

Exploring the Externalization Process of Tacit to Explicit Knowledge in Disaster Environments

Research Proposal for Organization Science Winter Conference 23

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I. Background and Motivation

Knowledge is arguably a foundational block in managing extreme environments, particularly in bringing about certain operative outcomes for the organization under strict time and space considerations. Extreme environments can take the organization out of its pre-established templates. For example, previous resource or processual configurations may not render themselves useful to a particular situation – resource may not be present, damaged, or inapplicable, while processes may be too linear and routine-specific to be followed. Given the time constraint to produce certain outcomes in disaster environments, organizations likely resort to their knowledge base to compensate for the inapplicability of what they had previously known to be useful as far as resources and processes are concerned. Extreme environments are reminiscent of the ‘environmental fluctuation’ described by Nonaka (1994) as a factor that can induce patterns of interaction among organizational members. In this vein, the role of individual organizational members as the carriers of knowledge that can be converted into an asset for the organization is highlighted.

Nonaka (1994) further argues that while individuals are often the main creators of knowledge in the organization, there is a process by which these disparate individual knowledge creations converge at the level of the organization. Knowledge creation, he contends, is the process by which tacit and explicit knowledge are converted, which in turn results in four modes of knowledge creation: (a) socialization, i.e. person to person sharing of tacit knowledge, (b) combination, where social processes occur to combine various explicit knowledge, (c) externalization, i.e. tacit knowledge is institutionalized in some form to become explicit knowledge, and (d) internalization, i.e. explicit knowledge is converted to tacit knowledge. These modes of knowledge creation spiral across various units, e.g. individual, group, and organization as described by Argote, McEvily, and Reagans (2003). One way in which such knowledge is also created is by means of dialogical interactions across organizational participants (Tsoukas 2009).

Of the three modes of knowledge creation, Nonaka (1994) highlights the need to investigate the process of externalization, arguing that the other three are rooted in particular disciplines, e.g. organization theory with a view to culture, information processing, and organizational learning. Externalization can also be seen as a process that involves two units, e.g. the individual and the organization. Where tacit knowledge is most likely located at the level of the individual organizational member, explicit knowledge can be assumed to have been stored at the level of the organization. This externalization process is likely enriched by the individual as it is an agent capable of intrinsic interactions, which in turn becomes an active agent in constant ‘reweaving’ of events, interactions, and experiences (Tsoukas and Chia 2002).

As described above, extreme environments can shake up an organization’s previously established and institutionalized knowledge, and prompt them to reconsider new solutions to achieve certain operative outcomes. It is during this moment when the opportunity for individual organizational members to articulate their knowledge base for the benefit of the organization potentially reaches a peak. Indeed, Nonaka (1994) argues that environmental fluctuation can generate ‘creative chaos’ that can trigger organizational knowledge. Indeed, granting that chaos can open up an opportunity for knowledge to spiral through various forms of dialogical processes, it remains to be explored how the knowledge becomes accommodated as a part of organizational knowledge that can be used to administer a collective action and attain organizational specific organizational outcomes. It is possible that this externalization process may be contingent upon certain factors or conditions.

To this end, the proposed paper explores this inferred process of externalization in extreme environments, where tacit knowledge of the individual is articulated and converted to explicit knowledge, which the organization can capitalize on to achieve particular outcomes. In particular, it seeks to address the following questions: How is tacit knowledge of individual organizational agents externalized to explicit knowledge that can be used by the organization to manage extreme environments? What are underlying factors or conditions that enable this process?

II. Data and Sample Vignettes

The questions are addressed by drawing on experience of three organizations during an extreme event. Vignettes are collated from a field study during a Category 5 super typhoon that hit the Philippines in 2013. The typhoon, known internationally as Typhoon Haiyan, overwhelmed the capacity and previous preparations of the critical organizations in the country. The sample vignettes below are used to analyze and draw various forms of externalization from individual tacit to collective explicit knowledge that may or may have been concretely picked up by the organization. They represent various accounts of externalization: the first vignette represents an externalization process that was adopted at the organizational level, the second vignette represents a temporal solution that was not necessarily adopted at the level of the organization but nevertheless helped achieve operative outcomes, and the third vignette represents an externalization process but not at the level of the organization the individual is originally a member of, but at the level of their partner organizations.

1. ‘Magic Man’: Using the Knowledge of the ‘Olden’ People

After Typhoon Haiyan, 95 percent of the electric utility poles fell to the ground. There was a directive from the government to re-energize the town within 30 days. Most of the external help were redirected to another town, there was scarce gasoline to run their vehicles, roads were impassable, and their boom trucks used to erect 40-ft concrete poles were also damaged.

The general manager has only served a few months in the company before the typhoon hit the town, and had no prior experience of typhoon, mentioning that he had to rely on the experience of his men. He presented the problem to his crewmen, and mentioned that it was a stretch goal to deliver the directive of the government within the time granted to them and without the necessary materials. However, he motivated them to the best of his ability, and even joined the crew deployed on the field.

The oldest lineman from the power cooperative who has served for more than 25 years in the company led one of the teams deployed to re-erect the poles. The other teams were anxious about re-erecting the poles without the usual assets they used in normal circumstances. After the first day of their deployment, his team was able to re-erect five poles. The general manager enjoined the other teams to adopt the same process. The old lineman devised a material made of bamboo that resembled a large scissor which can be used to manually lift the concrete poles. When asked how he thought of it, he said ‘that is what the ‘olden’ people used to do,’ referring to indigenous techniques.

The government officials who were overseeing the re-energizing process were stunned with this result, branding that what the old lineman did was ‘magic.’

2. Cook Turned Dietician: Patient Feeding through Instinct

A now retired cook who has served the district hospital for about 30 years was one of the few people who were on duty the night before the typhoon. As soon as the typhoon subsided, they found that 60 percent of

the hospital infrastructure had been destroyed. When the cook finished her duty for the day, there was no reliever coming in to feed the patients, and the dietician had not arrived. More patients, who were victims of the typhoon, were coming in. What was usually a quiet hospital, with an average of 40-50 patients on a daily basis on normal days, was now servicing an average of 90-100 patients.

The cook was already getting frantic because there was scarcity of produce that she can get from the market, and she usually relied on the meal plan provided by the dietician for their patients. It turned out that the dietician had left the town to be with her family for safety purposes before the typhoon made landfall. More and more patients were coming in, and she relied on her instinct to develop a meal plan for the patients, which was affirmed by the chief resident and a few other doctors. She said, 'thankfully, I had always been with the dietician during market day. Through time, I just learned what kind of meals had to be cooked for certain patients. It was instinct.' At the end of the day, instinct fed the patients.

3. Yolanda Doctor: Bike for Medical Relief

One of the combat doctors deployed by the military to provide medical relief to the victims of the typhoon has been a bike enthusiast for a while. When he got to the field, he described the people as coming in droves. There were thousands injured in the town where the typhoon surge hit the hardest, the roads were impassable, and most victims in town who needed the most immediate relief were unable to move or be moved. Owing to his experience biking, he thought that one way to get immediate relief was for the doctors to bike to different villages, to treat and prescribe medicine. 'Biking made it easier for the doctors to wiggle through the roads. It also made it less tiring and faster for them to get from one place to the other.' After his tour of duty, he raised funds through his social network, and donated 50 units of bicycles. This model eventually adopted by various non-profit organizations, and at present, local government units are using bikes as a back-up resource during disasters.

III. Perceived Contribution and Some Points for Consideration in Further Developing the Paper

The sample vignettes can be used as a takeoff point for further conceptualizing the externalization process of tacit to explicit knowledge, which can produce particular organizational outcomes. This is also in support of the discussion on understanding the process of articulation as individual organizational members try to make sense of events that are out of the ordinary, which in turn could produce actions on behalf of the organization. To this end, Weick, Sutcliffe, and Obstfeld (2005) reiterate that explaining how organizational level outcomes vary, there is a need to show the process by which the states at the macro-level can influence the behavior of the individual agents, and how, in turn, these actions can give way to new macro-level states.

In this regard, the following points are considered in further developing the paper:

1. As regards analysis, the following are considered:
 - a. What is the process by which knowledge from the individual 'spirals' to the organization? The vignettes surface that knowledge has various reaches. First, it can spiral to the level of the organization that is adopted as a course of action. Meanwhile, it can also remain within the individual as a means of coping with the demands of the organization. Finally, it can spiral to the level of the partner organizations.
 - b. Related to these three narratives of 'knowledge spiraling', some likely conditions and factors can be taken into account. Primarily, at the organizational level, what kind of environment facilitated the spiraling of knowledge? Likewise, at the individual level, are there emerging

- profiles of those who are likely to articulate their tacit knowledge for the organization to act on?
- c. Finally, this paper can also take the opportunity to confirm or add to the understanding of how knowledge is articulated in contexts when they can be a foundational block. To this end, we reflect whether disaster environments actually trigger a special process of spiraling tacit knowledge to explicit knowledge that can be used by the organization.
2. As this is a work in progress paper, we intend to carry out more work in relation to the following:
 - a. Grounding the conceptualization in the literature and moving from the descriptives;
 - b. Proposition building and strengthening the analysis;
 - c. Further crystallizing the contribution of the paper; and
 - d. Looking for likely collaboration – either by working out another set of vignettes that can be used to reinforce the initial findings of the paper.

IV. Key Reference Materials

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