| RESEARCH ARTICLE

The Effects of a Transformational Leadership Style and Technological Innovation on Crisis Management

PAULA MARIE G. PETER[1] ✉ **and DENNIS M. PLACIDO**[2]

[1]*CpE, MBA, PhD Management (Candidate), Saint Louis University, 2600 Baguio City, Philippines*
[2]*PhD Educ Mgmt, MA Philos., MA Relgs. Stds., Faculty, Saint Louis University, 2600 Baguio City, Philippines*
Corresponding Author: PAULA MARIE G. PETER, **E-mail**: peterpaulamarie@gmail.com

| ABSTRACT

Transformational leadership shows a strong influence and impact on the relationship with crisis management. Technological innovation is an iterative procedure started by the impression of a new market and/or new service opportunity for a technology-based invention. This study focuses on the effects of a transformational leadership style and technological innovation on crisis management; This hopes to bridge the gap in its application to local government units. The study aimed to examine the effects of a transformational leadership style and technological innovation on crisis management of the different Local Government Units (LGUs) in the Province of La Union. The key informant interviews were delivered among thirty-three (33) respondents, twenty (20) mayors or municipal heads and thirteen (13) board members. With this purpose, the mixed method was employed by combining qualitative and quantitative data gathering procedures using De Bono's Six Thinking Hats. The findings revealed**:** (1) the negative effects of being a transformational leader who is technologically innovated in crisis management, (2) the disadvantages of using technology in crisis management, and (3) some of the technological challenges during crisis management. It implies that local government officials need to significantly improve these, especially in the context of transformational leadership style and technological innovation in crisis management. Hence the researcher develops recommendations.

| KEYWORDS

Transformational leadership style, technological innovation, De Bono's Six Thinking Hats, Crisis management.

1. Introduction

The COVID-19 pandemic presents what is undoubtedly one of the greatest challenges ever faced by international development and humanitarian organizations. In general, crisis management is connected to the power of unanticipated or unforeseen events that may cause potential harm and shock to an individual or organization and its stakeholders at the micro-level, even a country at the macro-level (Park, 2021). Thus, it is necessary to develop a plan for crisis management. Particularly, this study focuses on the effects of a transformational leadership style and technological innovation on crisis management. While transformational leadership has been a saturated topic in crisis management, this study hopes to bridge the gap in its application to local government units. Many studies are set in general settings and often foreign settings. Hence, there is a need to have a localized focus on its application, especially amid the COVID-19 pandemic, which is a novel situation.

During crises, command and control are inevitable. With time, uncertainty and limited resources as constraints, leaders of the organization cannot act alone. Leaders need to lean heavily on the crisis management team. The existence of a team of crisis management is critical. Previous studies claim that transformational leadership has been shown to be effective during crises (Dwidienawati et al., 2020; Lacerda, 2019). However, Stoker et al. (2019) argued that there is an inconsistency in the effectiveness of transformational leadership in crises. Hence, further research must be done to investigate the effects of transformational leadership style and technological innovation on crisis management.

This current pandemic presents what is undoubtedly one of the greatest challenges ever faced by world leaders, international development and humanitarian organizations. There have already been major consequences for the human race, in terms of the direct impacts of the public health crisis on health and mortality and indirect impacts on the economy, business and finance, education and most especially, government organizations.

Understanding how leaders in public administrations and organizations handle this crisis competently and efficiently in this current pandemic and in times of crisis generally would actually be theoretically essential. Identifying concrete factors such as technology and crisis management in driving successful transformational administrative performance under the current remarkable circumstances could still boost current crisis responses.

There are several studies that have been made by several researchers on the different leadership styles and their impact on the effective leadership style during normal times; however, there is a lack of relevant research on the effect and impact of the best and most suitable leadership style during the times of a crisis situation. The main purpose or goal of this study is to examine the impact of the transformational leadership style and technological innovation during times of crisis, which is distinct from the type of leadership style required during normal or pre-crisis times.

1.1 Statement of the Problem

This study aimed to examine the effects of a transformational leadership style and technological innovation on crisis management of the different Local Government Units (LGUs) in the Province of La Union. Specifically, it sought to answer the following questions:

1. What is the demographic profile of the respondents in terms of:

        1.1. Gender;

        1.2. Civil status;

        1.3. Age;

        1.4. Highest educational attainment; and

        1.5. Number of years working in the government?

2. What is the perception of the respondents on transformational leadership and technological innovation essential in times of crisis in terms of critical thinking and creativity using De Bono's Six Thinking Hats which are:

        2.1. Black hat;

        2.2. Blue hat;

        2.3. Green hat;

        2.4. Red hat;

        2.5. White hat; and

        2.6. Yellow hat?

3. Are there significant differences in the perception of the respondents among De Bono's Six Thinking Hats?

4. What are the effects of a transformational leadership style and technological innovation on crisis management?

5. How does a manager's crisis experience moderate the relationship between transformational leadership style and technological innovation?

6. Based on the results, what academic-based inputs can be given as recommendations to enhance handling crisis situations with the aid of transformational leadership?

In line with this, the following objectives were set:

1. To describe the demographic profile of the respondents.

2. To examine the perception of the respondents on transformational leadership and technological innovation essential in times of crisis in terms of critical thinking and creativity using De Bono's Six Thinking Hats.

3. To investigate whether there are significant differences in the perception of the respondents among De Bono's Six Thinking Hats.

4. To know the effects of a transformational leadership style and technological innovation on crisis management.

5. To describe how a manager's crisis experience moderates the relationship between transformational leadership style and technological innovation.

6. To give academic-based inputs as recommendations to enhance handling crisis situations with the aid of transformational leadership.

1.2 Bridging the Gap
Leadership has captured the attention of scholars and researchers around the world. The role of leadership in an organization is not just about administrative activity, but it includes technical activities that lead to discovering and developing the potential of employees in order to be critical thinkers who are at the same time innovative and creative. In terms of research significance to the Philippines, the findings of the study may be utilized for inspiring and understanding the transformational leadership style in the Local Government Units.

There are several studies that have been made by several researchers on the different leadership styles and their impact on the effective leadership style during normal times; however, there is a lack of relevant research on the effect and impact of the best and most suitable leadership style during the times of a crisis situation. The main purpose or goal of this study is to examine the impact of the transformational leadership style and technological innovation during times of crisis, which is distinct from the type of leadership style required during normal or pre-crisis times.

During a crisis, the ultimate goal of the organization is to safeguard organization management which will impact the organization's sustainability. The effectiveness of crisis management has a crucial role in safeguarding the organization. This study will see the effects of a transformational leadership style and technological innovation on crisis management. Previous studies have measured the organization through transformational leadership style and technological innovation on crisis management through evaluation by their respective respondents.

2. Review of Related Literature and Studies
2.1 Transformational Leadership Theory
Transformational leadership was started by James V. Downton in 1973. He was the first to coin the term. This was later added to by James Burns in 1978. Burns was a leadership expert and biographer and proposed that it was only through the strength of the vision and personality that team members could be encouraged to follow (Nickerson, 2021). After agreeing to follow, members are then inspired to change their expectations and perceptions and are invited to a higher level of morality and motivation. A few years later, Bernard Bass (1990) added even more to the concept. This is known as "Bass's Transformational Leadership Theory." Bass added ways to measure and rank the success of transformational leadership as well as the idea of leaders expressing authentic and focused energy to inspire the other team members to become more like them. Bass felt that measuring the impact inspires a more authentic community. He also explained the psychological mechanisms that are the basis of the theory.

Ugochukwu and Egwuatu (2021) discussed that transformation leadership is a model of leadership that relies on the encouragement of a team to realize overall success. By raising a team's morale and self-confidence, the team can then align itself to an overall vision or common purpose. This purpose, however, must be established early on for it to be effective. Transformational leadership, when properly applied, can take a struggling or stagnant team and completely transform it into a productive and dynamic group of individuals.

2.2 Transformational Leadership and the Work Environment
From the work situation characteristics, leadership style can be used as a key element of a workplace. In this context, transformational leadership is defined as the interactive process between leaders and employees and emphasizes that leaders should propose higher levels of ideals, beliefs, and values, thereby enhancing the subordinates' consciousness so that employees can be satisfied with the higher levels of internal needs. Second, from the perspective of employees' behavior and psychology, transformational leadership can also be related to employees' thriving at work by affecting employees' perception of stress during work events or situations. The stress caused by challenging sources can be overcome by the individual, which can be positively related to individual performance and growth, such as workload, time urgency, work scope and responsibilities, work complexity, and so on. The individuals believe that once they overcome the challenge stressors, they will get benefits and rewards in terms of job performance, promotion and future growth, so they will adopt active strategies. In contrast, the stress caused by hindrance sources is difficult for individuals to overcome. It will hinder the achievement of individual work goals and career development, such as organizational politics, role ambiguity and conflict, bureaucratic procedures, job insecurity and so on. The individuals

believe that they will not obtain any benefits and rewards in the foreseeable future and then adopt negative strategies such as retreating or leaving (Lin et al., 2020).

2.3 Transformational Leadership and Crisis Management

Transformational leadership shows a strong influence and impact on the relationship with crisis management. It shows that leaders need to conduct continuous training sessions for their followers regarding crisis management practices. Rewards and recognition can be one the important motivational strategies that can make followers prepare for crisis management – this they can do by practicing all five stages of crisis management. The transformative style of leadership, plus the experience of the leader, may become a value-added asset for industries and organizations when facing an unexpected crisis such as a global pandemic like COVID-19 that has affected more than 170 countries across the globe. It is suggested that organizations need to develop future leaders (talent management) who possess crisis management competencies (Alzoubi et al., 2021).

Leading an organization in times of crisis is indeed very stressful, given the fact the leader's role and responsibility, as well as the management, plays a vital role and are magnified during these hard times and in times of change. Connecting with people while uniting them and establishing mutual trust and respect, as well as transitioning to a different leadership paradigm, can take time and effort, but thus, these should prioritize since these are kind of responsibilities immediately and effectively upon accepting the position they applied for, rather than waiting for a certain crisis to arrive then take action (Fernandez, 2020).

2.4 Transformational Leadership and Creativity

Creativity, in organizational contexts, is generally defined as the generation of novel and useful products, ideas, and procedures for innovation. Furthermore, Mehmood, Juan, Akram & Tariq (2021) categorize creativity as a critical factor for all types of business, whether new ventures or established organizations. The promotion of innovativeness and invention helps companies become competitive and sustainable in their industries (Chang & Webster, 2018).

While highlighting the roles of different components of transformational leadership, researchers have noted that transformational leaders have the potential to enhance subordinates' creativity through different mechanisms (Koh et al., 2019). Undoubtedly, leadership behavior and style considering the creativity of employees within the organization as an incentive for organizational change considerably influence employee needs and knowledge. Leadership has been emphasized in the change management process by the fact that change, by definition, needs a new system to institutionalize new approaches. In fact, leadership in organizations plays an important role in shaping creativity, attitude and responsiveness of employees to organizational change and acceptance of innovations. Therefore, individualized consideration of attitude, creativity and organizational changes, which implies the degree of attention and support to each subordinate, is an important dimension of transformational leadership (Teymournejad & Elghaei, 2017).

Edward de Bono is among the greatest in the domain of creativity. He established that creativity is not an inborn virtue but is developed only practice. According to De Bono (2008), creativity is a skill and not just a matter of individual talent. Also, creativity is more than just being different. The creative idea is not just different (for the sake of being different). Creativity involves breaking out established patterns in order to look at things in a different way. Leaders need creativity in order to break free from the temporary structures that have been set up by a particular sequence of experiences. It is a great motivator because it makes people interested in what they are doing. It gives hope that there can be a worthwhile idea. It gives the possibility of some sort of achievement to everyone. It makes life more fun and more interesting. It is not a talent. It is a skill that can be learnt. It empowers people by adding strength to their natural abilities, which improves teamwork, productivity and, where appropriate, profits.

2.5 Transformational Leadership and Technological Innovation

Transformational leadership motivates employees, creates organizational conditions for innovation, and leads to competitive advantages for the organization. Influential institutional leadership simultaneously facilitates innovation and competitiveness, and it is considered an important stimulus for the growth of sustainable business in emerging markets, especially through the use of technological innovation. When creativity and innovation are rewarded, employees are enthusiastic about sharing new ideas to improve existing processes (Chen et al., 2017).

Meanwhile, in the study of Al Derei and Musa (2022), they emphasized that leadership style is crucial since it often assists organizational employees to perform effectively and productively. Innovation, especially technological innovation, is an iterative procedure started by the impression of a new market and/or new service opportunity for a technology-based invention, which contributes to the development, production, and marketing tasks aimed at commercializing the invention.

2.6 Technological Innovation and Crisis Management

One of the key issues in the field of technology analysis and innovation management is how new technologies originate and evolve in the presence of crisis and environmental threats. Indeed, technology is evolving and progressing rapidly, playing an important

role in modern societies. Thereby, crisis management could benefit from the use of technological innovations which are nowadays available.

In the study of Ardito et al. (2021) on technological exaptation and crisis management during the COVID-19 outbreak, they concluded that searching for existing solutions, even from distant domains, for which there may be a collateral application to manage a crisis, like the COVID-19 pandemic, will likely speed up finding further innovative solutions to the crisis-induced problems by allowing taking advantage of available and more established knowledge.

2.7 Transformational Leadership in the Context of LGUs

In the context of local government units, the study of Adanri (2017) provided insights and said that transformational leadership is effective, especially in times of organizational crises and uncertainties. Because of its ethical characteristics, it can help reduce the problem of corruption and perceived inefficiencies in public institutions. It also has the capacity to shape the organizational culture and culture. Transformational leaders lead by example and engage in ethical conduct and personal principles and value that inspires others; they put the needs and interests of their followers above their own needs and interests. They also stimulate the intellectual capacity of their followers and allow for organizational learning, creativity and innovation, and support the hope and aspirations of their followers.

Understanding how leaders in public administrations and organizations handle this crisis competently and efficiently in this current pandemic and in times of crisis generally would actually be theoretically essential. Identifying concrete factors such as technology and crisis management in driving successful transformational administrative performance under the current remarkable circumstances could still boost current crisis responses.

3. Methodology

This study utilized mixed methods research design to obtain a complete picture of the study that the researcher is pursuing than either a standalone quantitative or qualitative study. To answer the first three (3) statements of the problem, a quantitative approach was used to get objective measurements which highlight statistical, mathematical, or numerical analysis of data gathered by computing methods. The data for this study was collected from the participants via a survey questionnaire which was given to them physically (via print copies) and sent electronically to those unable to physically get it (via Google Forms). Meanwhile, to answer the next two (2) statements of the problem, a qualitative approach was used to elicit responses and experiences and form a report or narrative based on that empirical data. Specifically, the researcher conducted some interviews (via Zoom, Google Meet, or Facebook Messenger) with randomly selected participants. Qualitative research design focuses on observing events from the perspective of those involved and attempts to understand why individuals behave as they do (Tracy, 2014, cited in Connaway & Radford, 2017, p. 3). Finally, the last statement of the problem was answered through the researcher's giving of academic-based inputs as recommendations to enhance handling crisis situations with the aid of transformational leadership.

For both the quantitative and qualitative approaches, Edward de Bono's Six Thinking Hats was the anchor. This concept is a thinking tool intended for group and individual thinking and sharing. The White Hat generates facts, figures, and objective information. Meanwhile, the Red Hat elicits emotions, feelings, hunches, and intuition. Next, the Black Hat brings out logical negative thoughts, "devil's advocate," and why something will not work. Then, the Yellow Hat is responsible for yielding logical, constructive thoughts and positive aspects of why something will work. The Green Hat generates creativity, generating new ideas, provocative opinions, and lateral thinking. Finally, the Blue Hat controls the other hats and directs thinking and attention or "mapmaking" thinking.

3.1 Respondents and Locale

The primary target populations were the employees and top management of the Local Government Units in the Province of La Union. The exclusion criteria are working for only less than two (2) years. For the quantitative part, thirty-three (33) respondents were asked to answer the questionnaire, which was composed of twenty (20) mayors or municipal heads and thirteen (13) board members. Meanwhile, for the qualitative part, the researcher interviewed ten (10) respondents, who were composed of five (5) mayors or municipal heads and five (5) board members.

3.2 Research Instruments

To ensure that the proposed problem statements were accurately and properly answered, the following research instruments were utilized: (a) a self-made questionnaire adopted from the study of Kivunja (2015), (b) structured interviews with the mayors or municipal heads and board members, and (c) semi-structured interviews with staff as a follow-up. Guide questions were prepared beforehand to have order and direction in the interviews.

3.3 Data Analysis

The data gathered underwent a triangulation method for validation. The researcher gave out a survey questionnaire, which the respondents answered and rated quantitatively. Then, the data collected from the survey questionnaire was validated by structured

interviews with the key informants. Moreover, through observation and follow-up interviews with the staff, the data had more richness and depth and further validated the responses from the mayors or municipal heads and board members.

For the first two (2) statements of the problem, a descriptive quantitative approach was used to organize, synthesize and analyze the gathered quantitative data. Frequency, percentage and weighted mean were utilized. After that, to have an answer for the third statement of the problem, whether there are significant differences in the perception of the respondents among De Bono's Six Thinking Hats, ANOVA was used. For the gathered qualitative data, Interpretative Phenomenological Analysis was conducted.

4. Findings of the Study

The following were the findings from this study:

In terms of the demographic profile of the respondents, out of the 33 respondents, the majority of them are male (with 18 respondents), married (with 24 respondents), between 31-35 years old and 56-60 years old (with 6 respondents each), college graduates (with 17 respondents), and in government service for more than 15 years (with 12 respondents);

For the perception of the respondents on the indicators using De Bono's black thinking hat, it got an average weighted mean of 4.648. As revealed by the interviews with the respondents, in using De Bono's Black Thinking Hat, which brings out logical negative thoughts, "devil's advocate", and why something will not work, the following themes emerged: (1) the negative effects of being a transformational leader who is technologically innovated in crisis management, (2) the disadvantages of using technology in crisis management, and (3) some of the technological challenges during crisis management;

For the perception of the respondents on the indicators using De Bono's blue thinking hat, it got an average weighted mean of 4.636. As revealed by the interviews with the respondents, in using De Bono's Blue Thinking Hat, noting the role of a leader as a facilitator, the following themes emerged: (1) transformational leaders cause positive change, (2) transformational leaders encourage collaboration, and (3) transformational leaders inspire the people;

For the perception of the respondents on the indicators using De Bono's green thinking hat, it got an average weighted mean of 4.615. As revealed by the interviews with the respondents, in using De Bono's Green Thinking Hat, which is responsible for generating creativity, new ideas, provocative opinions, and lateral thinking, the following themes emerged: (1) need for collaboration, (2) thinking outside the box, (3) providing training and seminars, and (4) investments on manpower and technology;

For the perception of the respondents on the indicators using De Bono's red thinking hat, it got an average weighted mean of 4.521. As revealed by the interviews with the respondents, the following themes emerged: (1) the four components of transformational leadership, (2) their perceptions of the respondents on transformational leadership, and (3) their perceptions of the respondents on utilizing technology in crisis management;

For the perception of the respondents on the indicators using De Bono's white thinking hat, it got an average weighted mean of 4.655. As revealed by the interviews with the respondents, in using De Bono's White Thinking Hat, answering the questions relating to the influence and integration of technology to a transformational leader in crisis management, the following themes emerged: (1) advantages of technology, (2) challenges in its utilization, and (3) some recommendations;

For the perception of the respondents on the indicators using De Bono's yellow thinking hat, it got an average weighted mean of 4.767. As revealed by the interviews with the respondents, in using De Bono's Yellow Thinking Hat, which is responsible for yielding logical, constructive thoughts, and positive aspects of why something will work, the following themes emerged: (1) the role of the transformational leader who is technologically innovated in crisis management, and (2) the role of technology in crisis management;

Out of the six De Bono's thinking hats, the yellow thinking hat got the first rank; and after utilizing ANOVA, the computed p-value was 0.000861185, which is less than $\alpha = 0.05$; thus, the null hypothesis was rejected, stating that there is a statistically significant difference between the group means. This implies reliability in the responses on the indicators using De Bono's Six Thinking Hats.

5. Conclusions

From the findings of the study, the following conclusions were derived: (1) The red thinking hat got the last rank with a weighted mean of 4.521. It implies that local government officials need to significantly develop this, especially in the context of transformational leadership style and technological innovation in crisis management. Thus, since emotions are included in situations, it is concluded that wearing the red thinking hat would help in those situations by defusing strong feelings, facilitating communication, and reduction of conflicts; and (2) Since the primary target population of this study was the employees and top management of the Local Government Units in the Province of La Union, it is concluded that it is very vital for these key persons to recognize the need to develop their skills and role as facilitators. As emphasized in this study, all of De Bono's six thinking hats

are useful in themselves. However, the facilitator's role includes defining the focus of the thinking, planning the sequence and timing of the thinking, and asking for changes in the thinking if needed.

5.1 Recommendations

From the derived conclusions, the following were the recommendations of the researcher: (1) Include in the training manual or guidance of the local government employees and officials the awareness, development and utilization of De Bono's six thinking hats, especially in the context of transformational leadership style and technological innovation on crisis management; (2) As much as possible, emphasize the importance of the Six Thinking Hats technique with pertinent applications which include team productivity and communication; product and process improvement, as well as project management; critical and analytical thinking, problem solving, and decision making; and creativity training, meeting facilitation, and meeting management; and (3) As facilitators, in the context of transformational leadership style and technological innovation on crisis management, it is recommended not to use a colored hat separately, but rather, stack the six hats so that they are effectively combined to ensure that values and cultural perspectives are considered alongside the change drivers, systems, and processes.

Conflicts of Interest: The authors declare no conflict of interest.

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