.-W. Bock, R. W. Zmud, Y.-G. Kim, and J.-N. Lee, "Behavioral intention formation in knowledge sharing: Examining the roles of extrinsic motivators, social-psychological forces, and organizational climate," *MIS quarterly*, pp. 87-111, 2005.
- [45] C.-H. Tsai, "Integrating social capital theory, social cognitive theory, and the technology acceptance model to explore a behavioral model of telehealth systems," *International journal of environmental research and public health*, vol. 11, pp. 4905-4925, 2014.
- [46] G. Peng, D. Dey, and A. Lahiri, "Healthcare IT Adoption: An Analysis of Knowledge Transfer in Socioeconomic Networks," *Journal of Management Information Systems*, vol. 31, pp. 7-34, 2014.
- [47] J. H. Dyer and H. Singh, "The relational view: Cooperative strategy and sources of interorganizational competitive advantage," *Academy of management review*, vol. 23, pp. 660-679, 1998.
- [48] P. J. Lane, B. R. Koka, and S. Pathak, "The reification of absorptive capacity: A critical review and rejuvenation of the construct," *Academy of management review*, vol. 31, pp. 833-863, 2006.
- [49] K. Joshi, L. Chi, A. Datta, and S. Han, "Changing the competitive landscape: Continuous innovation through IT-enabled knowledge capabilities," *Information Systems Research*, vol. 21, pp. 472-495, 2010.
- [50] M. T. Hansen, "The search-transfer problem: The role of weak ties in sharing knowledge across organization subunits," *Administrative science quarterly*, vol. 44, pp. 82-111, 1999.
- [51] F. D. Davis, "Perceived usefulness, perceived ease of use, and user acceptance of information technology," *MIS quarterly*, pp. 319-340, 1989.
- [52] R. C. Mayer, J. H. Davis, and F. D. Schoorman, "An integrative model of organizational trust," *Academy of management review*, pp. 709-734, 1995.
- [53] M. Sharratt and A. Usoro, "Understanding knowledge-sharing in online communities of practice," *Electronic Journal on Knowledge Management*, vol. 1, pp. 187-196, 2003.
- [54] W. Tsai and S. Ghoshal, "Social capital and value creation: The role of intrafirm networks," *Academy of management Journal*, pp. 464-476, 1998.
- [55] M. K. Singley and J. R. Anderson, *The transfer of cognitive skill*: Harvard University Press, 1989.
- [56] F. D. Davis Jr, "A technology acceptance model for empirically testing new end-user information systems: Theory and results," Massachusetts Institute of Technology, 1986.
- [57] W. M. Trochim and J. P. Donnelly, "Research methods knowledge base," 2001.
- [58] R. K. Yin, *Case study research: Design and methods*: Sage publications, 2013.