DUALITY OF STRUCTURE: STUDY OF FORMAL AND INFORMAL STRUCTURES ON-BOARD THE ROYAL MALAYSIAN NAVY SHIP

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ABSTRACT

The combination of formal and informal structures on-board ship is believed to be a key in determining the capability of the ship crew to carry out their formal designated roles and tasks. Since the nature of a navy ship working environment is concerned with the compliance towards established formal regulations, an investigation into the interplay of formal and informal structures and the extent of such interplay in facilitating the ship crews to achieve the logistics mission objectives was established. This research examined the relationship between formal and informal structures of a single-case study-on board a Royal Malaysian Navy Ship Multi-Purpose Support Ship (MPCSS) ship-by examining the routine function of the ship crew as agents in helping the ship to achieve its mission, based on sensitizing concepts emerging from the interplay of formal and informal structures and the duality of structure (as described in structuration theory) narratives. Data collection for this study was made on using multiple qualitative research methods. This research found that the nature of the interplay of formal and informal structures were, while similar to other business organisation still differentiated due to the unique nature of the maritime mission at-hand as well as the nature of military culture on the navy ship. The significance of this finding is that the importance of informal structures lies in its positive impact on personnel adherence to formal structures (the standard operating procedures), personnel improved performance, and its role in complementing the formal structures. The practical implication of this research is with regards to the fact that RMN navy ships could nurture a supportive informal structure, hence, leveraging on the strength of the (informal) culture on-board the ship, to increase the effectiveness of ship crew and work performance.

Keywords: [interplay of formal and informal structure, formal structure, informal structure, Royal Malaysian Navy, structuration theory, duality of structure]

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1. INTRODUCTION

Studies on formal and informal structures are widely researched in the context of business organisations, especially in relation to human resources management (Yang & Horak, 2017) and how informal structure, in comparison to formal structure, is positively related to performance, especially at the departmental and business unit, and firm level (Hunter, 2016). Such recognition for research on the existence of informal structure go to the extent of focusing on the social networks and the extent to which formal structure arrangements may be defined by informal patterns of interactions (Soda & Zaheer 2012; McEvily, Soda, & Tortoriello, 2014).

Even though, research of this nature within the military appears to be limited (Ali, 2016), there are a few studies (Ali, 2011, 2016; Godfrey, 2014) which have covered the importance of formal and informal structure in a military environment. For instance, Godfrey (2014) focused on the role and importance of humour in atypical organizational context in the British Military and Ali (2011) focused on the implications for organisational architectures and command and control by examining whether informal networks contribute to military mission outcomes and what factors facilitated the co-existence of formal and informal structure during operational deployments. Furthermore, Ali (2016) studied the interplay of formal and informal structures in the Australian Air Force, Army and Navy forces from the perspective of decision making contexts and domains.

In order to achieve the group effectiveness, Oh, Chung & Labianca (2004) submitted that it is necessary to have the interplay between formal and informal structures. From this interplay, group social capital resources such as information (relevant information, diverse information and timely access information), political resources (referral, protection, timely access to political support and input and decision) as well as mutual trust and emotional support can be utilized to achieve group effectiveness. Chung & Jackson (2013); Obstfeld (2005) found that formal structure elements are merely considered as control variables or boundaries that outline informal exchange among employees. They submitted that this trend has created a disconnection between the literature on formal and those of informal structure. The major finding common to these previous studies is that there is the tendency for individuals to interact more in an informal level when they are members of the same formal group. Thanh, Zouikri, & Deffains (2012) focused on the interrelationship between formal and informal decentralization, and how it influences sub-central governance performance in Vietnam. The study argued that the formally decentralized system of public service supply accommodate the informal sector, but the informal decentralization in public order provision tends to complete with the existing ineffective formal system. For the informal structures to complement rather than free-ride or rival the formal structures, the study recommended a reorganization of the system of decentralization of the provision of public goods or services.

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All these research offered findings within the landscape of (business) organisations; yet the interplay or interaction and relationship between informal and formal structures need scrutiny, in the context of Malaysian navy (military) landscape which, like any other military environment, abhors disobedience and upholds the command-and-control culture, yet, is coloured by the particularly unique informal (social) structure, especially within an on-board navy ship working environment. A research on the day-to-day routines of an on-board navy ship would distil new findings on the nature of the interplay of informal and formal structures.

A contextual gap which exist is demonstrated by previous studies which are international-based. Previous studies by Ali (2011, 2016) found the interplay of formal and informal structures in the military, however, the study was conducted in Australia and the sample consists from multiple services which cover air force, army and navy. The results might be different if the study is separated from each service as the landscape of operation is different in each service. Comparatively, the Australian military landscape of operation involves combat, humanitarian and disaster relief operations. Yet, in Malaysia, especially with the navy ships, logistics missions offer a different landscape worth investigating.

In addition, where theoretical gap is concerned, an analyses into the nature of interplay of formal and informal structures and duality of structures (Giddens, 1984), and the interdependence between structures and agents could solve issues pertaining to the importance of adhering orders in a military working environment—the extent of informal (social) structures or unwritten rules and regulations benefiting the formal structures or written rules and regulations, could steer the nature of productive capacity of a military-like environment during a particular logistics mission.

Where methodological gap is concerned, the application of qualitative approach in this study seek to gain understanding and uncovering of understandings and insights of a phenomenon in social reality which is how the interplay of formal and informal structures help the RMN's ship organisation in smoothen the ship operations and objectives. These underpinnings align with a qualitative approach based on interpretive and constructivist paradigms (Creswell, 2011; Punch, 2014). From the multiple data collection such as participant observation, non-participant observation, in-depth interview, semi-structures interview and document reviews, the phenomena of how the interplay of formal and informal structure on-board ship could be examined more distinctly.

This research focuses on the nature of duality of structures evident from the application of structuration theory. Structuration theory was applied to explained how continuous interaction of the ship crews as an agent was actually involving the interplay of formal such as written rules and regulations and informal structure such as unwritten rules and orders in order to ensure their organisational objective was achieved and accomplished. The application of the duality of structure, which focused on daily routines on-board an RMN ship was poignant, and matched with the multiple qualitative research methods, data was collected on how available resources were used. Concepts of signification, domination, and legitimation were used to analyse rich structures consisting of informal structures (unwritten legitimation, unwritten sanction and norms) and formal structures (written rules and procedure, rank and hierarchy system, power and command) throughout the ship's daily routine, while under logistics mission.

2. LITERATURE REVIEW

2.1 FORMAL AND INFORMAL STRUCTURES

Formal structures are the fixed set of rules, procedures and structures which are intentionally designed to coordinate and control the activities of the organization in order to attain its collective goals and formal structures are usually employed to categorize interdependent activities into distinct units with a view to promoting efficiency, facilitating learning and control as well as decreasing coordination efforts (Brennecke & Rank, 2016). According to Gulati and Puranam (2009), a formal structure is the normative social system designed by managers which can be changed relatively rapidly, while the informal structure is the emergent pattern of social interactions within organizations that may be subject to limits and lags in its adjustment to the new formal structures. On the other hand, informal structure refers to the emergent patterns of interpersonal interactions which employees utilize to pursue their instrumental and socio-emotional needs (Gulati & Puranam, 2009; McEvily et al., 2014). The relationship between formal and informal structures could either be formally designed or informally emerged through communication and interaction of individual behaviour between the individual in the organisation, as well as the norms, values, and beliefs that underlie such behaviours and interactions within the formal structure (Dickerson, 2012; Gulati & Puranam, 2009; Soda & Zaheer, 2012).

2.2 INTERPLAY OF FORMAL AND INFORMAL STRUCTURES: THE MILITARY ENVIRONMENT

The interplay of formal and informal structures in military-based environment is the productive practices where collective responsibility of their members encourage delegation, decentralization and greater worker support of the leader, which suggests a probable improvement in performance and overall productivity in military operational landscape (Ali, 2016; Godfrey, 2014; Diefenbach & Sillince, 2011). This interplay is based on human behaviour which emerged in response to the changing environment as well as complex and integrated operational landscape which develop the competency in achieving the objective of the military mission (Ali, 2011).

2.3 FORMAL AND INFORMAL STRUCTURES: KNOWLEDGE-SHARING/ADVICE SEEKING

Within a normal (business) organisation, most activities are organized into teams or projects. In essence, the supervisor or manager assigns individuals into teams with multiple memberships to promote cross-team communication, and learning and coordination which improve the performances of the teams and maximize their performances (Brennecke & Rank, 2016). Within a navy ship

working environment, multiple team assignments are also utilized, based on the specialisation of individuals. Nevertheless, the context of increased productivity in a stressful maritime zone, is dependent upon the nature of leadership and culture practised by the commanding officer. Regardless, what is more crucial to note is that like any other organisations, within a navy ship environment where knowledge-sharing exist, the informal work-related exchanges amongst the individuals emerge from the day-to-day communication (Lazega, 2001; Nebus, 2006), hence, the context of informal (social) structure may predominate over the formal (team) structure.

2.4. FORMAL AND INFORMAL STRUCTURES: DECISION-MAKING PROCESS AND COLLECTIVE RESPONSIBILITY

The relationship between formal and informal structures in information sharing basically involves decision making processes when they need the information from many sources (Ali, 2016). Hence, they are able to assemble the information needed, assess the situation, and make the decisions, thereby providing them with increased flexibility. This is because more people have the ability and knowledge to take responsibility when necessary in order to get the right decision (Bjornstad & Lichacz, 2013). Therefore, the information sharing leads to pronounced and transparent decision making processes through multiple individuals influence which is considered more effective during the critical situation in organisation under conditions of high task uncertainty (Geddes, Frantz, & Wright, 2014).

2.5 FORMAL AND INFORMAL STRUCTURES: SOCIAL NETWORKS

The issue of the use of social network analysis to study formal organisational structure in order to solve the duality was initially suggested by Tichy & Fombrun (1979). They argued that network analysis is concerned with the structure and patterning of these relationships, and seeks to identify both their causes and consequences. They further argued that social network represents social structure with regards to the relationship between social objects. However, not all social objects are linked together, and part of them are multiple, connected of affected, influenced information or goods and services. The study also argued that this is because social network is not a static linkage, and it carry multiple type of flows.

2.6. STRUCTURATION THEORY

The theory of structuration proposed by (Giddens, 1984) outlines how the social process evolve in the development aspects of society. The element of the theory is the double hermeneutic process, in which people, upon reflection of day to day routine, are able to influence the structure of society by either reproducing current practices or by changing them (Boucaut, 2001). The Structuration theory is an approach in which Anthony Giddens highlighted the distinctive techniques to the study of social relations. Giddens intended to use the approach to embrace and proceed further than the static nation of social structure. He also desired that the dynamic characteristics of agency are incorporated in the term, and both structure and agency are integrated within structuration philosophy (Stones, 2015). Thus, Giddens' structuration theory is akin to Pierre Bourdieu's work who also desired to proceed further than the reification and objectivism of approaches which pay attention to social milieu, thereby excluding individual and collective action. Giddens created a synthesis of the best from diverse traditions, and fashioned out a path between Marxism's deterministic tendencies and positivism on the one hand and, on the other, the overly voluntarist, free-floating techniques of interpretive sociologies such as symbolic interactionism and ethnomethodology (Bourdieu, 1977; Stones, 2015).

Furthermore, the theory is used to understand people's routine in the social structures. The concept of the theory offers perspectives on human behaviour based on the effects of a combination of structure and agency, and brings together structure and agency with a view to giving them flow continuity and possibility of structural change (Whittington, 2010). Moreover, Whittington highlighted the key concepts of structuration theory notably social practice, social systems, agency, structures, rules, resources, duality, structuration and institutions. Others include institutional analysis as well as the analysis of strategic conduct which play fundamental role in daily routine.

2.7 KEY CONCEPTS UNDERNEATH STRUCTURATION THEORY

Giddens (1976) defined structures as both the rules guiding action and the resources empowering action. Structure is a configuration of roles and procedures, the prescribed framework of the organisation, patterned regularities and processes of interaction (Ranson, Hinings, & Greenwood, 1980). Structure has been heavily influenced by the work on bureaucracy. This depicted precise and impersonal structures of tasks, rules and authority relations which are central to the rationalizing of the modern world (Ranson et al., 1980; Weber, Gerth, & Mills, 2012).

According to Giddens (1984) and Whittington (2010), social system exists in various level (organisation, society and industry) and the system is overlapping, opposing and inconsistent. This is because in an organisation for instance, an employee at the same time is part of a family member (father, mother, son etc.) as well as citizens. This makes the employee involved with various types of social system i.e. at work, home and polity. This overlapping cause an individual to try to meet the needs of this social system by trying to prioritize essential requirements in their daily lives where the importance of these needs often fluctuates according to time and circumstance. For example, perhaps today they prioritize family needs rather than work needs, and on the other hand the latter on other days (Whittington, 2010).

Looking at individual involvement in social system, Giddens (1984) defined this individual as an agent where it is important to understand the potential of each individual in their involvement in each social system section such as domestic, politics,

organisation, etc. This is because the agent is able to choose to do something or not to give them social power in choosing to prioritize their needs and requirements according to the social structure which they feel is more important to the situation (Whittington, 2010). For example, how they choose to work overtime, or come back home to be with their family and vice versa. However, according to Giddens (1984), people may have unconscious motivation in each of their actions, and they might not be able to fully account for their actions. Although they are likely to make mistakes in each of their actions, but via practicing of their actions repeatedly make them more discerning and able to adjust the necessary actions in order to achieve their objectives. Indirectly, this allows them to choose the appropriate action seen as most effective for them to practice in their daily lives (Whittington, 2010). Hence, it is important to identify what motivates the agent in each of their action. Furthermore, a simple social system could not predict every action and result of an action by the agent itself (Giddens, 1984).

Giddens (1984) further explained that the agent's capabilities are dependent on how they control resources either by obeying rules or not. According to structuration theory, rules and resources are parts of structure in social system where it recursively implicated in the reproduction of social systems. Resources are divided into two types namely allocative and authoritative. Allocative resources refer to command over object or other material sources of power, i.e., natural and physical materials and artefacts. Authoritative resources are non-material sources of power resulting in the dominion of some actors over others, i.e., command over the coordination of the activity of human agents. Giddens further explained that more resources owned by agents make them have more power or ability to negotiate with the rules.

2.8 DUALITY OF STRUCTURE

Duality of structure, according to Giddens (1984) refers to the interdependence between structure and agent. "Where the structure properties of a system as medium and outcome of the practices they recursively organize" (Giddens 1984: 25). Structures can be reproduced and transformed only through actors who themselves can come into existence only within a structured environment. Leaders are known as the dominant agents by virtue of the way they control allocative and authoritative resources, and their command of the rules, which they apply effectively. Their powers are both enhanced and inhibited by norms of appropriate conduct, as more or less shared by colleagues and subordinates within their system.

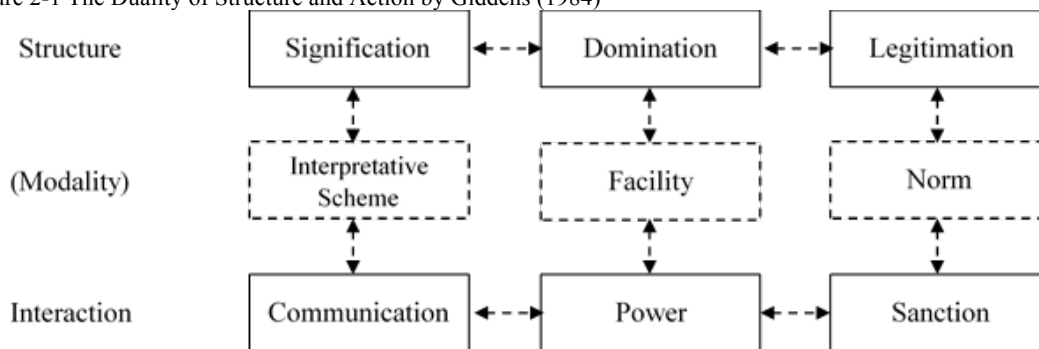Figure 2-1 The Duality of Structure and Action by Giddens (1984)

Figure 2.1 shows the three characteristics that form the interaction developed by the agency namely communication, facilitation of power and sanction (Dillard & Yuthas, 2013; Giddens, 1984; Whittington, 2010). This formation is logically connected to the three appropriate social structure dimension namely signification, domination and legitimization.

Signification refers to system discursive and symbolic order which rules or governs the way conversations are, such as jargon and image which predominate. Legitimate consists of guidelines for determining whether an act or behaviour is correct or moral in social structure of an organisation which represent the various levels of norms and values that make the act acceptable as ethical (Dillard & Yuthas, 2013; Giddens, 1984). This guide or regulation is also not written formally, but it is adopted as a culture within the organisation (Giddens, 1984; Whittington, 2010). Finally, domination determines who has access to resources. Resources provide the means, or facilities for realizing specific social goals or objectives. The realization of such goals results in the manifestation of power by those agents controlling the resources (Dillard & Yuthas, 2013; Giddens, 1984).

At the second layer of figure 2.1, modalities are the means by which structures are translated into action. Communication draw people interpretative schema which is connected to structure of signification. While exercising power, they facilitate the power to form the domination and in sanctioning, people draw on norm of appropriate behaviour embedded in the structures of legitimization (Giddens, 1984; Whittington, 2010). Final layer of figure 2.1 is interaction which represent the action or activity instantiated by the agent acting within the social system i.e. through communication, power and sanction (Dillard & Yuthas, 2013; Giddens, 1984).

However, according to Whittington (2010), the horizontal double arrow in Figure 2.1 implies that the three dimensions are analytic distinctions that do not rule out interweaving in practice. It is because Giddens highlighted the significant of the reciprocity of such norms even though it is logically belonging to the legitimization, it is also possibly, by the very giving of legitimacy, reinforce the facilities that originate in the dimension of domination. Thus, managerial powers gain from the fact of their legitimacy. Hence, this reciprocity brings us to Giddens (1984) idea of the duality of structure.

2.9 THE APPLICATION OF STRUCTURATION THEORY

The structuration theory proposed by Giddens had been widely used in diverse fields of research including management accounting, information system, group support system, communication, as well as organisation and management. For instance, Ranson, Hinings & Greenwood (1980) focused on diverse organizations where it considered the application of structuration theory. The study challenged the long-established representation of organisational structure as objective and somehow 'real' (Whittington, 2010). Macintosh & Scapens (1990) applied Giddens' structuration theory as a fundamental framework for management accounting research in order to increase its scope further than a technical focus which comprises political and social dimensions. The study explained the theory, highlighted the shortcomings as well as presented longitudinal case study analysis. According to the study, structuration theory represents a better informative, focused, efficient and integrative way of describing the way to implement accounting system in the maintenance, construction and changes of the social order in an organization compared to other frameworks. The study concluded that with the central concepts of 'structuration' and 'duality of structure', the structuration theory could be read along with the Derrida's 'deconstruction' and Foucault's 'power/knowledge' as post-modern genre for appropriate accounting research. Similarly, Coad and Herbert (2009) also investigated the new potentials of management accounting using structuration theory. They posited that the use of structuration theory in management accounting research had made distinctive contributions, because it offered the opportunity to shift from relatively abstract concepts to concreate construct which provide researchers with methodological and epistemological guidance. They further suggested the use of the concept of position-practices with quadripartite model of structuration. The study concluded that in the investigation of position-practices, emphasis has been on strategic conduct of agents, the importance of power in social interaction as well as the plurality of structures and theories. The study recommended the use of structuration theory in a flexible manner in order to address the issue of limited direct insights into the procedures of learning, reproduction and change in management accounting by quadripartite model, which identifies the hermeneutics, phenomenology and practices of agents. Hence this study could see the how routine been practices by the ship crews as well as how the use their power based on their designated roles in order to achieved the organisation objective.

Based on the above study, the relationship of structure and the action of agent can change the structure itself. This is based on concept of duality of structure in which the structure can be reproduced through action of agents (Feldman, 2004; Gao & Li, 2010). Further, attention should be given to day-to-day practices to enable this study to be implemented towards agent's behaviour in the social system (Giddens, 1986), Hence, the application of the duality of structure can be applied in this study by observing daily routine on-board MPCSS to understand the underlying mechanisms within the interface of formal and informal structures, on-board the RMN's navy ship.

3. METHOD AND MATERIAL

This research topic applied a qualitative research methodology for a single-case study on board the one of Multi-Purpose Command Support Ship (MPCSS), for several reasons. Military ships are complex organization (Rochlin, 1989) and are considered as isolated military units or organisation which encompasses with their own communities on-board. The Commanding Officer (CO) is the Officer in Command of a navy ship. Though all authority, command, direction and responsibilities rest with the Captain, he delegates the duties necessary for carrying out the ships function to the executive Officer, department heads, Officer on Duty and to the crew. MPCSS its big size with seven different departments and loads of crew consisting of various ranks (different hierarchy level), it is evident that the navy ship is most suitable for this single-case study.
Thus, MPCSS was chosen as the case site. A study on informal structure which is made of norms, traditions, unwritten code of conduct, and social relations required a deep analysis into the multiple settings within the boundary of the environment.

Empirical data were collected on-board MPCSS during the ship tasking from Lumut Naval Base to Langkawi Naval Base in a logistics assistance mission, in conjunction with Langkawi International Maritime & Aerospace Exhibition (LIMA) 2017. During this mission, varieties of routine and activities involved which are navigation briefing routine, preparation for sea routine, entering and leaving harbour, training routines, ship crew rest period and both watches. This setting includes the observing the phenomena, participating in the phenomena, as well as investigating the mindset of the agents involved in settings. The single-case design allowed various approaches to be considered, in order to understand the phenomena. The data was obtained from multiple data collection such as participant observation, non-participant observation, in-depth interview, semi-structures interview and document reviews. Thus, the phenomena of how the interplay of formal and informal structure on-board ship could be examined more distinctly. During this mission, varieties of routine and activities involved which are navigation briefing routine, preparation for sea routine, entering and leaving harbour, training routines, ship crew rest period and both watches. This setting includes the observing the phenomena, participating in the phenomena, as well as investigating the mind set of the agents involved in settings.

With regards to this research choice of sampling strategy, the most common sampling methods used in qualitative research are purposive sampling, quota sampling and snowball sampling (Guest, Namey, & Mitchell, 2012). Purposive and quota sampling are similar in which they both seek to pinpoint participants according to the criteria needed. However, quota sampling is more specific with respect to sizes and proportions of sub-samples with the selected group to echo corresponding proportions in the population. Since MPCSS consists of various ranks and branches from ranks of Junior Able Rating to Captain RMN which represent the hierarchy level of ship organisation, this study uses quota sampling to ensure each rank is chosen as sample.

4. RESULT

In this study, each routine represents a formal structure which needed to be complied by the ship crew. Each of this routine combined, form an overall (formal) work structure which needed to be performed during a logistics mission on-board the RMN navy ship. In performing their roles, the routines brought out certain patterns of behaviour which underscored the interaction of formal and informal structures the sections above discussed the crew's behaviour, in terms of how they performed their tasks and responsibilities, and ensured that the rule and regulations were successfully obeyed. The interplay of formal and informal structures is summarised in table 4-1. Further analyses are illustrated below. Overall, the findings interpreted from duality of structure indicates that there is interdependence between structure and agent where there the structure 'is the medium and outcome of the conduct it recursively organizes; the structural properties of structure do not exist outside of action but are chronically implicated in its production and reproduction, it was found that ship crew facilitate their power in terms of domination to produce new legitimation, leading to the outcome of informal structures. In addition, the interplay of formal and informal structures consequently created and effect, thus, a positive impact upon the performance of the navy ship. The positive role played by the emergence of the informal structures strengthens the formal structure and the command-and-control environment on a navy ship with a logistics mission (that at times, are critical).

Table 4-1: Further Analyses on Interplay of Formal and Informal Structures

No	Formal Structure	Informal Structure	Effect
1.	• Task assigns to each department based on their speciality.	• Each officer and crew helping each other even though the respected task and problem not their responsibility.	• Smoothen the ship operation. • Best option in problem solving • Good learning experience for officer
	• Higher authority orders	• Training as punishment	• Competency
2.	• Ship Daily Orders • Ships routine	• Unwritten punishment	• Awareness to follow routine and procedure.
3.	• SOP in demand and issues (store)	• Bypass the paperwork	• Speed up the work process. • Avoid disrupted ship operation

First, the interplay of formal and informal structures on-board RMN navy ship led to the effect of smoothening the logistics mission operation. This particular interplay was observed during the operation of management of demand-and-supply of equipment in ship store. Based on duality of structure (refer to figure 4-1 Interplay of formal and informal structures), both crew and storekeeper exercised their authoritative and allocative power over the entire ship crew and the formal structure (standard operating procedure) by ignoring the established procedures involving paperwork and a new legitimation structure was formed-bypassing the paperwork to speed up resolution of issues so as not to hinder or delay the activities and work process on the ship. This particular situation showed that the informal structure (seen as legitimation) emerged through the crews' behaviour while they were performing their formal designated roles. In actual fact, during any navy ship missions, this behaviour could help to avoid disruption of a ship's operation, particularly during critical situations. Thus, this study supported Gulati & Puranam (2009) where they showed that formal and informal structural elements usually complement each other such that informal structures are utilised to compensate for the weaknesses in the formal structure, or to facilitate the action required by the formal procedures.
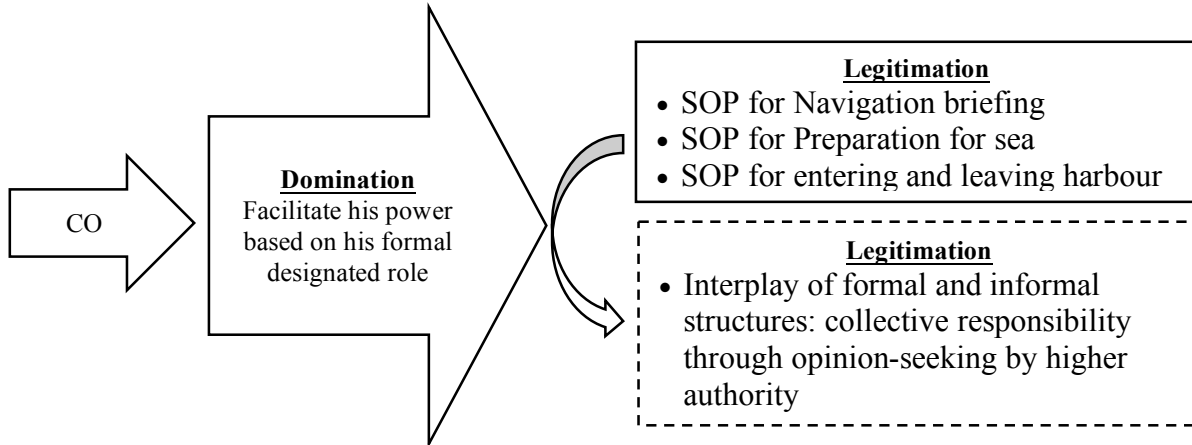
Figure 4-1: Interplay of Formal and Informal Structures: Informal Behaviour Bypassing Paper Work Procedure
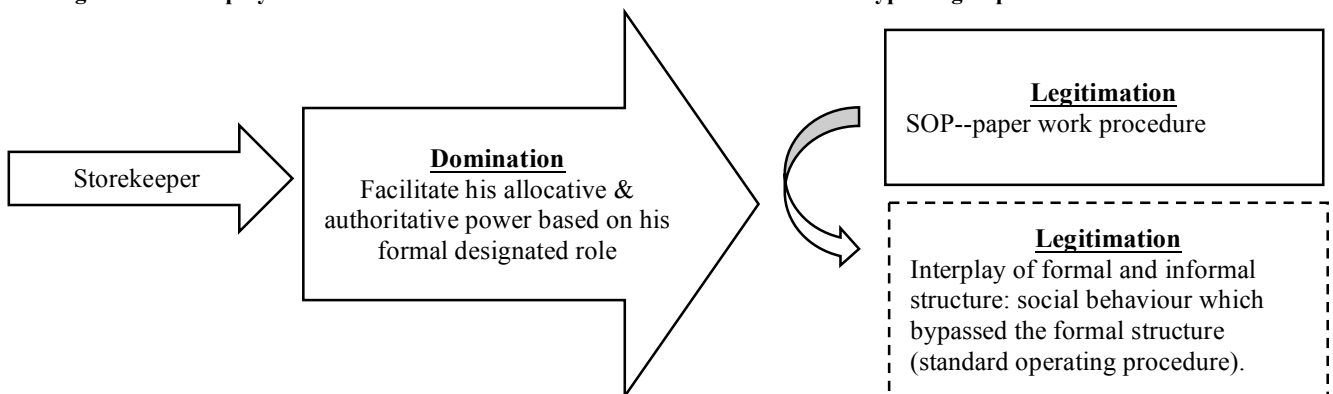
Second, the interplay of formal and informal structures on-board RMN navy ship allowed the ship crew to arrive at the best option in problem-solving. Even though the formal structure of the ship has listed the responsibility of each department and crew, an informal structure emerged during critical situation--assisting other departments by giving opinion in finding a resolution to the existing problem. This action/behaviour was observed during the preparation for sea routine, navigation briefing and when entering and leaving harbour. The Commanding Officer exercised his authoritative power over the ship officers, to encourage them in sharing their opinions (refer figure 4-2). The norm/culture of giving opinions and ultimately, obtaining better solutions were fostered both during normal circumstances and in critical situations. Thus this study concurred with Diefenbach & Sillince (2011), in terms of collective responsibility--the interplay of formal and informal structures encouraged joint responsibility in order to arrive at the right decision. Regardless, advice seeking is top-bottom, rather than bottom-up, and within such culture where obedience is a norm, collective responsibility became possible. This study showed differentiated findings

from Brennecke & Rank (2016) and Marrone, Tesluk & Carson (2007) which noted the interplay between formal and informal structures in many project teams tend to decrease the employees' attention from their advice seeking activities due to their workloads. This finding also concur witho Hunter (2016) who found that informal networks such as advice seeking and trust network crossed departmental boundaries. Finally, this study also supported Ali (2016), Godfrey (2014), and Diefenbach & Sillince (2011) discussion on the effect of collective responsibility in overall productivity and performance within a military operational landscape.

**Figure 4-2: Interplay of Formal and Informal Structure: Collective Responsibility**

Third, the interplay of formal and informal structures allowed the inculcation of good learning experiences for officers when unwritten informal structures for navigation briefing, preparation for sea and entering and leaving harbour is a norm. This can be seen when Commanding Officer encouraged them in sharing their opinions, adding value to their knowledge. As illustration, an officer without a designated role to navigate a ship into the harbour, could still acquire new information and knowledge in how to act during a critical situation of navigating the ship without assistance of a tug boat. This study concurred with findings of Bjornstad & Lichacz (2013), the ship crew assembled the information needed and make the decision together. Not only that, similar to Geddes et al. (2014) who observed that the influence of multiple individuals in the decision making process is seen as more effective during the critical situation where the conditions of high task uncertainty exists, this research findings attest to that conclusion too.

Fourth, the interplay of formal and informal structures led to the improvement of the competency of the ship crew in performing their formal designated responsibility. This can be seen during the training routine when commanding officer performed the extra exercises as sanction (unwritten informal structure) to all ship crew when they failed to follow his orders and ship routines. Through repeated exercises, it was seen that the ship crews were competent to perform their formal designated responsibility quickly and efficiently. Hence, this study supported Ali (2011) where the interplay of formal and informal structures coincided with human behaviours which emerged in response to the circumstance of disobedience/undisciplined behavior (changing environment). Furthermore, this study also supported Worsnop (2013) where the interplay of formal and formal structure on a navy ship is the central determinant of ship's effectiveness—leveraging and build upon informal structures becomes important.

Finally, the interplay of formal and informal structures led to awareness improvement for the ship crew. In the case of the ship crew reporting late to the ship, they did not follow the formal structure and the standard operating procedure of taking the daily orders and ship standing orders seriously. Therefore, the officer on duty used his authoritative power to bypass standard operating procedure which would have require the case to be reported to the higher level, initiating an investigation report (refer figure 4-3). Instead, the officer ordered them to write "reason in writing" as to why they failed to adhere to the standard operating procedure. As a result, the crew members were grateful to the officer for the leniency and not enforcing the full extent of the punishment that they ought to have received—this circumstance led to the motivation to adhere to the ship routines in the future. This circumstance showed that the interplay between formal and informal structures could either be formally designed or could informally emerged through communication and interaction between the individuals in the organisation (Dickerson (2012); Gulati & Puranam (2009); Soda & Zaheer (2012)). It was also found that this finding supported Naoum (2001) who posited that the interplay between formal and informal structures in an organisation brings out the individual behaviour and attitudes while at the same time shape the beliefs and behaviours of members of the organisation (Moynihan & Pandey, 2007).

Figure 4.3: Interplay of Formal and Informal Structures: Penalty for Latecomers
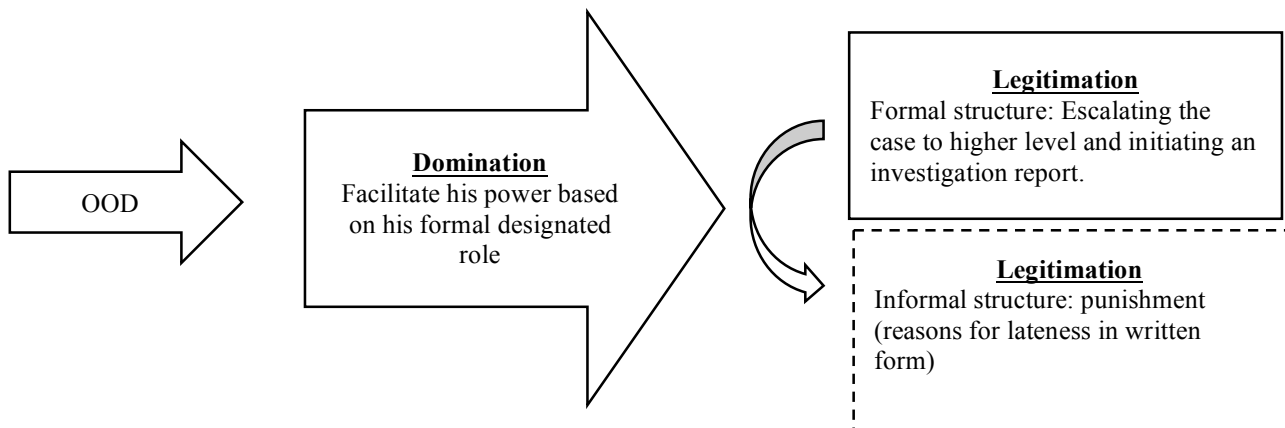
5. CONCLUSION

The formal structure of a navy ship is described in the ship's published regulations and needs to be obeyed in order to ensure the success of any given task. Informal structures which manifested were in the form of sanctions or punishments which were not written in the standard operating procedures, participative decision-making/knowledge-sharing, strong social network which supported each other (beyond the job scope) in completing the tasks at hand, and also, actions which bypass the standard operating procedures. Nevertheless, the interplay of formal and informal structures (through the behaviours, communications and interactions of individuals in performing their formal designate roles) becomes imperative for ensuring that obedience towards the rules and regulations is upheld. This research found a positive impact emerged as a result of the agents' social interaction (informal structure), in respond to the formal structure behaviour. All the informal (unwritten) structures had a positive effect of ensuring that i) the awareness compliance of routines and orders, ii) the ship's activities could be conducted and run smoothly and iii) the logistics mission was accomplished through best solutions via collective participation, iv) inculcating good learning experiences and competency building for all ship crew.

For illustration, the informal structure of collective responsibility emerged when the ship crew were required to find solutions to problem that arise throughout the duration of their navy ship routines. Their capacity for information sharing strengthens, facilitating the pursuit of completing the logistics mission operations. While the commanding officer did not actually require collective participation, the emerged informal structure manifested as distributed decision making--when in the operational situation changes, shared responsibility was required rather than ascribed to an individual (in order to get to the right decision). In addition, informal structure emerged through agent's behaviour and results in the creation of new informal standard operating procedure as mechanism to speed up the work process This was demonstrated in the store supply process where the crews chose not to submit the paperwork's beforehand in order to save on waiting time needed to obtain urgently-needed equipment for operational use, hence helping to smoothen the ship operations. Similarly, in other instances, each circumstance of activities on the navy ship showed that the emerged informal structure was vital in strengthening the importance of formal structures.

This research has contributed towards the literature on the interplay of formal and informal structures, specifically in relation to collective/participative decision-making, knowledge sharing, and social (bond) network. The interpretation along the lines of structuration theory (an application of the concepts of duality of structure, namely, signification, domination, and legitimation), further enhanced the understanding on the nature of interplay of formal and informal structures on-board RMN ship by observing how the ship crew undergo their daily routine and performing their designated roles to make sure the smooth running of the ship operations. As a result, this research has found out that the emergence of informal structures has complemented the formal structures, the underpinning essence of the existence of RMN which thrives in serving the nation through obedience within the chain of command. In addition, the navy ship landscape has provided new findings which are differentiated from that which were evident in business organisations.

From a practical point of view, RMN and especially the navy ships, could use informal structures to increase the effectiveness of ship crew performance by experimenting with different (informal) social behaviours which would facilitate adherence to routines and orders. This informal structure is seen as the good initiative for ship crews in order to make sure the smooth running of the ship operations.

In addition, rather than practicing the pure command-and-control military style of leadership, different context of leadership initiatives by the commanding officer (such as participative decision-making, distributed decision-making in order to arrive at the right decision, knowledge-sharing solicitation) would embolden the awareness of what the standard operating procedure entails, improving subordinate competency, as well as improve work performance. The initiatives taken by leaders play an important role in managing the crews to ensure crews are fully motivated, as their performances contribute the crews and the organization as a whole.

Moreover, in critical situation which requires the best possible solution to emerge, the informal on-the-feet initiatives taken would not only smoothen the operations, but also reduce jeopardising the success of critical navy ship missions. Thus, the emergence of informal structure is based on individual behaviour during critical situation is seen a good initiative during critical situation by encourage the opinion sharing.

Nevertheless, one key practical significance which should not be underestimated is that informal structures could also lead to tarnishing the missions, especially when adhering to the standard operating procedures timely and accurately determines the success of the mission. Hence, there is a need for balancing the impact of the interplay of formal and informal structures, within a military-like working environment. Tasks performed by the ship crew need to be monitored closely as they may develop unconscious motivations and they may not able to be fully accountable for their actions.

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