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Strategic contributions of game rooms to knowledge management: some prelimenary insights

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Abstract

Academics and practitioners have stressed the significance of managing knowledge in today's competitive environment. This has resulted in many efforts to increase knowledge exchange between organizational members. Much work so far has focused on the use of information technology as either a solution or enabler of knowledge management. While information technology enables easy exchange of explicit knowledge, its contributions to sharing tacit knowledge is restricted to connecting individuals via tools, such as e-mail and groupware. This research adds to the literature by reporting on a people-centered perspective for facilitating tacit knowledge exchange. The article describes an in-depth case study carried out to determine the role played by game rooms in the exchange of tacit knowledge.
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1. Introduction

Knowledge management is a management philosophy that has captured the interest of many and has become a buzzword in the popular press in recent times. In the past, management focused on control, exploitation, and utilization of tangible resources, such as land, labor, and capital, for the attainment of organizational goals. Today there is a paradigm shift towards the management of intangibles, such as knowledge, patents, and intelligence: knowledge management is one of these disciplines. In the knowledge economy, a key source of sustainable competitive advantage and consequent profitability is the way that a company creates and shares its knowledge [3,13,14,16]. Drucker [17] argued that, in the new economy, knowledge is not just another resource but is *the* resource. He contends that this makes today's society unique. Toffler [48] contends that knowledge is the highest source of power. He argues that knowledge has moved from being the adjunct of money and muscle to being its essence; hence the battle for the control of knowledge is rising all over the world. An industry survey of large enterprises in North America and Europe revealed that of 811 organizations, 90% were aware of knowledge management and most will have some activity underway within the next year or two [22].

In the knowledge economy, a key source of sustainable competitive advantage and profitability is how a company creates and shares its knowledge [15,21, 34,40,42]. The notion of the knowledge-based view of an organization has therefore been discussed [20,25,45]. According to this perspective, organizational knowledge (such as operational routines, skills, procedures, etc.) are the most valuable organizational

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asset and an organizational strategic management capability is the most common source of competitive advantage. Taking another strategic perspective, a *Resource-Based View* of the firm has its origins in management and industrial organization literature and it states that a firm deploys its resources in the most efficient way to gain a competitive edge over its competitors [2,49]. Four characteristics of a resource must be present to sustain competitive advantage: it must be valuable, rare, inimitable, and non-substitutable. In terms of the resource-based view of the firm, the capability to create and utilize knowledge as a strategic resource has been posited as the key ingredient to maintaining a sustainable competitive advantage.

Scholars and practitioners have proposed a wide assortment of definitions of *knowledge management*. According to Malhotra [31], "Knowledge management caters to the critical issues of organizational adaptation, survival and competence in face of increasingly discontinuous environmental change. Essentially, it embodies organizational processes that seek synergistic combination of data and information-processing capacity of information technologies, and the creative and innovative capacity of human beings." Allee [1] says, "Real knowledge management is much more than managing the flow of information. It means nothing less than setting knowledge free to find its own paths. It means fueling the creative fire of self-questioning in organizations. This means thinking less about knowledge management and more about knowledge partnering." Various research approaches have also surfaced regarding knowledge management [4]. One of these focuses on intellectual capital and its measurement and management. The second addresses directly the management of knowledge as it pertains to its creation, capture, and flow. The third is largely the domain of economists, it addresses the knowledge economy at a macro-level.

Under the umbrella of the second approach, the literature identifies several components as candidates to be managed, the most common being knowledge itself [51], the management process [10,12,50], knowledge workers [35,43], relationships between knowledge workers [5,26,46], culture [9,19,30,36], reward structures [28,47] and information technologies [7,11,37,44]. Much of the work has been on the role of information technology (IT) in the knowledge management process. This paper reports on a people-centered approach to knowledge management. We focus on the role played by coffee and game rooms in the exchange of tacit knowledge between knowledge members in a technology organization.

2. Knowledge and knowledge management

Plato and Aristotle studied the sources and types of knowledge that humans acquired over time. Attempts to classify knowledge can be considered from two perspectives: *explicit* and *tacit*, based on communicability of knowledge [41] and on *individual* and *collective* knowledge, based on the knowing entity [33]. Explicit knowledge can be expressed in words and numbers and shared in the form of data, scientific formulae, product specifications, manuals, universal principles, etc. This kind of knowledge can be readily transmitted across individuals formally and systematically. Also, it can easily be processed by a computer, transmitted electronically, or stored in databases.

Tacit knowledge on the other hand, is personal and hard to formalize, thus making it difficult to communicate or share. Subjective insights, intuition, etc. fall into this category. Furthermore, tacit knowledge is deeply rooted in each individual's actions and experiences, as well as in their ideals, values, and emotions. The subjective and intuitive nature of tacit knowledge makes it difficult to process or transmit the acquired knowledge in any systematic or logical manner. For tacit knowledge to be communicated, it must be converted into words, models, or numbers that anyone can understand. Also, there are two types of tacit knowledge: The "technical" dimension—informal and hard-to-pin-down skills or crafts. For example master craftsmen develop expertise after years of experience. Highly subjective and personal insights derived from bodily experience fall into this dimension. The "cognitive" dimension consists of beliefs, perceptions, ideals, values, emotions and mental models. Though they cannot be articulated easily, this dimension of tacit knowledge shapes the way we perceive the world around us.

Research has highlighted two perspectives on knowledge: knowledge as an *object* and knowledge *embedded in people*. The first views knowledge as an

object that exists independent of humans. It is appropriated as a private good and can be exchanged as any other commodity. The second is considered to be a private good owned by the individual. This focuses on management of human resources, with the goal to motivate members of the organization to share their ability and to connect knowledge seekers with knowledge providers.

3. Tacit knowledge exchange

Tacit knowledge exchange among knowledge workers could be enhanced through use of information technology, such as electronic networks and group support systems. In these settings individuals exchange knowledge via e-mail, online discussion, chat sessions, listservers, and thus in computer-mediated and group decision support systems (GDSS). An alternative approach is through encouraging face-to-face dialogue between members of an organization—a *people-centered* approach. Dialogue can be encouraged through deliberate or emergent mechanisms. *Deliberate* mechanisms are planned interactions, which include cross-functional team meetings, product innovation camps, etc. Lave and Wegner [29] introduced the notion of communities-of-practice to foster knowledge sharing and exploitation. "Evolving communities-of-practice" were considered by Brown and Duguid to demonstrate that an individual's way of working and learning might be very different from the official practices specified by the organization. Krogh et al. [27] provided the illustration of "Communities-of-Practice" at Unilever; there a group of 10–12 members met regularly in a structured meeting setting, to share knowledge for product innovation and development purposes. Honda set up "brainstorming camps" to solve complex problems. These meetings were held outside the workplace, often at a resort, where participants discussed issues while drinking sake, eating, and taking a bath together in hot springs. The meetings are open to all employees and not restricted solely to project managers.

On the other hand, emergent mechanisms are informal in nature and occur in unplanned settings. The following research is concerned with such environments. Nonaka and Takeuchi [36] stress the process of socialization for sharing experiences and thereby creating and exchanging tacit knowledge. Orr [39] argues that members exchange ideas and share narratives in informal settings, thereby building a shared understanding out of conflicting and confusing information. While the exchange of knowledge in structured meetings had been studied, the exchange of tacit knowledge had not. We investigated the role played by game rooms on organization premises in facilitating dialogues between employees for tacit knowledge exchange.

4. Methodology and study setting

The study of new organizational forms requires a review of practice of companies at the forefront of the use of new techniques. Rich, qualitative methods for data collection and analysis are most appropriate for such research [6]. We therefore based our work on an exploratory case study using both structured and unstructured interviews along with a survey for data collection. Thirty-five unstructured and semi-structured interviews of 45–60 min duration were conducted. Participants spanned vertical levels and functional groupings; all interviews were recorded and transcribed. During this part of the effort, care was taken not to impose our theoretical frame of reference on the participants, we avoided using terms such as "knowledge," or "knowledge transfer," etc. We also spent time in the coffee and game rooms observing activities on 3 days a week. A survey of employee usage of these rooms was also conducted. Excluding analysis of survey results, a qualitative approach was used to analyze the data [18,32,52]. First, the content of all interviews transcripts and observation notes were read to identify key issues and topics. Initial issues and topics were then used to deduce key themes that were common or recurring.

We chose Alpha[1] Corporation as a pilot site; this is a technology company based in Chicago, IL. The company has offices in Texas, California, South Dakota, and Florida and provides IT solutions. Alpha Corporation has long been an industry leader in delivering customized software solutions. In 1999, it began to experience double digit employee turnover due to high demand for IT professionals in the economy.

[1] At the request of the organization the name has been disguised.

Faced with the challenge of retaining employees and increase their satisfaction, many efforts were undertaken to reduce the turnover. The methods used included: increase in tuition reimbursements, better profit sharing plans, introduction of a re-hauled and flexible work schedule, and setting up of game rooms on the office premises. The game rooms had four video arcade stations, a pool table, a dartboard, a wide assortment of board games, free soda and coffee machines, and couches. Two such game rooms were located in the Chicago office. We began our work at Alpha Corporation at this time. The decision to setup game rooms had been approved and budgetary funds had been allotted. Our study spanned 12 months, starting with an interview of members of the executive team and a dedicated "work-out" team that was responsible for improving employee morale. Via semi-structured interviews, we collected data on initial perception of the purpose of game rooms. Monitoring initial use of the rooms followed this. However, initial response was less than favorable. Single digit usage rates were seen for the initial 4 weeks. This led our adding a second stage of research, where suggestions were asked of the employees about improving their usage of the rooms; answers were reviewed and good ideas implemented. Monitoring of usage was conducted again, and the usage rates were found to increase steadily. Next, researchers observed use of the facilities.

5. The beginning—initial perceptions

Knowledge management is a social activity requiring voluntary involvement of individuals; a strong commitment and involvement from all members can be acquired when they share the same vision and goals. To facilitate this, leadership and direction from top management is crucial. A study conducted by Andersen and APQC revealed that one crucial reason that organizations are unable to leverage knowledge is because of a "lack of commitment of top leadership to sharing organizational knowledge or ... too few role models" [23]. Leadership sets examples, engendering trust and respect, instilling a cohesive and creative culture, establishing a vision, listening, teaching, and learning [24]. Orlikowski [38] argues that organizational culture not technology has a greater impact on the exchange and sharing of knowledge.

At Alpha Corporation top management leadership was clearly evident. They initiated the formation of a "work-out" team charged with better employee retention and morale improvement, by knowledge exchange among organizational members. An initial set of semi-structured interviews were conducted with five members of the executive team including the Chief Executive Officer, Vice President of Human Resources, Chief Operating Officer and members of the work-out team. Their purpose was to gain an understanding of the team's perceptions on appropriate usage of the game rooms and belief why they were introduced. Most interviews lasted for an hour with rich exchange of dialogue. Detailed analysis revealed the following three key reasons for investing in the gaming facility.

5.1. Encouraging exchange of expertise

Alpha Corporation followed a project-based structure for work assignments: members were brought together from different groups to work on dedicated assignments under a project/team leader. For all *project-related queries* the team leader was responsible, while for *administration queries* employees reported to their departmental managers. Knowledge flows between projects was limited. As one member reported:

> ... At Alpha we know that we know, but we don't know what other's know. I can detail items pertinent to my job, but ... I often find myself reinventing the wheel ... During a project ... I devised an entire functional specification before realizing that another team working on the exact same design for a different client had it already done ... This resulted in 30 h of wasted effort.

Another perspective to exchange of expertise was mentioned by the VP of human resources who commented on training programs:

> ... Being in the IT industry our biggest asset and greatest expense is human resources ... we spend extensively on employee development ... What would be nice is for our employees to train our employees ... We could gain by fostering knowledge and experience exchange between members ...

There was a clear consensus that knowledge exchange must be fostered within the organization. When asked why the use of IT was not being considered as the focal point for knowledge exchange, the Chief Information Officer (CIO) reported:

> ... Currently, we have Lotus Notes® as well as numerous other databases for tracking product faults and customer queries. However, we still have not figured out a way for capturing technical expertise. Experimentation was carried out with using dedicated electronic boards for posting technical queries but response rates were low. ... our programmers and engineers have a hard time explaining things in words ... they rather demonstrate how it is done ...

Another overwhelming concern was security. There are severe negative consequences for codifying tacit knowledge, including greater chance of loss to competitors. Most members of the executive team were aware of such concerns.

5.2. Improving employee morale via informal socialization

Out of the 10 people we interviewed, eight stated that their second important motivation was to boost employee morale through creation of informal social exchange settings. When asked why they perceived such atmosphere would foster social exchange, one executive reported:

> ... The only time I meet my line managers outside the office is during our travel to client sites and the year end party. Having a pool table and dart room will hopefully encourage me to develop social relationships ...

Most participants interviewed, echoed this line of rationale. One even stated that it would build team morale to have inter-departmental competitions.

5.3. Avenue for venting frustration and taking a break

Roughly 85% of the company's workforce were IT professionals, covering jobs such as software engineers, business systems analyst, data warehouse specialist, network administrations, etc. much of their efforts were in areas where first-mover advantage was a crucial consideration. In a prior employee survey it was found that employees had no way to exercise or take a break from their tasks unless they left the corporate building. Most felt that having a recreation facility would allow employees to take well-deserved breaks and get back to work rejuvenated, thus improving productivity.

One member remarked, "... look around; every dot.com has its fridges filled for employees ... exotic art work ... wires running through the wall ... it is this kind of relaxed and fun-filled atmosphere that is driving people out of here ... we need to step to the challenge ..." This sentiment was echoed by 75% of the panel to varying degrees.

6. Rough start—role of leadership

After 2 months, the game rooms were operational. A mass e-mail was sent out informing employees of this event and an open-house date was arranged with free food and drinks. Attendance at the open house was satisfactory. Out of 1500 employees in Chicago, 300 signed in, along with 28 from other locations who were on-site for business reasons.

The weeks that followed showed unsatisfactory use. For the first week single digit attendance rates were present (see Fig. 1). Employees had to swipe their ID cards to enter the game rooms, as it was located on a different floor from the office space. ID logs were tallied at days end to calculate usage statistics. A meeting was called between the members of the executive team and the "work-out" team to consider how to improve use of the asset. After 2 days of 3 h meetings each, the team came up with four initiatives.

6.1. Make leadership-use visible to help eradicate fear

If improved use was going to occur, leaders had to lead the change within the organization and not leave it to chance. One of the barriers is employee resistance. Knowledge management like any other facet is not free from organizational politics. Knowledge providers make up 20% of the workforce, as they possess experiences and insights that are beneficial to the organization. The remaining 80% are consumers of knowledge.

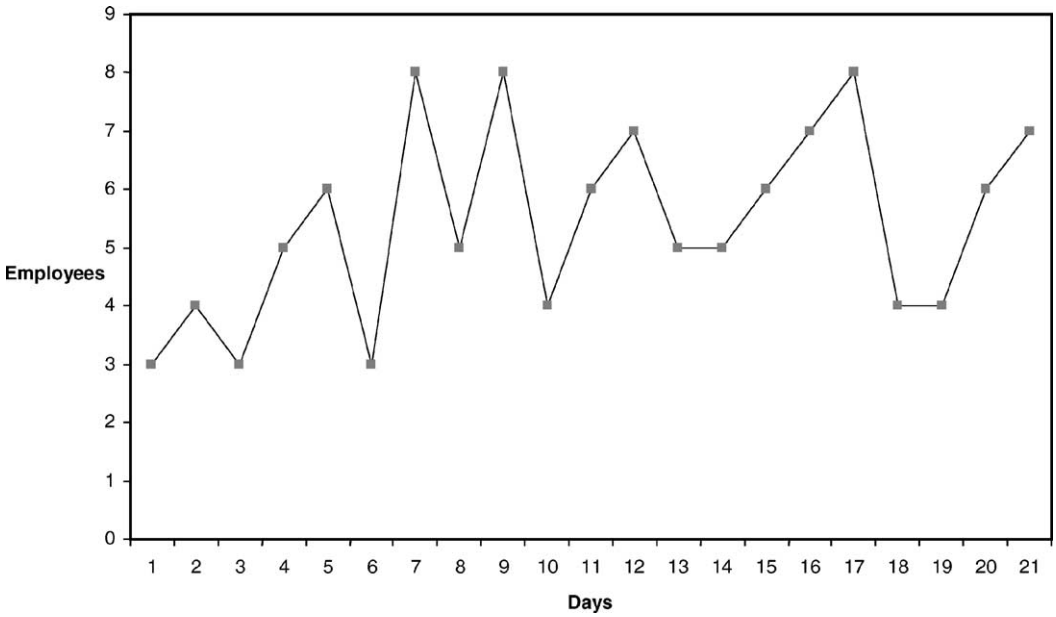

Fig. 1. Employee use of game rooms.

Between departments there are also knowledge barriers, in which one group may not want to share its insights with another.

Management felt that setting the example would help. Therefore, open weekly schedules were set aside for playing a game of pool or arcade competitions with members of the executive team. Management spent time and effort encouraging employees to signup. After the first week of its initiation, departmental managers and project leaders began posting their open hours and encouraging their constituents to participate.

6.2. Educate departmental managers on key issues with use of game rooms

Davis and Botkin [8] summarized the six traits of a knowledge-based business as follows. (1) The more *they* use knowledge-based offerings, the smarter *they* get. (2) The more *you* use knowledge-based offerings, the smarter *you* get. (3) Knowledge-based products and services adjust to changing circumstances. (4) Knowledge-based businesses can customize their offerings. (5) Knowledge-based products and services have relatively short life cycles. (6) Knowledge-based businesses react to customers in real time.

These traits help the organization to be highly efficient in conducting their operations, learn from past experiences, be creative and innovate at a faster rate than competitors, have high employee morale and low turnover, provide superior customer services, and stay ahead of the competition.

While the executive and "work-out" team had clear objectives and purpose for game rooms, this was not conveyed effectively to the rest of the organization. Meetings were set up between members of the executive team and departmental managers to convey the message. Structured presentations were given followed by Question & Answer sessions. The biggest concern for middle managers (departmental heads) and project leaders was fear and motivation. The network administration lead remarked "... I have eight people on my team ... some of them who never leave till well past 7 in the evening due to the work load ... How can I expect to have them dedicate time to play arcade games or chess with their peers ..."

6.3. Have bi-weekly happy hours

A decision was made to sponsor bi-weekly open/happy hours where employees were encouraged to use

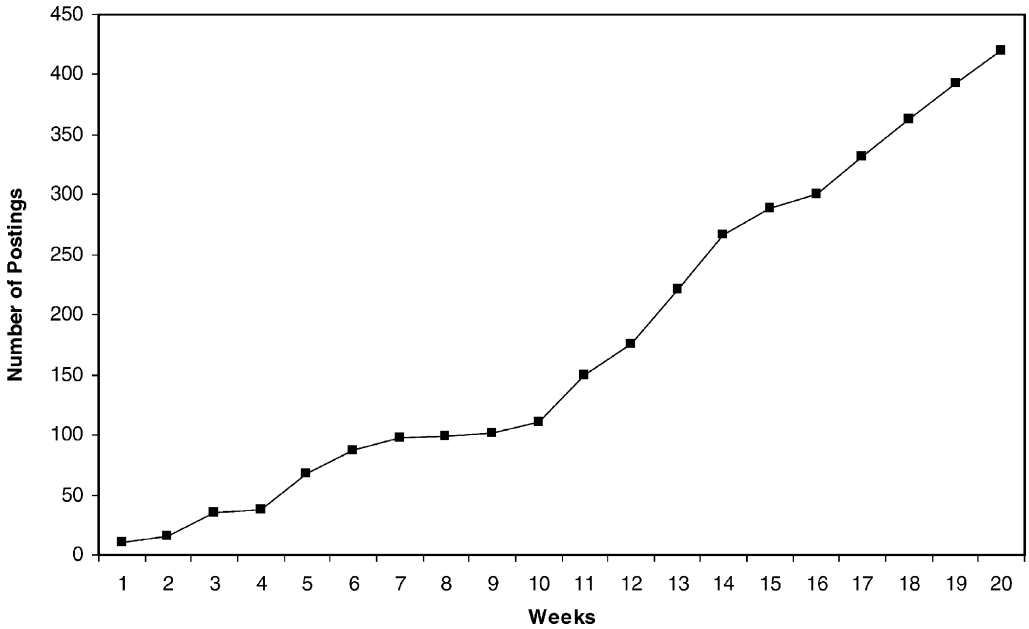

Fig. 2. Contributions to the database.

the game rooms to meet and engage in dialogue with their peers. As the CEO put it, "... I recently attended a conference where a guru preached ... let employees talk and pay them to talk ... I don't think we can pay them explicitly to talk at the moment due to the reward and pay structure but let me be the first to experiment with motivating talk through food and drinks and entertainment ..."

6.4. Implement an electronic bulletin board

A dedicated Lotus Notes® database was initiated for comments and suggestions regarding the game rooms. Awards were assigned for members who made significant comments. As a secondary goal, the database served as an avenue for posting inquiries on playing tips, exchanging ideas on key projects, and a scheduling mechanism. Postings to the database grew once initial fears were subdued (see Fig. 2). Postings were made in three categories: suggestions and comments for game rooms, exchange of playing tips or scheduling time, and exchange of project-based knowledge. As can be seen from Fig. 3, project-based contributions to the knowledge repositories increased over the study period. One posting that stirred up a vital discussion and eventually won an award saved the company US$ 28,000.

Response from both the executive and "work-out" teams were favorable at this point. Monthly meetings followed for the next 6 months with minor changes. After 9 months, a survey was commissioned to gauge employee use of the game rooms. Anonymity was guaranteed.

7. Survey results

Due to the exploratory nature of this study, the scales developed and used were experimental.

A web-based survey tool was used to generate and administer the survey.[2] The survey consisted of two parts: Part 1 addressed demographic information, such as title, time at the company, number of projects in charge, etc. Part II addressed usage of the game rooms (see Appendix A). Out of the 1500 employees located in Chicago, 671 (44.7%) surveys were completed by the due date and were deemed usable for analysis. Chi-squared statistics were first calculated to see if

[2] For copies of the survey please contact the author via e-mail.

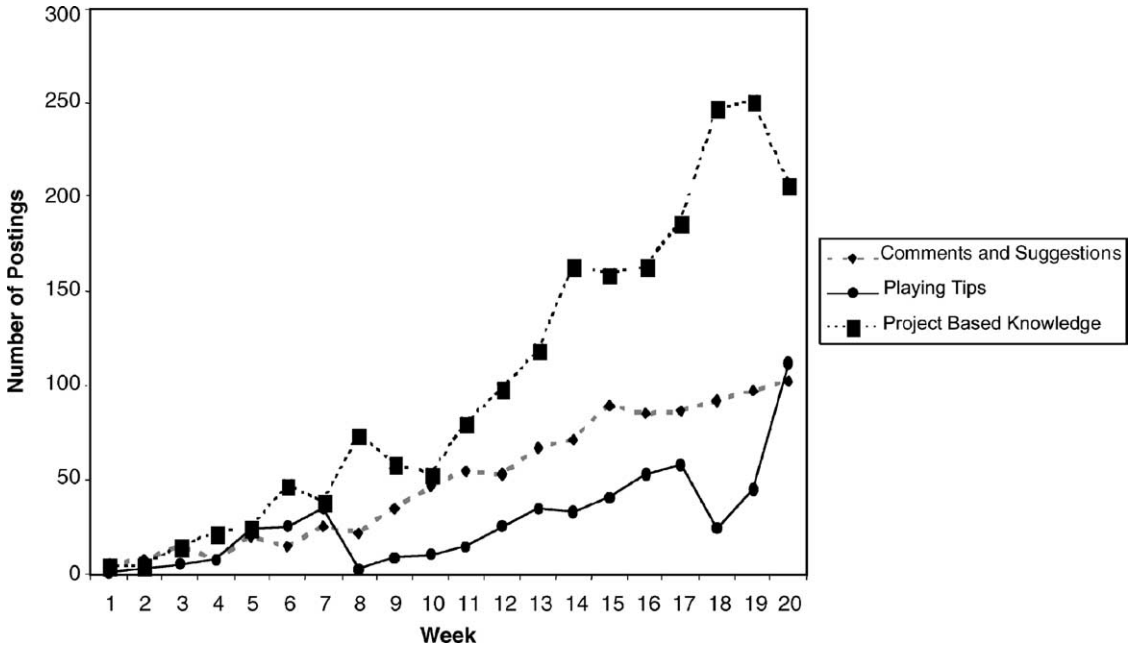

Fig. 3. Category-based contributions to the database.

there was statistical difference between responses from various functional groups in the organization. At the 0.005 level of significance no differences were observed (Table 1).

Part II of the survey was designed to gather usage data. The third question was used to gauge which equipment was widely used from an asset allocation and future investment purposes. Hence, for our purposes results are of marginal value, except for one key insight: *Respondents who used either pool tables or board games almost always came to the room with a peer and 60% of them left in groups*.

As can be seen, the game room is being used appropriately. Responses to Likert-like questions were scored between 1 and 6, representing 'strongly disagree' to 'strongly agree'. A mean score of 4.7 was observed for people using the game room with a single partner, while 3.6 was recorded for people in groups (Table 2).

Table 1
Game room usage results

Number of hours of usage per week	I visit the game room mostly during
1–2 (12)	6.00–8.30 a.m. (10)
2–3 (28)	8.30–11.00 a.m. (12)
3–4 (39)	11.00 a.m.–1.30 p.m. (42)
4–5 (11)	1.30–4.00 p.m. (15)
>5 (10)	4.00–6.30 p.m. (21)

Values given in parenthesis are in percentage.

Table 2
Low–high and mean scores of game room usage

	Low–high	Mean score
I visit the game room with a peer	1–6	4.73
I visit the game room with a group	1–6	3.59
I have built better social relationships with my peers through use of the game rooms	3–6	4.12
I have exchanged job-related information/knowledge during my time at the game room	2–6	3.85
I have received job-related information/knowledge during my time at the game room	3–6	4.01
I have used information/knowledge received in the game rooms on the job	3–6	3.15
I have initiated gatherings/meetings in the game rooms	1–6	4.25
I have attended special events hosted in the game rooms such as happy hours and team outings	3–6	4.89

Table 3
Type of knowledge exchanged

	Percentage
Social	20
Economy related	7
Industry related	10
Company performance	15
Project team related	29
Application/information technology solution/product related	19

An average score of 4.1 was observed when asked if the game rooms fostered better social relationships. Also the low score for the question was three, which meant that few respondents slightly disagreed. Most respondents also exchanged (3.95) and received (4.0) job-related knowledge in the game room. The score for using job-related information in the game rooms (3.1) was lower than expected but is satisfactory. The next two questions were meant to gauge proactive behavior in setting up meetings in game rooms. The responses were favorable. The last question was meant to elicit the type of knowledge exchanged in the game rooms (Table 3). Various broad categories were provided while also asking employees to state any explicit examples.

Individual responses to types of knowledge exchanged were aggregated to derive overall percentages. Social knowledge was exchanged 20% of the time; this mainly consisted of discussions on family matters, children's performance in schools, shopping bargains, and sports. Economy or national news-related items were addressed only 7% of the time. Industry-related knowledge covered competitor analysis, new products in the market place, price to quality debates, and movements of share prices. Company performance involved discussions which included mergers, change in upper level management, and performance of the dot.com subsidiary. The biggest section of the discussion concerned project teams. It is also interesting to note that all respondents who felt that they exchanged or received job-related information in the game rooms, said that they exchanged project team-related information (Table 3). Much of the discussions were to company-specific projects that were either in danger of being failures or running over budget. A small portion of the respondents alluded to the point that they also discussed forthcoming projects. Product-specific discussions were mainly concerned with defects or improvements to current systems.

8. Conclusion

To a large extent, knowledge management initiatives have turned to IT solutions. It is however important to give people the time and space to talk to each other, as knowledge is generated at the individual level. Unless people talk and share it with peers, knowledge remains untapped.

This article has reported on efforts to foster tacit knowledge exchange. The concept was rather simple: provide an inviting room with no formal rules to encourage dialogue between members. We believe that top management has to do more than just have visions of knowledge management. They must see it through their leadership and support it on a continuous basis.

Our study however is only a first breakthrough. Being a case study, we must caution that the behavior demonstrated at Alpha Corporation may be different from the larger population, and thus this study may not be representative of all high technology or information technology organization. In conclusion, we believe that the paper has opened a research avenue worth investigating and implementing. Game rooms and recreation centers are common investments in most organizations. Hence, using them to foster knowledge exchange *can* add significant payoff to a relatively small investment.

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Appendix A. Game room survey—usage (Part II)

1. I visit the game room for hrs per week 1-2 2-3 3-4 4-5 5+

2. I visit the game room mostly during 6-8.30a.m. 8.30-11.00a.m 1.00a.m-1.30p.m 1.30-4.00p.m 4.00-6.30p.m

3. Rank the following according to usage (1 being most used, 8 least used)
Pool Tables Dartboard Arcade 1 Arcade 2 Arcade 3 Ping Pong Table Board Games Juke Box

4. Please rate the following questions from "Strongly Disagree" to "Strongly Agree". Please use the space below to provide comments to any of your responses. We are especially interested in the one's you strongly agree or disagree….

	Strongly Disagree	Disagree	Disagree Somewhat	Agree Somewhat	Agree	Strongly Agree
I visit the game room with a **peer**						
I visit the game room with a **group**						
I have **built** better social relationships with my peers through use of the game rooms						
I have **exchanged** job related information / knowledge during my time at the game room						
I have **received** job related information/knowledge during my time at the game room						
I have **used** information/knowledge received in the game rooms on the job						
I have **initiated** gatherings/meetings in the game rooms						
I have **attended** special events hosted in the game rooms such as happy hours and team outings.						

5. Type of information/knowledge exchanged/received in the game rooms, examples of topics is indicated in parenthesis. (Select all applicable)

Social *(Family, Education, Entertainment, Politics)*
Economy Related *(Rate of Unemployment, Job Security, Salaries)*
Industry Related *(Performance of Competitors, New Threats / Opportunities)*
Company Performance *(Earnings, Growth Rate, Mergers and Acquisitions)*
Project Team Related *(Team Performance, Work Issues with Supervisors or Peers)*
Application / Information Technology Solution / Product Related *(Stability of Product, Defects, Room for Innovation)*

Please provide any explicit examples of the above topics that were discussed

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