

A Study on the Application and Proposals of Safety Culture, New Public Management and Social Amplification of Risk Framework via Ship Accidents in Korea

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Abstract : *This paper provides a study on the application and proposals of safety culture, new public management and social amplification of risk framework via ship accidents in Korea. This document analyzes what are the concept of safety culture, new public management as well as social amplification and risk framework and describes how 3 issues act, harmonize, interrelate through M/V Sewol accident. Korean government is needed to apply social amplification of risk framework to the in order to promote the safety culture in the maritime administration. Hence, this paper proposes safety framework in order to prevent and resolve future unexpected accident especially for maritime field.*

Key Words : *Safety culture, New public management, SARF, M/V Sewol, Safety framework*

1. Introduction

Since big ship accident at the sea had been occurred such as Torrey Canyon in 1969, Exxon Valez in 1989, or Titanic in 1912, so international conventions and standards have been adopted and amended in terms of improving the maritime safety and each country's government have tried to amend or create their each national regulations. Since M/V Sewol accident has happened with people missing and killed at April, 2014, Korean government could implement national contingency plan and regional contingency plan against sinking the ship and had to integrated every maritime organization into one "superagency" to rapidly solve such as ship accident and to facilitate the procedure of maritime administration(Cho, 2007).

In order to amend or create the national regulation, the administration of each country can use the media to inform the public which is to amplify or attenuate those issues which are related to big ship accident.

This document shows one example, the M/V Sewol ferry accident, to explain how Korean government has been operating to set up the safety culture in maritime sector of Korea and how

Social Amplification of Risk Framework (SARF) can be applied Korean government in detail to make some regulation and to adopt some international regulation after some incidents.

Also, this paper analyzes what is the concept of safety culture, new public management as well as SARF and how three issues can be operated, harmonized and interrelated. Such three concepts can be applied to the korean government in order to promote the safety culture in the maritime administration with proposed safety framework.

2. Safety culture

The safety culture was shown up first in the OECD nuclear agency report in 1987 years which has dealt with 1986 chernobyl disaster(INSAG, 1988) and, recently, many researcher defined various concept of safety culture from their point of view(Cooper, 2000).

But this paper considers that the definition of the safety culture is that individual and group's value, attitudes, perception, patterns of behavior tends to influence the rule of one organization or one community, and definitely the rule of one organization or one community determines certain tendency of individual or group's behavior.

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According to the study of analysis of M/V Sewol accident which had happened in the Korea in 2014, causes of the Sewol accident were : (a) rapidly over manipulating ship not considering certain stability, (b) 3rd officer's unskillful maneuvering the ship at wheel house, (c) irresponsible escape by captain who was not in control to crew and passenger, (d) over heavy loading and improper securing the cargo, (e) does not exist person to control the passenger and (f) inappropriate rescue operation. This paper points out 6 causes of M/V Sewol accident in terms of safety culture in Korea. As for (a) rapidly over manipulating ship not considering certain stability.

On 16 April at 8:00 a.m. (KST), the 3rd officer of M/V Sewol ferry began her scheduled four-hour shift on the bridge. Although a 3rd officer of M/V Sewol ferry only had one year of experience in steering ships and an additional five months of experience on Sewol, she was to guide the ship while steering at the bridge. During this time, even her not sufficient experience, Captain was not required to stay at the bridge and he left the helm at 8:08 a.m. and did not return for the next 30 minutes.

Before 8:48 a.m., Sewol entered the maenggol channel, which is notorious for its strong underwater currents, a condition which on 16 April was exacerbated by the full moon from the night before. The channel, which was 3.7 miles long and 2.8 miles wide, was located 11 miles from Jindo Island and served as a shortcut through the islets of the South coast of Korea.

While the wider area contained rock hazards and shallow waters, conditions were calm near the time of the incident and there were no rocks or reefs in the immediate vicinity. The 3rd officer of M/V Sewol ferry had no previous experience of steering through the channel. CCTV data later recovered showed Captain Lee returning to the helm at 8:37 a.m. and leaving at 8:41 a.m., actions which were then repeated by the chief engineer. The 3rd officer has not sufficient maneuvering experience at bridge for passing the channel.

According to the study of "the nature of safety culture" by Guldenmund, Eagly and Chaiken states that simple attitude model consists of cognitive processes, affective processes, and behavioral processes. Also, the attitude can be reflected to the cognitive responses, affective responses, and behavioral, response respectively(Guldenmund, 2000).

When it comes to captain's attitude from Eagly and Chaiken's point of view, the reason captain did not take immediate and proper action is that there is no safety culture in his mind and the company of M/V Sewol ferry involved. As far as the

formation of norms of safety culture of one organization is concerned, individual person shall act actively with each other, they have to support and communicate with each other to understand other's idea, and one organization has to handle the design of environment, controlling behaviors and dealing with safety problems(Guldenmund, 2000).

Norm of safety culture can be followed by the ISM code as one of example.

As a matter of the fact, the ISM code is significant elements for an effective management structure and mandatory in shipping industry such as the establishment of a formal safety management system and the appointment of a senior staff member to be specially responsible for safety matters(O'neil, 2002).

Looking into this accident in terms of captain and crew's attitude and behavior, during the capsizing, some members of the crew drank beer. The crew also had seven phone calls with staff from Chonghaejin shipping.

As passengers stayed in their cabins as instructed, the captain and crew members abandoned ship. The captain, the chief engineer, and the chief and the second mates were the first people to be rescued. The captain was rescued around 9:46 a.m.

Ballard think risk is related to frequency and consequences. It means "events which happen often must have a low consequence, or events involving serious consequences must be rare"(Botterill and Mazur, 2004). In order to foster the safety culture, people involved have to think what we can do in maritime world? Also, we should change from 'have to do' to 'want to do'.

The captain of M/V Sewol ferry should have taken into account actively against the risk. And they have to devise practicable operational plans to achieve the objectives.

For instance, they should be educated to improve human resource development by education and training in relation to risk and risk perception.

Safety culture can be set up in the organization and individual's mind by education system associated to IMO Instruments (STCW Convention and ISM Code). The STCW provides certain criteria for evaluation of competence, assesses knowledge, understanding and proficiency, requires commitment of seafarers, companies and administrations to maintain international standards and develop a safety culture, and provides another tool to establish a safety culture. If there were checklist or procedure on the M/V Sewol ferry at the incident by describing ISM code, the captain and the company would not have sunk.

3. New public management

Since M/V Sewol accident had occurred, Korean government has newly established a ministry of public safety and security to cope with safety accident and security effectively. The ministry integrated all marine administration into one 'super-agency'. New public management is to make use of private sector principles to increase efficiency of administration and public finance organization. In concept of new public management, traditional management has such characteristics as vague relations between measures and costs, as well as planning division. Also their emphasis is put on management under law and rules and on input. Such management has limited use of market mechanisms and centralized organizations from top down.

M/V Sewol accident was coped with under typical perspective of traditional management system. For instance, Korean coast guard had only legal contracts with Undine maritime industry to rescue ship and people in the accident at sea. Surely, rescue contract with private company is one kind of characteristics of new public management. But the coast guard had to use other rescue companies with flexibility. During rescue operation of M/V Sewol accident, other rescue could not help Korean coast guard in official way because they had strict contract with the company. By formal contract, Korea coast guard could have other certain rescue contract. Also, Korea coast guard had bureaucratic order regime. In fact, taking into consideration the character of coast guard, they have to have that kind of conservative organization especially for dealing with work process. Many rescue and accident experts mentioned that there should exist 'qualified manager on scene'. The person have to know the accident on scene in detail and have to have all authority in official management regime to rescue people and ship at sea. But, in such bureaucratic regime, accident manager must be director of Korea coast guard. If Korean government adopt new public management system, they have to consider 'qualified manager on scene' for coping with the accident.

With regard to characteristic of new public management, such organization provides system based on contracts between organizations, planning divisions, competition with private sector, and response to various needs of people.

Also, in the management system, the management can use market mechanisms, and the focus is put on improving customer satisfaction. In addition to that, such system have to consider

management based on output and outcome by establishment of management cycle and the effort should be focused on improving accountability. Such regime is given on decentralized and flexible operations which can lead to new centralized organizational operations presenting visions and directions.

Establishment of new public agency as ministry of public safety and security means that Korean government is willing to change their concept from traditional management to new public management.

The 3 main features of new public management are 'disaggregation', 'competition', and 'incentivization'.

First of all, 'disaggregation' is that structures of the organization separates large public sector hierarchies in the same way that large private corporations earlier moved from U-form to M-form (multifirm) structures achieving wider, flatter hierarchies internally; and represcribing information and managerial systems to facilitate this different pattern of control.

'Competition' introduces purchaser/provider separation into public structures so as to allow multiple different forms of provision to be developed and to create more competition among potential providers.

'Incentivization' means shifting away from involving managers and staffs and rewarding performance in terms of a diffuse public service or professional ethos, and moving instead toward a greater emphasis on pecuniary-based, specific performance incentives(Partick, 2005).

Even Korean government established new ministry for dealing with accident such as M/V Sewol, as far as the character of management regime is not changed, the ministry is belonged to in just new type of traditional management.

To adopt new public management in the ministry, the ministry has to focus on disaggregation which can lead to separate public sector and it can facilitate control system in the organization. The ministry should allow competition of private company to provide more efficient work done. Without reward to staffs, there are no more efficient work process. if possible, the ministry have to establish specific performance.

Before the introduction of public management of Japan, Hughes(1998) mentioned some same problems in his academic journal such as 'politicization', 'the economic basis of managerialism', and 'reduced accountability'. As a matter of fact, Japan has found some problems after the introduction of Japan's practice of new public management.

"As a corollary to market-orientation, the scope of politics and

governments is narrowed.”

This results in weaker democratic control overall; excessive cost-consciousness results in a decline in the quality of public service.

The morale of the civil service decline, and this results in creased popular suspicions of government and the civil service.

And success in the marketplace is used as a justification for public policies; this leads to reduced accountability(Yamamoto, 2003).

Recently, in spite of establishment of new public management of the administration, through the disadvantage which Hugh and Yamamoto commented about new public management, the administration has been trying to change the management system to overcome the disadvantages.

4. Social amplification of risk framework

Social amplification of risk framework was developed in the late 1980s. This framework described the different processes by which some hazards and events become a focus of social and political concern and activity (amplification), even though experts believing that they present a comparatively low statistical risk, while other potentially more serious events receive comparatively little public attention-attenuation(Pidgeon et al., 2003).

Social amplification of risk framework can apply to maritime interest group in the formulation of public risk perception. The purpose of maritime interest group is to amplify risks, minimize risks, and imposes a pressure on policy-making bodies and the industry and to protect their specific interest. In case of interest group, media plays an essential role in the amplification of risks.

During the capsizing and the subsequent reporting of M/V Sewol, the government's announcements and the media had inconsistent and inaccurate information. An editorial in the huffington post stated that the governmental reports were like a rubber band, 'increasing at one moment and decreasing at another.'

Most newspapers and media have made corrections and apologies concerning their earlier reports. Because the amplified level in this media case is much high in term of counting rescued persons, the public media seemed to be more effective than the private one. The public tends to trust more on the private communication channels.

Moreover, it is possible that they do not have much more

money to use for some media. Therefore, the willingness to accept is high. Explaining highly simplified representation of the social amplification of risk and political impacts on a corporation by using the M/V Sewol. Regarding 'risk event', the M/V Sewol incident happened on the southern coastal waters and approximately 300 people killed in the sea. After that accident, the incident was characterized by several researches such as structure of passenger ship, competence of officer of port authority, and competence of seafarer.

These researches had been spread to the public by the media. As for 'information flow', the portrayal of event and signal relating to the accident has spread to the public in order to notice the danger.

And with regard to 'interpretation and response', risk-related behavior forms in company and relevant people. The spread of impact can transfer to 'victims', 'company', 'industry', and 'other technologies' one by one. Eventually, the type of impact at the company level can be 'loss of sales', 'regulatory constraints', 'litigation', 'community opposition', and 'investor flight'(Kasperson et al., 1988).

Since ISM code has developed, every company having safety management system have to implement hazard identification.

There are 'measure'→'review'→'policy'→'organize'→'implement' →'measure' again for building 'safety management system' in circulating one circle. At the stage 'implement', it consists of 'hazard identification', 'risk assessment', 'risk reduction', and 'emergency preparedness'(Kuo, 1998).

At the stage of 'policy', the company can use the SARF to amplify the risk for making public policy. But several difficult issues require attentions.

- "The technical concept of risk focuses narrowly on the probability of events and the magnitude of specific consequences."

- "Cognitive psychologists and decision researchers have investigated the underlying patterns of individual perception of risk and identified a series of heuristic and biases that govern risk perception."

- "Risk is a bellwether in social decisions about technologies (Kasperson, 1988)."

In general, maritime interest groups can apply SARF in the formulation of public risk perception. Public are not passive recipients of mediated information. But active interpreters whether to achieve ends by amplification of risks depending upon the recipients' personal experience, grounded knowledge, interests, culture and behaviour, and needed priorities.

5. Relationship of safety culture, new public management and SARF applying in M/V Sewol

Taking into account detailed relationship of safety culture, new public management and SARF to apply in maritime field of Korea. It is clear that 3 objectives which are public, media and administration, are significantly important. New public management can use media to set up the safety culture in the maritime sector. According to Bandura's model toward the concept of reciprocal safety culture, individual person has safety climate in the internal psychological factors.

On the external observable factors, there are 'situation' for safety management system and behaviour for safety behaviour. Even ship accident was big issues at international level since M/V Titanic accident, public people in Korea did not recognize how severe ship accident influences, in particular, to the maritime environment and other people at domestic level prior to the M/V Sewol incident.

At that time, actually, there are not sufficient emergency preparedness in maritime field. That's why 1) those seafarers did not notice the danger level of the vessel in terms of the internal psychological factors, 2) There are no safety management system on board the vessel in terms of external observable factors, and 3) there are no suitable behavior to response the danger.

After that accident, media and maritime administration simultaneously has informed the accident to the public which are, in particular, seafarers and shipping company with correct information. At this time, maritime administration and the media can attenuate some accident to the public.

In order to set up the safety culture in the Korea, the administration has to implement the ISM code and other relevant law be in correct way.

According to mandatory regulation of IMO, all member states has to be audited under the supervision of IMO in accordance with the procedure of IMO member state audit scheme (IMSAS). Prior to be undergone the IMSAS, we have to set up safety management system in administration. considering legal affairs, R & D, safety policy, technology, and so on. Some department of administration to be can act like private sector.

In this sense, SARF can be good messenger to change the new public management and to make safety culture in maritime sector. Since the organization has changed, public administration can be operated actively in terms of making policy.

In my view for making policy, considering these facts, unless there is strong political commitment, the bureaucrats' negative view of new public management will present a strong barrier to the introduction of the reforms of the organization in the public sector.

If certain risk has potentially high level to occur accident which can happen seldom, the administration do not expect any big ship accident, and they try to make some instruments for potential danger. In future, the administration will be needed and used SARF to amplify the potential danger to the public in correct way.

There are some education course relating to the ISPS code as a good example. In the Korea, we have no accident to be cause of establishment of ISPS like 11/9 accident, 2001 in U.S.A.

But the relevant administration have made in itself national act corresponding to ISPS code as the Media had spread the fact to the public to get common idea with Korean government.

In other words, if individual person can require certain policy and can notice some risks but administration can not recognize those dangers, so individual person can request to the administration in order to make some policy for their safety by using SARF.

Judith stated that media play a key role in this contest; as channels of communication; as mechanisms for public feedback and the articulation of public opinion; as sites of public debate and discussion; as watchdogs over abuses of power; and as active campaigners in their own right (Judith, 2000).

6. Proposals

As shown in Fig. 1, this paper proposes one framework in order to prevent and resolve future unexpected accident especially for maritime field (Kasperson, 1988).

It has to think and predict expected accident. Even there are many necessary measures and action, regulation and rules as well social campaign and effort of public management, sea incidents will be confronted. Through M/V Sewol accident, we could know how important media play roles and treat the fact. Public management should adopt new management regime. Otherwise, if though we have well performance of SARF and each community including individual person, it is impossible to implement proper activities to eradicate such risk or incident without new public management. Generally, SARF consists of source of information, information channels, social channels, individual stations and

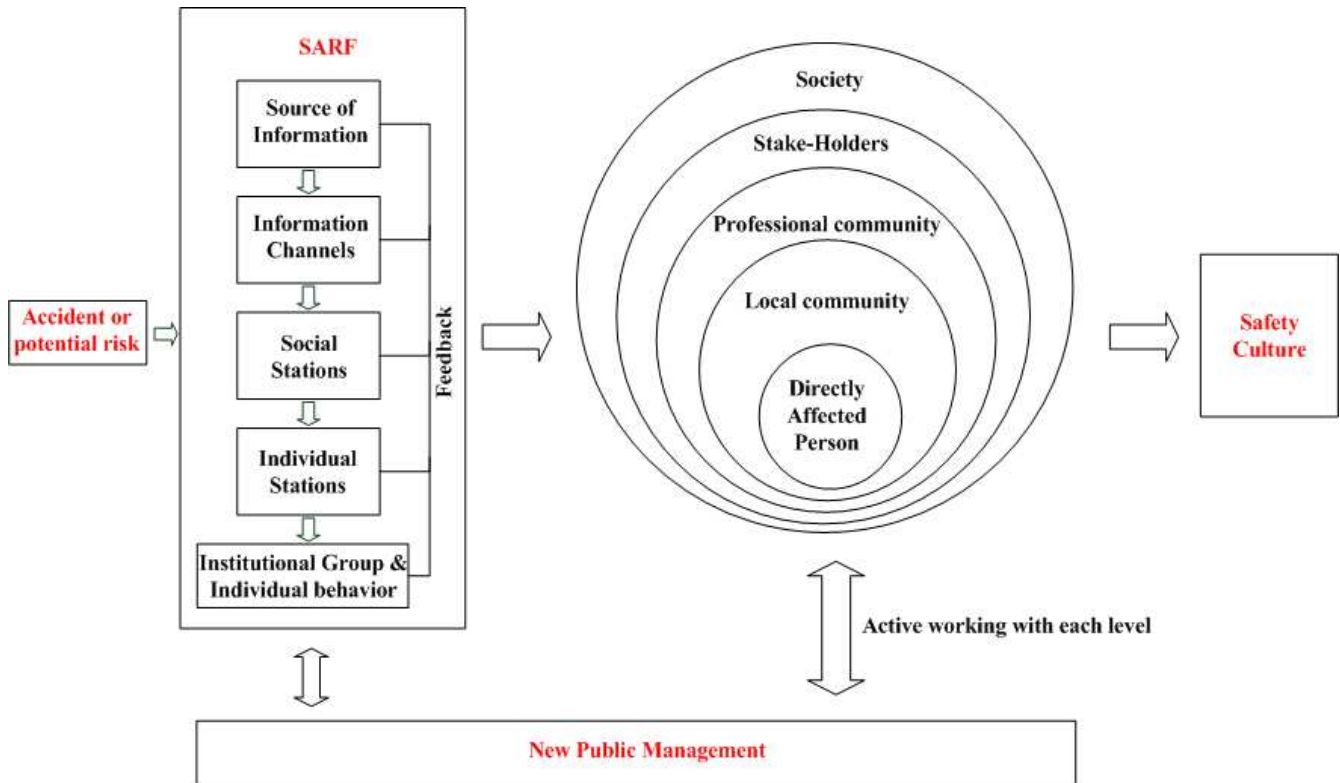


Fig. 1. Proposed Safety Framework using SARF and New Public Management.

institutional group & individual behavior. Each level in SARF is interconnected and inter-communicated with feedback. Accident and potential risk stage has to allow public and individual person know such fact relating to risks via direct or indirect channels such as media or person to person. Among level of SARF, social station can be social opinion leader affecting people by social network system, cultural and social groups, government's notice, NGO, or media. After social stations, each person at stage of individual stations can make attenuation, decoding to other person and cognition in social context. As last step, each person and/or group can take certain behavior. In sources of information to institutional group and individual behavior, it is needed certain collaboration with new public management providing 'disaggregation', 'competition', and 'incentivization'. With such proper acting SARF concept, new public management have to communicate each person and/or communities. Hence, new public management is able to improve safety culture to society/group and each person by using SARF concept. Through such circulations, safety culture will be settled down to whole society. Eventually, well adopted safety culture plays proper roles in unexpected incident.

7. Conclusion

In conclusion, this paper contains the concept of the safety culture, new public management, SARF as well as relationship between above 3 issues applying in the Korea though one big ship accident. Safety culture means that individual and group's value, attitudes, perception, patterns of behavior tends to influence the rule of one organization or one community, and definitely the rule of one organization or one community determines certain tendency of individual or group's behavior.

The 3 main features of new public management are 'disaggregation', 'competition', and 'incentivization'. And SARF described the different processes by which some hazards and events become a focus of social and political concern and activity (amplification), even though experts believing that they present a comparatively low statistical risk, while other potentially more serious events receive comparatively little public attention-attenuation (Pidgeon et al., 2003).

Since the M/V Sewol accident happened, it was majority reason of establishment of the 'administration' which has integrated many organizations into one 'superagency' which is the

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ministry of public safety and security. In order to set up the safety culture in maritime administration, SARF must be used to notice risk perception in correct way.

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