



Tentamen 8 November 2017, vragen en antwoorden

Leadership and Technology Management (Technische Universiteit Delft)

Answers Examination MOT1524 Leadership and Technology Management

Date: November 8, 2017 (13.30 – 16.30 hours)

The exam consists of 3 open questions.

QUESTION 1

Managing knowledge work at BSVQ [total: 10 points]

BSVQ is an international engineering firm, which provides planning, designing, engineering and project management services. The business demands the simultaneous achievement of innovative solutions and significant time compression imposed by client and regulatory requirements. The organization has established a wide range of knowledge management initiatives to encourage sharing of know-how and experience across projects. These initiatives range from organizational processes and mechanisms, such as cross-functional communications meetings and skills networks, to technology-based approaches such as the VQbase database and intranet.

- a) Knowledge sharing is not the only knowledge process that needs attention. List and describe two other knowledge work processes. [2 points]

The following knowledge processes were highlighted in the book:

1. Creating Knowledge
2. Integrating Knowledge or Applying knowledge
3. Codifying or Storing knowledge
4. Sharing or Distributing knowledge

The following knowledge processes were highlighted in the slides:

1. Identifying knowledge gaps.
2. Acquiring and creating knowledge.
3. Storing knowledge.
4. Distributing / sharing knowledge.
5. Applying knowledge..
6. Evaluating knowledge

Select any two of the above except 'sharing and distributing knowledge'. Next provide a description of these processes. For example,

1) **Identifying knowledge gaps.** Discovering this gap implies comparing the knowledge that is required for the work to be done with the available knowledge.

2) **Acquiring and creating knowledge.** Having determined where the knowledge gaps are the required knowledge has to be acquired.

3) **Storing knowledge.** Considerable knowledge is stored in people's brains. This can be very explicit but is often quite tacit. Such knowledge is stored in the form of skills, insights and professional expertise. It is also stored in working routines, such as in the ways people have learned to do their tasks, or in machines and layouts of physical production departments. Other knowledge can be stored in information systems, although the problems with this approach have been discussed in earlier sections.

etc.

Answers Examination MOT1524 Leadership and Technology Management

According to the one of the founders of BSVQ, Fiona Clare, the organizational initiatives in relation to knowledge management have been more successful than the technology-based approaches. For example, a survey of engineers in the firm indicated that in design and problem solving, discussions with colleagues were rated as being twice as valuable as knowledge databases, and consequently engineers were four times as likely to rely on colleagues.

- b) What could be the reasons why the engineers prefer to rely on each other rather than on knowledge databases in the case of design and problem solving? Provide two reasons why. [2 points]

1. **The difficulty of codifying tacit knowledge.** Engineering consultancy involves a great deal of tacit knowledge and project experience. Both are difficult to store and retrieve electronically.

2. The complex engineering and unique environmental context of each project both **limit the reuse of standardized knowledge and expertise.**

For companies, such as BSVQ, the management of knowledge processes is not easy and there are a number of dilemmas associated with managing knowledge work. One such dilemma is that money seems to be rarely a motivator for knowledge workers.

- c) If money is not a motivator what kind of reward system would you suggest to BSVQ for managing their engineers? Please, describe a suitable system of performance and reward management for the engineers at BSVQ. [2 points]

Sophisticated reward and performance systems are needed here, see the example of ScienceCo in Chapter 6 for a description of such a system but see also Chapter 10 of the book)

- d) As said, there are a number of dilemmas associated with managing knowledge work. Provide two more dilemmas that companies, such as BSVQ may face in managing knowledge work. [2 points]

Choose any two of these.

1. The organizational dilemma between the need to systematize knowledge into **codified information** for wider accessibility and standardization and the fact that learning and sharing situational knowledge can only be done via personal contact.
2. Another dilemma is the one individuals face when they have to choose between the **short time demands of their daily tasks and the long-term need for developing their knowledge.**
3. A third problem results from the globalization of many organizations. This implies that cooperation and knowledge exchange by employees may be hampered by **diversity in language proficiency and by cultural differences** in perspectives and interaction habits.
4. Another dilemma is found between the need for company-wide, or even inter-company exchange of knowledge versus the requirement for **security.**
5. The challenge of being able to cooperate with partners in an alliance, without giving away company sensitive knowledge.

Answers Examination MOT1524 Leadership and Technology Management

The VQbase is the core Knowledge Management System (KMS) at BSVQ. It turns out that a number of engineers do not seem to value the KMS very much. However, many other large firms claim to have much more success with their KMS.

- e) What could BSVQ do in order to get more success with their KMS? Provide at least two important requirements for successfully introducing a KMS.

One of the deficiencies of codification has to do with the fact that Knowledge Management systems do not seem to fit with the daily work of employees. Also the engineers at BSVQ do not seem to use the VQbase repository as part of their daily work. In order to successfully introduce the KMS it is important to try to fit this system into the work of the engineers.

1. Learning is key here and BSVQ could try to train their employees better in order to use the KMS more effectively.
2. Another way to stimulate the use of the KMS could be to show its value through examples of projects that successfully applied the VQbase for their benefit.

Both options will help to create more awareness of the benefits of the KMS and may stimulate its use.

QUESTION 2

The development of a hydro-power generation system [total: 10 points]

Hong Kong is one of the most densely populated areas in the world with most residents working and living in high-rise towers and residential apartment blocks. A group of engineers at the international engineering firm BSVQ, has generated an idea for developing a small-scale, in-building hydro-power generation system that makes use of the unused water pressure in the potable water pipelines of high-rise buildings in Hong Kong. The design and development of new products, such as the in-building hydro-power generation system are the outcome of a methodology based on solid, proven design principles which are again supported by knowledge processes. Rather than developing the idea for a hydro-power generation system in house, BSVQ decided to work together with a number of local partners from Hong Kong including members of the Hong Kong Polytechnic University.

- a) Why do you think that BSVQ decided to work with local partners? Provide at least four advantages of collaboration in relation to innovation. [2 points]

In chapter 4 of the book, there is a section on the advantages and disadvantages of team work for effective knowledge sharing and knowledge creation. The following 7 **advantages** are discussed and you may choose any 2 of these:

1. Potential for synergistic solutions
2. Increased pool of knowledge
3. Increased acceptance/commitment of the selected decision
4. Wider range of perspectives
5. Novices can learn from more experienced team members
6. Greater understanding of the rationale of the selected decision
7. Learning opportunities

Answers Examination MOT1524 Leadership and Technology Management

- b) Although collaboration has a number of benefits there are also a number of disadvantages associated with collaborative work. List and describe four disadvantages of collaboration. [2 points]

In chapter 4 of the book, there is a section on the advantages and disadvantages of team work for effective knowledge sharing and knowledge creation. The following 7 **disadvantages** are discussed and you may choose any 2 of these:

1. Knowledge boundaries may restrict knowledge sharing
2. Conformity may stifle knowledge sharing
3. Groupthink may override individual judgement
4. Group polarization may lead to risky decisions
5. Diffusion of responsibility
6. Satisficing
7. Peer surveillance may stifle creativity and innovation

BSVQ uses a proven project management methodology, which include mechanisms that are aimed at facilitating knowledge exploitation. Michael Zhang is appointed as the leader for the in-building hydro-power generation system project. Michael Zhang claims to be an experienced project leader and calls himself a 'boundary spanner'. He is also convinced that trust among the different team members is a necessary condition for the success of this particular project.

- c) What is the role of a 'boundary spanner' and to what extend may this role be beneficial for the project? [2 points]

Chapter 8 of the book is dedicated to 'the role of social networks and boundary-spanners'. In relation to the role of Michael Zhang, a **boundary spanner** is a highly connected person. By being connected to different groups, such a person is able to span the boundaries of social networks.

The benefits of boundary spanners in projects, such as described in this example, are obvious as such a person like Michael Zhang is usually able to manage relationships across different interfaces. There are many interfaces in the hydro-power generation system project that need to be managed in order to gain success.

- d) Do you agree that trust is a necessary condition for the creation of knowledge? Argue why or why not. [2 points]

The exchange of **tacit knowledge** is key here.

High levels of trust are considered necessary in order to facilitate the type of communication and dialogue that is needed for people to share **tacit knowledge** and generate **learning** that can lead to knowledge creation. Since tacit knowledge is hard to codify, interaction between the different stakeholders is necessary and unavoidable. If there is no trust between the different people in the project, there will be no meaningful exchange of tacit knowledge and information. (see chapter 4 on the importance of trust in collaborative work)

Answers Examination MOT1524 Leadership and Technology Management

- e) Knowledge exploitation from projects, such as the development of a hydro-power generation system, seems to be very difficult. Argue why. [2 points]

The further exploitation of knowledge created from this project is difficult for the following reasons:

1. Because of a deficit of collective knowledge,
2. Because of a lack of awareness that useful knowledge is available,
3. Because the knowledge that is available is often not very useful as this often focusses on product knowledge rather than on process knowledge

You may choose and elaborate on one of these reasons. (see chapter 5 on project-based organizations and knowledge)

QUESTION 3

The making of a revolutionary music record [total: 10 points]

California, 1968. In the Los Angeles suburbs, the musician Captain Beefheart wrote 28 difficult songs on a piano in 8 ½ hrs. Beefheart wanted the members of his Magic Band to “live” those unusual songs, and be capable of recording the songs, to perfection, in a single take. Thus he locked up the band members in a small house for eight months, and forced them to rehearse the songs over and over again, while he exercised dictatorial control over the band members. The musicians hardly received food (one group member recalled living on a small cup of beans for a month). Beefheart attacked, beat up or imprisoned his musicians when they did not play their part correctly, or lectured them until they collapsed in tears. The drummer, who had received the nickname Drumbo, hardly survived the physical abuse. In the end, the Magic Band recorded the music record in one take. The album, *Trout Mask Replica*, was rated 60 in the magazine Rolling Stone’s Top 500 Greatest Albums of All Time in the year 2003 [source: Wikipedia.org].

- a) The making of Trout Mask Replica is a real-life illustration of phenomena that are studied in social influence theory. Social influence theory distinguishes between two types of social influence. Mention and describe each of these two types? [2 points]
1. Informational: conforming to other people because we believe that their interpretation of an ambiguous situation is better than ours (conforming due to “the need to be right”)
 2. Normative: conforming to other people because we wish to be liked and accepted by them -> compliance to the norms, rules, and beliefs of a group (conforming due to “the need to be accepted”)
- b) Which type of social influence did Captain Beefheart use to keep the Magic Band on track? [1 point]

Normative: The Magic Band had to comply with Captain Beefheart’s norms, rules, and beliefs.

Answers Examination MOT1524 Leadership and Technology Management

In the 1950s, Solomon Asch conducted several studies into conformity. Particularly famous are his line experiments.

c) Describe the setup and outcome of these famous line experiments? **[1 point]**

- One (naïve) subject vs. a group of 5-7 confederates (group members that were instructed about the true aims of the experiment, and instructed to behave accordingly)
- A series of cards showing a line (Exhibit 1) and three other lines A, B, C of varying length (Exhibit 2)
- The group needed to decide which line from Exhibit 2 was equal in size as Exhibit 1.
- The confederates deliberately gave incorrect answers to such questions.
- Results: 76% conformed at least once; 24% never conformed. Most subjects conformed 1-3 out of 12 trials; 12% conformed almost every time.
- It took a majority of 4 or 5 people to break majority influence.

d) Asch's line experiments provided yielded several insights how to prevent conformity from happening that were also summarized in Bibi Latane's social impact theory. List and describe each of these insights? **[1.5 points]**, and explain, how the musicians from the Magic Band could have prevented the recording process from derailing the way it did? **[0.5 points]**

Latane showed that the chance that people will conform to group pressure in such setting depends on:

1. Strength: How important is the group to you? -> If you wish to be part of the group, you will be more willing to conform
2. Immediacy: How close is the group to you during the influence attempt? -> It makes a difference to be constantly in the group, or can occasionally get out of the group
3. Number: How many people are in the group? -> The bigger the group, the bigger the pressure.

For the Magic Band members, the smartest solution to counter Beefheart's pressure would have been **to tackle immediacy** – i.e., walk out and take regular breaks from the mad recording process as a group would have put all things in perspective.

Less likely answers are:

Change the size of the band: Size of the band was more or less a given (standard for a rock-n-roll band, so excluding a guitarist would have led to signing a new guitarist, thus to the same group size).

Change the strength with the band: This may not have been the smartest strategy (for the musician(s) should then have had to walk out of the recording project).

Answers Examination MOT1524 Leadership and Technology Management

In recent years, evidence has been collected for the existence of dark personalities in everyday life (starting with Paulhus & Williams, 2002). Specifically, a dark personality tetrad is proposed, consisting of four (4) manifestations.

- e) Please list and describe each of these four dark personalities [2.0 points]?
- **Psychopath** = characterized by high impulsivity and thrill-seeking plus low empathy
 - **Narcissist** = characterized by high grandiosity, entitlement, dominance and superiority
 - **Machiavellian** = characterized by cynical, unprincipled beliefs in manipulation as key to success in life
 - **Sadist** = characterized by deriving enjoyment from observing and/or inducing suffering in other people
- f) Based on the description above, which of the dark personalities from the tetrad best describe(s) the malevolent musician Captain Beefheart [0.5 points], and what aspects from dark personality theory make you say so [1.5 points]?

There is no need to provide a detailed clinical assessment of this musician. On the basis of the brief descriptions in the example this particular musician could be characterized as psychopath or a sadist:

- Psychopath = characterized by high impulsivity and thrill-seeking plus low empathy
All Captain Beefheart cared about was the perfect recording of the music record. The Magic Band members had to act / play by his own rules only (suggesting a low empathy). Not living up to Beefheart's standard was met with physical and emotional violence (suggesting high impulsivity).
- Sadist = there is also an element of sadism in the story (i.e., calling the drummer Drumbo), and deliberately bringing musicians to tears and breakdown.

At least, these characterizations are most likely to fit. However, as long as you provide a clear explanation other assessments are accepted as well here.