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Abstract

Two years after the Great Eastern Japan Earthquake Disaster that occurred on March 11 on 2011, and the subsequent nuclear plant failure at Fukushima, organizations are rethinking their business continuity plans to accommodate large-scale crises. Yet Information Technology (IT) functions may benefit from lessons other than the technical or procedural. People leadership, lauded as an important skill in emergencies, has received insufficient attention in IT function crisis response. This descriptive, case-based research examined the leadership of CIOs during and after the Japan earthquake disaster, using the transformational leadership approach as a theoretical lens. Our data originates from interviews and questionnaires to 3 CIOs and 4 of their subordinates in 3 large companies in Japan, and gives an account how the direct reports of CIOs evaluate the leadership of the CIOs in this crisis situation. While transformational leadership by IT managers has received praise, our results suggest that transformational leadership may also be applicable in crisis situations. We contribute one description of how transformational leadership is viewed in the IT function in a situation requiring agility. We also raise several questions and possibilities for further research in this area.

Keywords: Chief Information Officer, Japan, crisis, transformational leadership
1 INTRODUCTION

The Japan Earthquake crisis that occurred in the Tohoku region of Japan’s main Honshu island in March 2011, has caused not only immense loss of human life, but has had widespread impact on business activity in Japan as well (MOFA 2013). The scenario unfolded with a powerful earthquake of magnitude 9.0 that by itself did comparably little damage to manmade structures and business systems. Japan has long utilized advanced construction techniques that prevent serious damage from occurring even as a result of this kind of powerful tremors. However, the country was less prepared for the giant tsunami wave that emanated from the epicenter. Residential buildings and other constructions had been built in low-lying areas near to the sea, with insufficient protection from a giant wave such as this. Although earthquake early-warning systems and alarms were in place, they were not sufficient to evacuate most people in the affected areas. Whole villages and towns were swept away, and thousands of people perished in the inundation. A further disaster following this tsunami was partly man-made; the power plants in Fukushima had little protection against flooding of this magnitude. The incoming water masses disrupted the cooling systems of the plants, causing overheating and subsequent meltdown in the plants. While the direct loss of life from the tsunami was devastating, the radiation scare and electricity shortages resulting from the inevitable shutdown of these facilities can be said to be equally destructive. Two years after the earthquake, the recovery and rebuilding process in the Tohoku region is still underway. The experience has also been a lesson for many organizations and businesses in crisis response – including those that managed to avoid bearing the brunt of the disaster.

While continued and unrelenting effort to curb the human cost of disastrous events such as this is necessary, the continuance of organizational and business activities and rapid recovery from damages should also be considered priorities. Current organizations are to a large extent dependent on information in their activities. Indeed, information technologies (IT) have become perhaps the most important business technologies of this so-called information age. Should there be a major disruption to IT services, it is difficult to imagine that companies could effectively function with letter mail and paper-based accounting instead of e-mail and electronic spreadsheets. Therefore, when examining the crisis resilience of organizations, one crucial facet is to examine the continuance of stable and reliable IT services (Gibb & Buchanan 2006, Hecht 2002). Especially in large organizations, the head of the IT function who is responsible for the functioning of these IT services is called the Chief Information Officer (Chun & Mooney 2009).

This research examined the role of the Chief Information Officer (CIO) during and after the Japan earthquake crisis, and in particular, concentrated on understanding the CIO’s leadership during this period. We viewed the CIOs’ leadership through the theoretical lens of transformational leadership (Bass 1985), and also included facets in the data gathering and analysis design that are typically connected with leadership when understood as a relationship between the leader and subordinates. The paper is structured as follows: chapters 2-3 discuss crisis management from the viewpoint of IT functions and CIO leadership, chapters 4-5 present the theoretical framework, the method, and the research design, chapters 6-7 describe the cases and their contexts, chapter 8 discusses the findings and gives suggestions for future research, and finally, chapter 9 presents the contributions and limitations of this research.

2 CRISIS MANAGEMENT IN IT FUNCTIONS

Crisis management in general is a field often referred to as disaster management, and subsumes the decisions, activities, actors and technologies that pertain to the various stages of a disaster (Lettieri & Radaelli 2009). Disasters may include various kinds of man-made and natural disasters of which wars, famine, flooding, earthquakes and financial crises are but a few examples. The phases of disaster management are pre-crisis, crisis, and post-crisis, where disaster response is the main activity during the crisis. Disaster response consists of actions to manage and control the various effects of disaster
and minimize human and property losses, and prior research has typically highlighted the lessons learned from a specific disaster when using a given technology (Lettieri & Raduelli ibid.). Insights recurring in this literature reveal that coordination among various organizations is crucial to avoid waste of time and resources in disaster management. Further, the existence of several competencies in disaster management teams, and the redundancy of manpower and technologies are vital to prepare for unexpected contingencies. There also has to be trust between the superiors and the subordinates to reduce disobedience that would be detrimental to operations, and the possibility to rapidly increase the readiness level of the organization to account for escalating crisis situations.

Within the IT field, crisis management has been primarily addressed in the Business Continuity Management (BCM; see ISO22301) theme, and the recovery topic within that theme. BCM consists of activities to identify the risks and vulnerabilities of the organization, select risks to which a contingency plan shall be developed, and make plans in order to prepare for the possibility that a risk materializes, with the aim to minimize damage resulting from the actualization of a risk factor (Copenhaver & Lindstedt 2010, Devargas 1999, Gibb & Buchanan 2006, Hecht 2002). Much of the prior literature is prescriptive in nature, directed to the IT managers, with an emphasis on planning and advance preparation in particular regarding technical factors (Iyer & Bandyopadhyay 2000, Lumpp et al. 2008), but also noting communication, training, motivation, and cultural factors (Gibb & Buchanan 2006, Hecht 2002).

IT crisis response can be viewed as a capability built on the Resource-Based View (RBV). The framework of Leidner et al. (2009) shows organizational skills such as leadership to be crucial in extracting the value from other resources in crisis response. In particular, they note the presence of shared leadership at all levels and clear ownership of tasks that eliminates confusion and conflict among groups. The role of management is visible in this asset side, but also in the capabilities side, providing the signal recognition and holistic picture that are crucial in crisis response. In addition, they claim that communication of relevant information with high speed to all directions (not only to one’s superior in the same organization) is vital. Leidner et al. (ibid.) also report the success of Singapore government in setting up the crisis response team based on the existing IT structures during the SARS crisis and the Indian Ocean tsunami crisis. The organizational structures were much more flat in “crisis mode” than in day-to-day operation, and the IT unit was allowed relatively independent actions. This organizational shift to more flexible model during the crisis points to decreased bureaucracy and increased central control over the operation.

The capability view discussed above is close to the dynamic capabilities theory (Teece et al. 1997) and the agility concept, which stress the ability of the organization to change to accommodate external shocks (Evans 1991, Sherehity et al. 2007). While these theories concentrate on shocks resulting from the business environment, they might also be applicable to shocks resulting from e.g. natural disasters. Agility can be nurtured in the IT function by e.g. developing internal management and leadership (Tapanainen et al. 2008), increasing the level and variety of skills possessed by staff (Lui & Piccoli 2007), and improving the communication and prioritization abilities of staff, along with encouraging risk-taking behaviour and increasing motivation and staff confidence in their “gut feeling” (Hodgson & White 2003). Thus, management actions are key to improving agility in the IT function.

The head of the IT function in many large organizations is the CIO. The responsibilities of the CIO are quite wide, including knowledge of technology, business and people management (Weiss & Anderson 2004). The CIO also provides leadership in IT governance (Rau 2004). Chun and Mooney (2009) conducted a survey of CIOs in the USA, and found evidence of three capabilities that CIOs most need in their job. These are relationship building, business systems thinking, and leadership. Thus, leadership has been recognized to be an important skill for CIOs. Leadership is, in particular, important during changing times when the organization and processes are in a flux, because it is precisely those times that the staff are most troubled and stressed in their jobs. Thus, CIOs should be competent in leading the staff of their organizations and supporting them in the recovery effort during and after the crisis has struck.
It appears that leadership has featured as an important factor in crisis response, and is also considered one basic skill for CIOs. Next, we turn to reviewing leadership during crisis situations in the next chapter.

3 CRISIS MANAGEMENT AND CIO LEADERSHIP

Surprisingly little work has been done on investigating leadership in crisis situations. While disaster stories from the field often praise “heroic”, military-style leadership (Martin 2007), leadership theories seem to be focused on understanding leadership as a holistic concept rather than examining the crisis situation per se. These theories include variables such as environmental effects and task characteristics (House 1971, Fiedler 1987, Mumford et al. 2000). For example, Fiedler (1987) argues that effective leadership style is dependent on task structure, leader-subordinate relationship, and the leader’s authority over the subordinates. He maintains that leaders should be task-oriented or at least fairly task-oriented in a situation where they have strong authority over subordinates in a poorly structured task where leader-subordinate relationships are good. Similarly, House (1971) argues that the leader should select his/her leadership approach by considering task and subordinate characteristics in each situation, and gives fine-tuned leadership style prescriptions for tasks which are complex and ambiguous.


Some, although limited (Zhang et al. 2012) research has examined crisis leadership by utilizing the so-called transformational leadership approach. Bligh et al. (2004) and Boin et al. (2010) analyzed the rhetoric of U.S. President George W. Bush during the 9/11 crisis and the Hurricane Katrina disaster, whereas Pillai et al. (2004) analyzed the leadership ratings of U.S. President Bill Clinton during the Impeachment Crisis. Transformational leadership (Burns 1978) emphasizes that certain characteristics of leadership can produce favourable team conditions and improve team performance (Bass 1985). The theory provides an understanding how leaders may influence followers to make efforts, commit to organizational goals, and perform in a way that is beyond expectations (Yukl 1999). According to Bass (1985), a transformational leader is a person who:

- raises associates’ level of awareness of the importance of achieving valued outcomes and the strategies for reaching them,
- encourages associates to transcend their self-interest for the sake of the team or organization, and
- develops associates’ needs to a higher level in such areas as achievement, autonomy, and affiliation.

Thus, a transformational leader is someone who can create a transformational leadership relation between him/herself and the associates (subordinates). The paradigm is often contrasted to transactional leadership that is defined as a leadership approach wherein the leader rewards correct behavior and/or punishes incorrect behavior.

The dimensions of transformational leadership are (Bass 1985): individualized consideration, intellectual stimulation, inspirational motivation, and idealized influence. Individualized consideration denotes the ability of the leader to take into account the individual needs of each subordinate, and respect the individual contribution of each. Intellectual stimulation refers to the ability of the leader to
challenge the assumptions held by each subordinate and place intellectually demanding tasks for them. This dimension refers to what extent the leader can create a learning environment around the subordinates. Inspirational motivation is the leader’s skill to articulate an appealing vision of a future state and to promote that vision so that the subordinates become motivated to act on basis of that vision. It is very close to the concept of charisma that has also spawned a leadership approach of its own, i.e. the charismatic leadership approach (House 1977). Finally, idealized influence is defined as the capability of the leader to become a role model and gain the trust of the subordinates through his/her ethical actions. These dimensions may be measured by the MLQ (Multifactor Leadership Questionnaire) instrument (Bass 1985) which emphasizes the subordinates’ ranking of their superior’s leadership attributes.

Lowe et al. (1996) found in their study that critical dimensions of transformational leadership correlate positively with subordinate satisfaction, motivation and performance. It mediates the link between emotional intelligence and team outcomes (Hur et al. 2011). Transformational leadership has been studied in many different contexts. Studies have shown that transformational leadership has a positive effect on performance in profit and non-profit (Egri & Herman 2000), educational (Harvey et al. 2003; Kirby et al. 1992), governmental (Wofford et al. 2001), military (Bass et al. 2003), religious (Druskat 1994) and sports (Charbonneau et al. 2001; Ristow et al. 1999) organizations. Thus, it appears to be an effective leadership approach for many types of organizations.

Transformational leadership has been argued to be useful to CIOs. Chen et al. (2010) claim that CIO’s need transformational leadership to effectively respond to business demands. Gupta et al. (2009) found that effective CIOs exhibit behaviours consistent with transformational leadership, and the research of Tapanainen (2012) emphasized IT manager transformational leadership as a catalyst to IT agility. This research takes the transformational leadership approach as an analytical tool, and introduces the research question and the method in the next two chapters.

4 EXAMINING CIO LEADERSHIP VIA LEADER-SUBORDINATE INTERACTIONS

As we use transformational leadership as the basis of leadership evaluation in this research, it is necessary to examine the relationship of the leader and subordinates to determine to what extent the CIOs’ leadership is transformational. We specify the research question as follows:

**How do the direct reports of CIOs view the CIOs’ leadership during the Japan Earthquake Crisis?**

Table 1 below summarizes some of the main variables that have been examined together with leadership, when in particular leader-subordinate exchanges (Dienesch and Liden 1986) are the focus.

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hui, Law &amp; Chen</td>
<td>1999</td>
<td>Negative affectivity, perceived job mobility, in-role performance, organizational citizenship behaviour</td>
</tr>
<tr>
<td>Lapierre &amp; Hackett</td>
<td>2007</td>
<td>Trait conscientiousness, organizational citizenship behaviour, job satisfaction</td>
</tr>
<tr>
<td>Schyns &amp; Croon</td>
<td>2006</td>
<td>Social structure, task demands, satisfaction with the supervisor, satisfaction with colleagues, satisfaction with job conditions, satisfaction with the task</td>
</tr>
<tr>
<td>Tse &amp; Mitchell</td>
<td>2010</td>
<td>Knowledge creation, open-mindedness norms</td>
</tr>
<tr>
<td>Wang, Law &amp; Chen</td>
<td>2008</td>
<td>Task performance, interpersonal facilitation, job dedication, intention to quit, promotability</td>
</tr>
</tbody>
</table>

*Table 1: Variables examined with leader-member exchange*

First, Table 1 shows several variables associated with the outcome dimensions of leadership such as task/in-role performance, knowledge creation, and satisfaction with the job/task, supervisor, and colleagues. Second, it shows variables connected with the length of work relationship between the leader and subordinates, such as perceived job mobility, intention to quit, job dedication, and promotability. Third, it also shows variables connected with the work content and structures around
The leader and subordinates, including social structure and task demands. These three groups of variables are intimately connected with how leadership is experienced by subordinates and are included in the design of this research.

The next chapter outlines by what means the research was conducted when these theoretical tools were taken into use.

5 METHODS

The research method of this descriptive research was the case study (Yin 2009), combining both qualitative and quantitative data. Qualitative data was collected by means of recorded, semi-structured interviews to CIOs and their direct subordinates. Quantitative data was collected by the MLQ (Multifactor Leadership Questionnaire) instrument, which was translated to Japanese with assistance from native speakers and administered directly to CIOs and their subordinates. The instrument was cropped down to include only questions directly addressing transformational leadership (addressed to both CIOs and subordinates) and the leadership outcome dimensions (addressed to only the subordinates). These outcome dimensions include “extra effort”, “effectiveness” and “satisfaction” that correspond to the variables frequently examined in connection with leader-subordinate relationships as written in the previous chapter. The research design is as outlined in Figure 1.

![Figure 1: Research design](image)

Interviews were conducted in October and November 2012, and there were 7 interviewees in total from 3 large Japanese private companies. Three of the interviewees were CIOs, and 4 were direct reports of these interviewees. Each CIO hailed from a different company. The selection of this interviewee group was challenging because of access difficulties, and thus, the companies were selected based on availability of access. Attempt was made to contact companies which were expected to have been affected by the Japan earthquake crisis, and publicly available data was sought before conducting the interviews in order to understand the company business and structure, as well as the issues affecting the company at the time of the crisis, where this was available. Table 2 below describes the data collection succinctly.

It should be noted all interviews were conducted in Japanese, with both of the authors (of whom one is a native speaker) present in the CIO interviews, and either of the authors present in the subordinate interviews. We utilized a previously agreed interview template of topics to cover. However, we preferred to give latitude to the interviewees to bring up topics they considered relevant for discussion. During the interviews, the interviewees were given a choice to shut down the recorder at any point, but this option was used only once by the CIO of Service. The length of the resulting interview tapes ranged from 20 minutes to 1 hour and 20 minutes. Afterward, the interview tapes were transcribed into text and analyzed. Statements interpreted from the text were then sent to the
Interviewees to be verified. Interviewees were given a choice of concealing any statement they did not wish to disclose, but none chose to do so.

Two problems surfaced during the course of data collection: the CIO of Service was unwilling to be subjected to the questionnaire, and to collaborate on interviewing his subordinates privately. This was a serious setback. However, we were able to interview him and his direct report together as a group. We also obtained high quality data from the two other companies.

<table>
<thead>
<tr>
<th>Company moniker</th>
<th>Business field</th>
<th>Interviews</th>
<th>Interviewees</th>
<th>Interviewee status (CIO/subordinate)</th>
<th>Questionnaires administered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto</td>
<td>Automobile</td>
<td>2</td>
<td>2</td>
<td>1 CIO</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 subordinate</td>
<td></td>
</tr>
<tr>
<td>Insure</td>
<td>Insurance</td>
<td>3</td>
<td>3</td>
<td>1 CIO</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 subordinates</td>
<td>YES, both</td>
</tr>
<tr>
<td>Service</td>
<td>Business services</td>
<td>1</td>
<td>2</td>
<td>1 CIO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 subordinate</td>
<td></td>
</tr>
<tr>
<td>(total)</td>
<td></td>
<td>6</td>
<td>7</td>
<td>3 CIO, 4 sub.</td>
<td>Five</td>
</tr>
</tbody>
</table>

Table 2: Summary of the data collection

Analysis of the data progressed by one researcher assigning labels to relevant sections of the transcriptions whether they addressed (1) the leadership of the CIO, (2) the context of the CIO leadership situation during the crisis period, or (3) the outcome of CIO leadership. This analysis produced a list of labelled statements that were sent to the second researcher, and this second researcher was given the task of commenting or changing the existing labels, or adding/deleting new statements to the list. The resulting list was then used as the basis of the argumentation for this article.

In the next chapters six to seven, we present the description of what we learned from the interviews and from the relationships between the CIO and subordinates.

6 COMPANY EXPOSURE TO THE CRISIS

The companies experienced a variety of challenges as a result of the Japan earthquake crisis. Common to all of them was trouble with the communications network and the electricity cuts and traffic chaos that followed in the days after the earthquake. All companies had in place a robust and rehearsed system for earthquake safety measures, with assigned duties, floor announcements and evacuation zones. Business Continuation Plans had been prepared, special control rooms been set up, and a task list for emergencies had been drawn up. Therefore, no company of these three was taken entirely unawares by the disaster. None of the companies had their primary activities or core units within the tsunami-hit Tohoku area, and thus none suffered a decimating blow to their operations. Nevertheless, the scale of the disaster was shocking even for these earthquake-hardened Japanese companies.

The Auto company has a manufacturing base outside the tsunami area, and therefore production was not initially affected by the disaster, but the company was exposed due to two things: the distribution and supplier network. The first response consisted of an employee report-in and investigation of the damage to the IT network connecting to the local dealers in the Tohoku region. Later, an unexpected contingency unfolded: it was realized that the suppliers of the company had problems in producing specific components upon which hinged the assembly of certain types of car. In other words, the unavailability of just one component might prevent the company in assembling a given car model, and thus stop the value chain for this product. An urgent response to this problem ensued.

The Insure company had its headquarters away from Tohoku area, but several local branch offices and a regional headquarters were seriously affected by the disaster. The company was faced with the prospect of considerable insurance payments especially in the area affected by the tsunami, where whole towns had been swept away by the tide. The earthquake had also damaged countless buildings and structures in the Tohoku region. For the IT unit this meant that technical support had to
be provided to the local branch offices that had damaged IT equipment or had lost their data connection to the central information databanks. One emergency measure was to send expert reinforcements to the regional headquarters in the Tohoku area in order to locally administer this technical support. The crisis also served as a valuable lesson to the IT unit in terms of testing the earthquake emergency procedure. Gaps were found in the evacuation procedure and solutions had to be found on-the-spot when the crisis occurred.

As the two other companies, the Service’s headquarters were located safely out of the tsunami range. However, in the wake of the disaster, it was found that the company IT systems were vulnerable. International transactions which the Service conducts on a day-to-day basis require access to the foreign exchange systems and this system needed special attention during the communication outages when the earthquake hit. Trouble was also found in the security systems of the company which were supposed to be helpful precisely during this type of crises. For example, confirmation of the safety of employees had to be conducted by a work-around because of this failure.

7 CIO LEADERSHIP IN RESPONDING TO THE CRISIS

Table 3 below summarizes the results of the questionnaire on transformational leadership conducted to the CIOs and their direct reports for the Auto and Insure companies. No questionnaire was conducted at Service as per the request of the CIO. The components of transformational leadership, averaged among the respondents, are shown. For idealized influence, the average of attributed and behavioural components of the construct is given. The scale of the items is 1-5, with higher ratings in each category contributing to the transformational character of the leadership.

<table>
<thead>
<tr>
<th>Transformational leadership components</th>
<th>Auto CIO (1 rater + the CIO)</th>
<th>Insure CIO (2 raters + the CIO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idealized influence (average of attributed and behaviour)</td>
<td>3.7</td>
<td>4.0</td>
</tr>
<tr>
<td>Inspirational motivation</td>
<td>3.9</td>
<td>4.7</td>
</tr>
<tr>
<td>Intellectual stimulation</td>
<td>4.1</td>
<td>4.3</td>
</tr>
<tr>
<td>Individual consideration</td>
<td>4.1</td>
<td>4.1</td>
</tr>
</tbody>
</table>

Table 3: Transformational leadership of Auto CIO and Insure CIO (scale 1...5)

As all scores are well above 3.0, the data strongly suggests that the raters and the CIOs themselves believed that the CIO leadership style tends toward transformational in both companies. Other than that, it can be noted that both CIOs were rated strong on intellectual stimulation, and that Auto CIO was strong in individual consideration, whereas Insure CIO was particularly strong on inspirational motivation. Idealized influence can be seen as a relative weakness for both CIOs.

The CIO direct reports were also given an opportunity to rate three outcome dimensions of the CIO’s leadership, and these results are given on Table 4 below.

<table>
<thead>
<tr>
<th>Transformational leadership components</th>
<th>Auto CIO (1 rater)</th>
<th>Insure CIO (2 raters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra effort</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>3.5</td>
<td>4.0</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>4.5</td>
<td>3.8</td>
</tr>
</tbody>
</table>

Table 4: Leadership outcome dimensions for Auto CIO and Insure CIO (scale 1...5)

Table 4 suggests that CIO direct reports were all relatively satisfied with their leaders. The next subchapters describe in turn how the crisis decision-making was conducted in the IT functions of all three companies, and how the CIOs’ subordinates view their bosses’ leadership. The subchapters also tell about what kind of leadership the subordinates believe would be effective in crises.
7.1 Auto CIO

A “war room” was established to respond to the crisis immediately after the earthquake and attended every morning for one week after the earthquake. Auto CIO attended this war room as the IT representative and gave directions accordingly to the subchiefs of the IT department. One of these subchiefs, here identified as Mr. Abe, was interviewed in this research. His workstation was located adjacent to Auto CIO, and thus face-to-face interaction was preferred over email. Formal communication took place twice per week in the form of a meeting and a report – but communication intensified during the crisis as a result of increased top-down directions from the war-room.

Mr. Abe described Auto CIO as quite frank and preferring to discuss work content in concrete terms rather than about the formalities. He would rarely give detailed instructions, and explain the overall objective in succinct terms, delegating the job to the subchiefs. He emphasizes the initiative of the individual in deciding between the methods to complete the job. In doing so, he finds out whether the person has sufficient ability to do the job. Thus, the interview suggests (as verified by the questionnaire) that the leadership style of Auto CIO exhibits a high degree of individualized consideration and intellectual stimulation.

“He concentrates firmly on the objectives, explaining the gist of the job and delegating the job to the subchiefs of the department, and then waits to see what results they are able to come up with”

During the crisis, however, Mr. Abe noted that Auto CIO became more exacting and detailed with his directions (Figure 2). Everyone knew that it was an emergency so there was no back talk or complaints to him even when he was quite direct in his commands.

“He was more exact about how to do the job compared to the usual”

Mr. Abe stressed that crisis response should be fast and skip any formalities. In times of crisis, careful IT-business alignment should be bypassed in favour of faster action and a more flexible management style. If it looks like a decision is going to be accepted, it should be immediately executed, with monetary considerations handled later. In the words of Mr. Abe, crisis leadership is a process of trial and error whereby the decision that looks best at any given time is taken. Formal management leads only to late crisis response – consensus does not result in good decisions. The opinions of Mr. Abe regarding effective crisis leadership seem to agree with the leadership style of Auto CIO, suggesting high idealized influence, which is verified by the questionnaire.

7.2 Insure CIO

When the earthquake occurred, the previously assigned key members of the IT function crisis team gathered in a meeting room to hold a conference call with the company headquarters. This crisis team was composed of about 50 people – including all the director-level chiefs in the IT function – to be able to conduct the necessary decision-making independently. Two direct reports of the Insure CIO were interviewed in this research, here identified as Mr. Igarashi and Mr. Ito. These persons reported a quite different communication profile with Insure CIO. Mr. Igarashi communicated with him face-to-face on a daily basis, whereas Mr. Ito met him only 2-3 times per month. Both of them reported
greatly increased face-to-face communication after the earthquake, to even as many as 5-10 meetings per day.

Mr. Igarashi, who has worked with Insure CIO for a long time and has been in daily contact with him for 3 years, was assigned the duty for evacuations during the crisis. He described Insure CIO as an able leader who puts great value on the employees’ welfare. According to Mr. Igarashi, he prefers to delegate work to the subordinates and only interferes with advice if it really looks like the subordinate is not up to the task.

“He does not shy away from delegating work, and beyond that accepts that he can only stand by and watch the outcome. If it turns out not to produce what was expected, only then would he give a little advice”

Mr. Ito, who has worked with Insure CIO for 20 years, described Insure CIO as a good leader; a radical who has a strong innovative streak. The CIO is quite firm regarding his views and does not easily change his opinion. He practices good communication with the staff and therefore his relatively top-down leadership approach is accepted by everyone. However, his style is not to give detailed instructions to, or discuss at length with subordinates. Rather, he paints a big view of the desired direction of the company or of the project. Nevertheless, he does welcome suggestions from trusted subordinates such as Mr. Ito.

“He tends to relay big messages and big issues, and draw big pictures, vectors and the stars we should reach out for. He is the type who does not give very specific instructions, rather delegating such detailed issues”

As also shown by the questionnaires, these descriptions by Mr. Igarashi and Mr. Ito suggest that Insure CIO is strong on individualized consideration and intellectual stimulation. According to Mr. Ito, this leadership style is unchanged after the crisis (Figure 3), and Insure CIO remains well trusted by employees.

![Figure 3: Insure CIO’s leadership before and after the crisis according to the interviews and questionnaires](image)

Mr. Ito stated that he believes that a good leader is a good businessman, forward-looking and considers issues holistically. In the IT business, a radical who likes new things and keeps following future trends is in his words the most appropriate personality. On the other hand, Mr. Igarashi stated that he believes a true leader must stay calm at all times and listen to others’ opinions. A true leader should not abandon his/her convictions. There is often limited time to explain the full circumstances of, for example, why a project should be extended, so quick and firm decisions are important. In Mr. Igarashi’s opinion, top-down leadership is crucial just after the crisis has struck, but there needs to be a point when leadership returns to the usual bottom-up way of doing things after the situation has calmed down. While such a noticeable change did not occur in Insure CIO’s behaviour, these reports by the subordinates of Insure CIO seem to otherwise coincide with how they describe Insure CIO, and therefore point to idealized influence by Insure CIO.

7.3 Service CIO

Emergency actions took place on the earthquake day – among them consideration of the problems with foreign exchange and the security systems. As the next day was Saturday, Service CIO ordered everyone to go home save for the staff working on these emergency measures. He himself stayed to supervise the work until Saturday morning. On Monday, a crisis team of 18 people was set up and convened to decide on the priority of maintenance. It was decided that communication tools would
have highest priority and business tools the lowest priority in recovery. A single interview was conducted with both Service CIO and his direct report (Mr. Sato) present. They have worked together for more than 10 years.

Service CIO describes his role as the main decision-maker in his department during the crisis. Although in his words this is not traditional Japanese management style, he thought it was best to practice strong leadership at that time because a consensus-type approach might not result in a decision. He believes that strong leadership is necessary especially at the headquarters during such occasions because things do not get decided if everyone’s opinion is heard (Figure 4). He stressed that, while he does listen to employee opinions, he prefers to deal with employees who are listening to him. He concluded that the crisis has enhanced employees’ loyalty towards the company and trust toward each other.

![Diagram of leadership before and after crisis]

Figure 4: Service CIO’s leadership before and after the crisis according to the interviews and questionnaires

The final two chapters discuss the results, the further research opportunities, and contributions/limitations.

8 DISCUSSION AND FURTHER RESEARCH

The three case descriptions above offer a rare glimpse into the emergency leadership in the IT department of Japanese large companies. While none of the companies above suffered critical damage to the IT operations, the crisis did trigger the planned BCM measures and exposed a number of vulnerabilities in each company, however large and sophisticated they might be, and located in a country that itself is well prepared for earthquakes. Examining Japanese management and leadership style in this critical time can give insights that are not visible in more ordinary times. For example, knowing the reputation of Japanese management as bottom-up and relying on careful “ne-mawashi” and “ringi” which aim at securing the approval of employees and higher managers in advance of the decision (Smith 1984), the management style of the above three CIOs appears to be remarkably direct. The cases illustrate that leadership is one important factor for crisis response also in IT functions.

The data indicates that both Auto CIO and Insure CIO were transformational leaders approximately 18 months after the crisis. It cannot be fully verified whether their leadership was transformational during or before the crisis, but the statements of the interviewees did not indicate that there would have been a change in the transformational character of these CIOs’ leadership. Prior research has, however, hinted at the possibility of transformational leadership emerging as a result of a crisis (Hunt et al. 1999, Bligh et al. 2004), pointing to the need for further research that measures both pre- and post-crisis transformational leadership levels. If we assume that these two CIOs indeed were transformational throughout the crisis episode, then the satisfaction of the direct reports toward their leaders suggests that transformational leadership can be applicable for CIOs to mitigate crisis situations such as described in this paper.

A point that may not be prominent in BCM planning but is crucial during disasters is the demonstration of leadership that can calm down and reassure employees, facilitating a cool-headed crisis response. The noted change in the leadership style of Auto CIO during the crisis (Figure 5) was probably a conscious attempt at showing his willingness and ability to take responsibility of the employees’ safety and emotional wellbeing. However, such a change was not evident in the other companies. Instead, the CIOs of Insure and Service were said to retain their characteristic style of leadership which was delegating for Insure CIO, and directive in the case of Service CIO.
This noted change in the behaviour of the Auto CIO during the crisis surely warrants extra attention. Based on this data, the satisfaction of the direct reports of Auto CIO and Insure CIO was high irrespective of the different way they led during the crisis. The explanation may be in how transformational leadership functions in different contexts. For instance, while transformational leadership has been noted to be effective in other cultures than the Western (Den Hartog et al. 1999), it has also been found that transformational leadership can function somewhat differently in these cultures (Spreitzer et al. 2005). Could it be that transformational leadership also functions differently in different corporate cultures? In any case, much more detailed and comprehensive further research is encouraged in this vein.

Another point to consider in future research is whether transformational leadership alone is sufficient for CIO crisis leadership. Prior research suggests benefits in combining transformational leadership with transactional (Bass & Bass 2008) or technical leadership (Thite 1999, 2000). Chen et al. (2010) build a maturity model of CIO leadership wherein the most “mature” leadership combines both supply (transactional) and demand-oriented (transformational) leadership. Transactional leadership features also in the results of Gupta et al. (2009), who found that highly effective CIOs exhibit both transformational and transactional leadership, although the latter with less intensity than the former. This paper did not measure transactional leadership levels, but future work should address also transactional leadership together with transformational leadership in the MLQ instrument.

As noted in the literature section, crisis leadership also has parallels with the concept of agility, which prescribes management actions to sense and respond to organizations’ environmental changes. Natural disasters constitute sudden and unexpected environmental disruptions to many organizations, and thus agility can be seen as an enabler for crisis leadership in such situations. It may be that effective crisis leadership is dependent on capabilities or competencies that have been built and practiced prior to the crisis, just as effective leadership is often understood in context as a relationship between the leader and the subordinates. The CIOs in this research had developed relationships with their followers during many years of working together in the company. The level of mutual trust and commitment between these leader-follower-pairs was probably very high, and effective ways of communicating and collaborating had most likely developed. However, it is as yet unclear whether transformational leadership would be effective as a crisis leadership approach in situations where such “agile” or dynamic capabilities/competencies had not developed, or where there was no time for proper leader-follower trust and commitment to develop. This is the case, for instance, in short project situations (Ryömä & Tapanainen 2010).

9 CONTRIBUTIONS AND LIMITATIONS

There is a research gap in examining crisis leadership for IT managers and Chief Information Officers (CIOs). This research was conducted as a descriptive case study of the CIOs of three large Japanese companies to more deeply understand the role of CIO leadership, and especially transformational leadership, during and after the Japan Earthquake Crisis in March 2011. It was conducted in a way
that captured data from several sources including interviews and questionnaires to both the CIOs and their direct reports. The research contributes to the IT management field by offering a descriptive account of the CIOs’ leadership during this time as evaluated by themselves and their direct reports, and interlaced with description of the context of the crisis from the viewpoint of company exposure and IT function response.

This research adds to findings regarding CIO (IT manager) transformational leadership. While prior research argues that transformational leadership is desirable for CIOs (IT managers) in situations involving a stable environment (Chen et al. 2010, Gupta et al. 2009), this paper suggests that transformational leadership can be applicable for CIOs also in crisis situations. However, this remains a suggestion until more accurate verification is possible. If interpreted using the agility lens, this research describes how transformational leadership was viewed by the actors during a situation requiring agility, complementing Tapanainen (2012). Although two of the three CIOs were transformational and were seen as having similarities in their leadership approach, they used different leadership strategy during the crisis, hinting that it might not be sufficient to use only transformational leadership as a yardstick when attempting to understand IT manager leadership in crisis situations. We hope that this description will stimulate discussion on the human factors in IT function crisis response and business continuity management which have received little attention thus far.

Our research also has some limitations. The small number of interviewees and missing data from Service CIO poses the greatest limitation and also restricts the generalizations that can be made on the analysis. Unfortunately the sensitive nature of corporate superior-subordinate relationships has been a significant barrier – especially considering a “messy” situation such as disaster response – and we feel fortunate to have even this limited data set. Another limitation was that the timing of the data collection took place well after the disaster. However, we acknowledge that it is hard to make interview appointments when CIOs are busy solving the problems in the field. In that viewpoint, we believe that the data we collected is still timely and can be valuable to many researchers.

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