Understanding Health Emergency Management Response Planning in Oman: Perspectives on Standardization.

A dissertation submitted by
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in partial completion of the award of
MRes in Disaster and Crisis Management

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Abstract:

Disaster response is often regarded as a critical phase in the disaster management cycle as it happens during the event itself. In particular, extensive stakeholder effort often boils down to and concentrated within the response point. Understanding then both the complexity of this phase and the nature of the integration and interaction between stakeholder is paramount. Therefore, a common ground is required in order for these stakeholders to interact and response efficiently. This common ground is standards, which form the basis of response plans. Similarly, the Health response sector have the same complexity and a vast number of stakeholders with uniformity and integration being a top priority. Thus, standards have the same level of importance for this sector. Moreover, standards often are looked at almost exclusively from a functionality point of view with lesser regards to how people perceive it. Therefore, this research aimed at further understanding standards by exploring users' perception of current standards and their future desire. This was achieved by conducting a series of semi-structured interviews as a means of data collection. Next, the produced data was analyzed according to the designed framework. As a result, the Omani current standards typology was grounded in research and the desired future typology was determined. Thus, drawing a clear trajectory of end users' perspective, which ultimately aided the achievement of a robust understanding of the Omani's current health response planning system. This understanding lead to a clear identification of what Oman's standards end users perceive current standards are (Rigid-explicit) and what is the desired future standards (Flexible-Implicit).

ACKNOWLEDGMENT

I dedicate this piece of work to

My wife for her limitless support for me and my children

My Father, Mother

My family,

My friends & co-workers

Without whose support this work would have not been possible.

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For his precious advice and exceptional support and for his patience and time in teaching me how to transit from natural science to social science and how to address this type of research.

Mr. Richard Gordon

The Director of Bournemouth University Disaster Management Centre

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Ms. Lauren Jarrad

For providing a never-ending support for me and the entire team without a single fail

&

And most importantly my country "**The Sultanate of Oman**" for giving me this opportunity to complete my

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Understanding Health Emergency Management Response Planning in Oman: Perspectives on Standardization

Chapter One: Introduction

1.1) Introducing Health Emergency Management (HEM):

There has been a remarkable increase in the frequency and complexity of disasters in recent decades. This is a by-product of the interaction of multiple factors, which has led to the current situation facing most of the world's nations (OECD 2003; Alexander 2005; Perrow 2007). One of the nations constantly facing the challenge of disasters or impending disasters is the Sultanate of Oman.

Oman is a coastal country located at the rim of the Arabian Peninsula, which is a part of the Arabian Plate edge that is colliding with the Eurasian Plate (Reilinger et al 2006). The result of this collision is a seismically active Markran trench (El-Hussain et al 2017). Oman's close proximity to the trench (refer to figure 1) makes it highly vulnerable in terms of its exposure to earthquake and tsunamis (El-Hussain et al 2017). Additionally, the presence of wadis in Oman make it prone to frequent floods during the rainy season (Al Shaqsi 2010). Here, we can observe Oman's susceptibility to different natural disasters.

Furthermore, the fact that Oman is a part of the relatively politically unstable Middle East, with numerous surrounding countries engaged in direct war or involved in a war by proxy (Aras and Yorulmazlar 2017), makes it susceptible to man-made disasters (refer to figure 2). Oman's

vulnerability to both natural and man-made disasters requires multiple stakeholders to respond simultaneously, with the health sector being one such stakeholder.

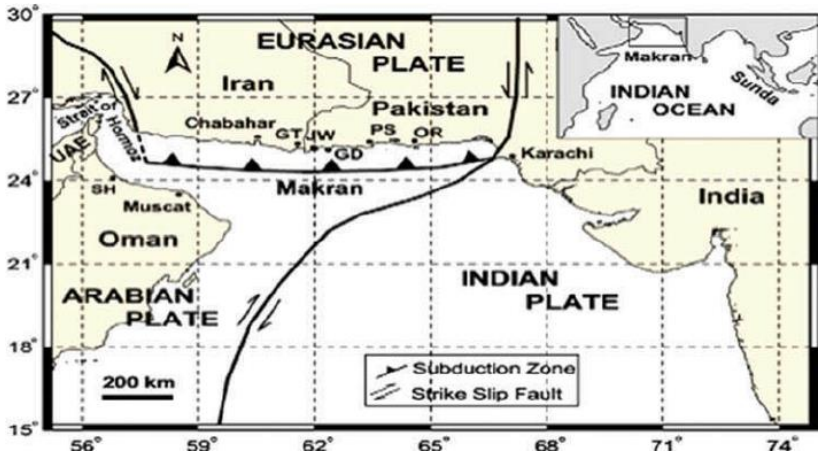


Figure 1 Makran Trench, source: www.researchgate.net

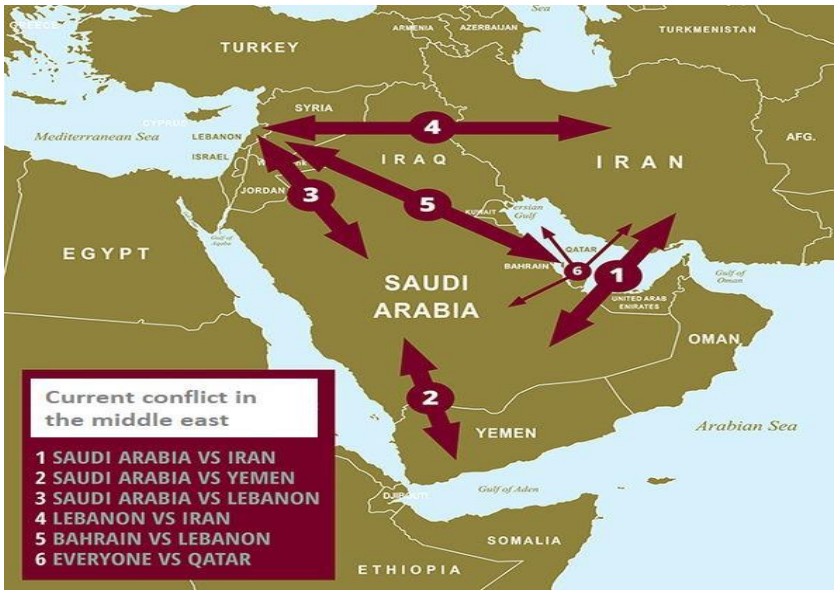


Figure 2 Conflicts in the Middle East, source: www.express.co.uk

The health sector is involved in the majority of natural and man-made disaster responses, making it a key stakeholder during this phase (publichealthmatters.blog.gov.uk nd; Hick et al. 2004; Hodge 2006;

Hodge et al. 2013). Therefore, this research will primarily focus on the response phase. Furthermore, within the health sector, there are multiple stakeholders that respond to the same disaster simultaneously. Subsequently, this creates a complex dynamics between stakeholders from different organizations within the same sector, or even within a responding organization itself (Hick et al. 2004). Thus, a high level of integration is required to reduce the level of potential chaos generated in this phase and to bring greater order to disaster response.

However, in order to achieve this, a common ground should be established between the stakeholders that will enhance efficiency, communication and response time. This common ground is provided by standards, as it sets the minimal requirement to carry out a task with an acceptable level of functionality upon which the health emergency response is built on. Therefore, the importance of standards cannot be ignored. Close observation and examination is needed to understand the particular attributes of standards, in addition to how these attributes currently, and may in the future, interact and influence one another.

Moreover, apart from the functionality aspect of standards which will be incorporated into this research, this research will investigate how standards are perceived by involved personnel, and thereby try to link both to further enhance our understanding of standards. The reason for including perceptions of standards is that most of the available "reviewed" literature explores the functionality of standards as a stand-alone entity or through plans, and seldom consider how people perceive standards. The aforementioned link (the gap in the literature between the functional attributes and the perception of standards) formed the basis of the questions driving this research: can we further understand health emergency response standards through perceptions of involved personnel? And are plans and standards perceived the same by the involved personnel?

1.2) Aims and objectives:

The aim of this thesis is to investigate how enhancements in health emergency planning in Oman can be understood and conceptualized from the perspective(s) of standardization. In particular, this work seeks to contribute to an explanation of why - regardless of the recognized growing importance of standards in relation to health emergency plans – there remains a notable deficit in terms of existing conceptual ways to understand, differentiate and operationalize different types of standards effectively. Therefore, this research aims at improving the understanding of health emergency response planning in Oman by introducing more developed perspectives on standardization that consider how health emergency planning can be more effective. This researcher hypothesizes that there is a pressing need to develop more sophisticated perspectives on standardization involving developed notions of the '4 Cs' (command, control, clarity and coherence). These aims will be met through a number of objectives:

- To identify - via an extensive literature review – the nature, form, and character of standards and standardization in health emergency management and response planning.
- To develop a conceptual framework that can offer new perspectives on standardization and provide value-added to explaining balances and tensions to the imperatives of flexibility and rigidity.
- To evaluate how standards are viewed and understood in practice in relation to health emergency response plans in the particular case of Oman, using benchmarking from the case of the UK.
- To provide academic and policy recommendations to promote multi-agency standardization in health emergency response planning in Oman.

The development of this perspective will be achieved by answering two research questions:

- Can we further understand the use of standards through an extensive analysis of the perceptions of end users (the people who use standards)?
- Are health emergency response plans (HERP) and their related standards the same?

1.3) The structure of the dissertation:

The first step in answering these questions is achieved via the production of a focused literature review[1] (see chapter 2). Initially, an extensive search will be carried out on certain search engines such as google scholar and Bournemouth University electronic library search engine. During this search some key words will be targeted to further expedite article gathering, alongside the usage of snowballing technique through articles which could prove to be of great importance to the research's structure. The obtained secondary data will form the foundation by which the research will explore the functionality of standards and pave the road to extract standards' attributes in later chapters.

The second step represents the discussion and rationalizing of the key methodologies (see chapter 3). This step will identify the research methodology and the optimal methods for such a topic. This will be achieved by identifying the research's ontological and epistemological position, followed by identifying the research method which can best capture the personnel perception of standards. In this research a qualitative method will be used as it can provide the means by which this research can appreciate the participants' perception of standards. The tool of choice will be semi-structured interviews since it has the ability to capture in depth the

[1] The reviewed literature includes literature on urban planning, strategic formal planning in marketing, disaster management planning, and Health emergency response and planning. The selection of these fields for the literature review is based on two reasons: 1) the scarcity of a specialized literature in the field of standardization in health response planning; and 2) the similarity (general themes and components) that was found between health emergency response planning and standardization, and the rest of the aforementioned disciplines.

participants' current perceptions of standards and their future desires as well. Additionally, several important and related issues will be discussed in this step, such as sampling and limitation issues to name a few.

The third step is where the conceptual framework is introduced (see chapter 4). This chapter will demonstrate the interaction of standards with components involved in disaster management generally, and emergency health response in particular, and their terms of reference. This will be done by extracting standards' attributes from the available literature review (flexibility, rigidity, explicitness and implicitness) and relating these attributes to each other to create a standards typology. This will be followed by relating these attributes and typology to plans in order to establish a connection between perceptions of plans and perceptions of standards. Moreover, the established links along with the attributes (the conceptual framework) will serve as guidance for the empirical chapter and help in extracting the needed data to draw a conclusion.

The fourth step represents the empirical investigation and presentation of key findings (see chapter 5). This chapter will illustrate how the current Omani system was established (top-down system) and the logic behind its current position. Moreover, this chapter will integrate the current Omani system with the participants' data by the means of the previously designed quadrant conceptual framework in order to identify the current position of the Omanis' standards and draw its future trajectory according to participant perspectives in relation to the quadrant framework.

The fifth step is the presentation of key comparative conclusions, including reflections on future academic research agendas and practical applications (see chapter 6). This chapter will demonstrate how findings from the empirical chapter can be utilized in future health emergency planning and health emergency standards formation, in addition to how the trajectory of future standards can contribute to building a practical standards evaluation toolkit and help in suggesting a future research agenda.

The sequence of the above-mentioned steps will assist in fulfilling the research's overarching aims and pave the way to the empirical chapter to provide an answer to the proposed research questions (see section 1.2). Furthermore, it will aid in understanding the current position of Oman's health emergency response plans, their standards and future desires, thus helping to provide a practical and academic recommendation for the future.

Chapter Two: Literature Review

This literature review is focused and targeted to support the study of standardization, specifically in health response planning. In order to do this, the research reviews literature that is most relevant to this research. This includes the fields of: 1) Standardization; 2) Planning and planning theory; 3) Formal planning; 4) Planning in disaster management; and 5) Health response planning. By focusing on the literature of these fields, we will tease out the similarities and differences between the literature and the key lessons that will inform the future conceptualization of this thesis.

2.1) Standardization:

There is considerable controversy in the literature over the definition of standards and standardization (Sandler and Shani 1992). This controversy extends deeply to the very nature of both terms. In other words, most of the reviewed literature blurs the boundary between standards (the entity) and standardization (the process) and use it interchangeably, thus creating a noticeable degree of difficulty to effectively and efficiently define and discuss standards and standardization separately. Therefore, in line with the reviewed literature, both terms will be used interchangeably. Picard (1978), Jeannet and Hennessey (1988) view standardization as a set of similarities in terms of the application of activities, policies and programs that are recognizable within different organizations[2]. Other authors argue that standardization is not only about the application, but also the development of specific standards and procedures within different organizations (Shierif 2006; Saltzman et al. 2008; Gao et al. 2014), and it

[2] Adapted from standardization in marketing (Picard, 1978; Jeannet and Hennessey, 1988; Shierf, 2006; Saltzman et al., 2008; Gao et al., 2014; Daniels, 1987; Rostal, 1962; Pleebs et al., 1978; Kegaan, 1984; Onkvisit and Shaw, 1987)

is best applied in organizations that share similar characteristics (Roostal 1963; Daniels 1987).

Uniformity is a key aspect of standardization and therefore a highly desirable outcome to be achieved (Pleebs, Ryans and Veronk 1978; Kegaan 1984). However, uniformity tends towards rigidity and dismisses other potential attributes which could be promoted by standardization, such as flexibility. Onkvisit and Shaw (1987) have stated that standardization should contain an element of flexibility that allows local modification, whilst maintaining enough uniformity to preserve its integrity[3].

There are numerous outcomes gained by maintaining an emphasis on flexibility within the frame of standardization. By introducing flexibility, we allow some degree of dilution of any limitations caused by standards, subsequently giving room for change and innovation (Kala and Thursby 1994; Liker, 2004). Avoiding changes can obstruct an organization's progress; in fact, it could be the cause of deterioration since changes are unavoidable (Kherbash and Mocan 2015; Stajniak and Kolinski 2016). Lawrence (1969) argued that the refusal of change by any given organization can render it obsolete, due to a lack of progress. By incorporating flexibility within standardization, we will be able to introduce flexibility attributes within the standardization framework such as versatility, convertibility and malleability (Finch 2009). By applying these attributes, organizations can withstand internal and external challenges and interferences.

A crucial advantage of standardization is the ability to facilitate complex knowledge transfer among different partners and stakeholders (Tassey 2000; Tether et al, 2001; Rysman and Simcoe 2008). Al-bdali (1996) argued that this attribute has the important implication of allowing

[3] Flexibility in standards is the maneuvering availability within the standard.

successful strategy transfer among different organizations, subsequently optimizing control, efficiency and decision-making at the operational level (Bjorn et al. 2009). Moreover, by reducing uncertainties through increasing similarities between organizations and exploiting existing arrangements, it enhances operational efficiency, cost effectiveness and resource utilization (Onkvisit and Shaw 1987; Shoham 1999; Koller and Schurig 2009; Stajiak and Kolinski 2016; Nixon et al 2017). Another key advantage of knowledge sharing accomplished by standardization is the elimination of duplication and conflicts, further enhancing efficiency and control (Tang and Shen 2015). Daniels (1987) stated that another way of maximizing control is to have a multi-organizational headquarters which can reinforce standardization. Additionally, the presence of a common base among stakeholders will fight the temptation to reach perfection and omit the individual scope by looking at the process from a wider perspective (Hanseth et al. 2006). On other hand, some authors argue that better efficiency and control are not necessarily achieved by standardization, and that localization can substitute standardization (Samiee and Roth 1992).

Innovation within the framework of standardization remains a controversial topic. Lecocq and Demil (2006), and Hashem and Tann (2007), argue that standardization has a positive impact on innovation as it promotes the diffusion of creativity. This hints that the positive relation between both is permanent. Furthermore, Utterback (1994) stated that standardization could be designed and applied by pioneer organizations in a given concerned field, which further supports the positive impact of standardization (hence the usage of the word pioneer). Xie et al (2016) argue that standardization should be coordinated to promote innovative goals, otherwise it will be a collection of disjointed processes leading to further bureaucracy (see table 1). Other authors viewed the relation between standardization and innovation as a conditional relationship. The introduction of standardization should be planned in a timely fashion,

otherwise it could have a negative impact on innovation and flexibility (Ho and O'Sullivang 2017) (see table 1). However, choosing the right timing could be challenging, especially in multi-organizational operations (Blumental and Clark1995). By contrast, Gilson et al (2005) argued that the line is blurry between standardization and innovation and the relationship is unclear, whereas others stated that the impact is always negative (Hamel 2006).

Another important aspect of standardization which serves as a point of debate, due to the multitude of factors that can influence it, is the implementation of standards. The implementation of standardization, and its benefits, is hindered by factors such as legislation, media, the availability of resources, infrastructure and religious constraints (Roostal, 1963; Lenormand 1964; Barker and Aydin 1991; Shoham 1999). Moreover, Jain (1989) argued that standardization's success is influenced by cultural differences, economic differences and organizational perceptions of standardization. European countries, for example, share many common attributes yet their diverse cultures and languages act as barriers to standardization (Roostal 1963). Kotler (1986) argues that standardization is not necessarily always achievable because the lack of cohesion amongst similar institutions can frustrate the process. Additionally, even in near identical organizations, the presence of micro differences can upset the process of standardization (Shoham 1999). Whitelock and Jones (1993) and Daniel (1987) argued that standardization requires a degree of adaptation in order to overcome such obstacles, corroborating Jain's view (1989).

Standardization Advantages/enhancing effect	Standardization Disadvantages/depressing effect (if not combined with flexibility)
Enhances knowledge sharing	Less innovation
Improves control	Less motivation
Decision simplification	Increases bureaucracy
Improves cost effectiveness	
Enhances operational efficiency	
Better resource utilization	
Elimination of duplication	
Bias reduction	

Table 1 standardization advantage and disadvantages. Source: author.

The standardization literature, unsurprisingly, recognizes the importance of standardization, as well as the controversy surrounding this topic. Moreover, it points towards the importance of standardization in forming the bases of uniformity, which is considered a desired end goal of standardization. Furthermore, it is considered as a critical point in conceptualizing the perception of standards later in this thesis, a point where standards and attributes of plans merge to form a single entity (see section 2.3 and 5.4.1).

2.2) Planning theory:

A notable port of call in surveying the academic landscape from the perspective of standardization is to consider works emanating from planning theory. Friedman (2011), for example, has argued that planning theory remains relevant to a multitude of disciplines, although at the cost of making concise definitions and parameters of planning theory more difficult. He subsequently complained that planning theory had been "cobbled together from elements that were originally intended for different uses" (Friedmann 2011: 8). Ahmed Baha' El-Deen Abukhater (2009) argued instead that the real debate should be centered less around whether the focus of planning theory should be on the role of the planner and/or manager, and rather focus instead on the process of planning and the production of plans.

Fainstien and DeFillipis (2015) refined these arguments concerning planning theory into three fundamental challenges that has resonance for our analysis. First, planning theory is required to apply a standard sequence of questions to explain how the planning process will work. In essence, there is a desire to find elements of standardization at the core of planning theory. However, no standard set of questions could ever be appropriate across multiple disciplines and thus there has been tension between the pressures for uniformity of approach and the interdisciplinary value of planning theory. Second, planning theory often tries to balance the interests of specialists and generalists in the planning process. The boundary between the 'subject matter expert planner' and the 'generalist manager planner' are blurred and both have the capacity and the capabilities to plan. However, perceiving the matter differently, each group will generate a different set of questions. These apparent differences will eventually lead to a marked split between the objectives presented by the subject matter experts and the planning methods presented by the general planners, which is the third challenge identified by Fainstein and

DeFillipis (2015). Furthermore, Allmendinger (2017) highlighted that these challenges have led to a great deal of complexity, fragmentation and diversification that has had a profound influence on planning theory. Therefore, although planning theory has often assumed that standardization represents a worthy pursuit, being applicable and beneficial, the development of more sophisticated concepts of standardization has often been lacking. There is something of a gap in existing knowledge that warrants further work.

Though the aforementioned challenges hold some degree of relevance to this thesis, the first challenge holds the most value to this research as it aids in describing or visualizing the critical and complex relation between standards and plans (standardization and planning). In other words, the first challenge of the planning theory suggests that standardization is considered to be at the very core of planning and planning theory, thus unifying their perception from the end user point of view which is considered as a key component in the conceptual framework of this research (see section 5.4).

2.3) Planning:

Planning is a process in which an organization foresees a future event and puts in place a detailed course of action to deal with it (Oxford 2018). Steiner and Schollhammer (1975) stated that plans are often used by organizations in situations of high uncertainty. There has, therefore, been a long-standing link between planning and handling external shocks and uncertainties. Furthermore, Ansoff (1991) asserts that uncertainty is considered to be a risk factor, therefore plans should be made prior to an event in order for an organization to succeed, because it promotes better situational awareness and reduces imposed risk in rapidly changing environments (Thompson, 1967; Thune and House, 1970; Huntsman 1994). Therefore, plans should be comprehensive to facilitate better execution and results (Ansoff 1965; Leonard-Barton 1992). Furthermore,

Ansoff (1965) added that organizations with clear plans and explicit goals prove to be superior, even at the technical level. This has relevance since we need to conceptualize both clarity and explicitness (see chapter 4). Nevertheless, the incorporation of flexibility is often required in order to achieve better results (Ivancevich 1977; Schoonhoven 1984) (see section 2.1 and chapter 4).

However, Armstrong (1982) also highlights that there is a considerable amount of controversy in the literature in relation to the benefits of planning. For some, such as Song (2015), the main benefits of planning relate to the enhancement of efficiency and resources management. Additionally, Song (2015) stresses the importance of planning in setting organizational priorities. Moreover, Ansoff (1991) asserted that planning optimizes organizational decision-making by reducing decision-making time, achieved through enhancing performance and inhibiting a trial and error attitude. The author explains further by identifying how planning establishes decision execution points, thus eliminating confusion and re-enforcing effective control and action implementation. From a standardization perspective then, planning - and greater standardization - should lead to greater efficiency and provide for greater clarity and unity of purpose via the removal of duplication and the offer of clear lines of control. Hence, the main benefits of planning should therefore be the improvement of overall performance, productivity, profit, growth and cost effectiveness (Latham and Kinne 1974; Kim and Hamner 1976; Armstrong 1982; Ansoff 1991). However, there remains a fine balance to be struck. Al-Bazzaz and Grinyer (1980) have argued that plans can have a detrimental impact on organizations, for instance when the respective organizations become overly controlling and too rigid in terms of planning. Where this occurs, this may reduce the sense of responsibility of stakeholders which leads to a noticeable reduction in performance and effectiveness.

However, planning also identifies the challenges of coordinating plans among stakeholders and interested parties. Organizations are more comfortable following their own plans (Bass 1977). Therefore, by involving them as stakeholders and/or planning with them as designing partners, the overarching planning organization gains the benefits of their commitment and participation (Armstrong 1982). Stakeholders will buy in to the idea and arrangements of the plans and gain some ownership of them. Yet for this to work, further challenges will need to be addressed. Improving communication and coordination between several organizations on different organizational levels is identified as also being critically important. Alongside this, and indeed as part of ensuring effective communication, flexibility enhances the ability of plans to coordinate and control complex organizations. Flexibility should also lead to notable improvements in goal(s) establishment, which is considered as an important objective of planning (Lorange and Vancil 1976).

Indeed, planning also shows us that there is a relationship between plans and complexity that becomes even more complicated over time as planning matures. Lindsay and Rue (1980), for instance, shows that there is a direct relationship between plans, instability and complexity; and furthermore, that organizations tend to adopt/design more complete plans as their complexity grows. At the same time, Terreberry (1968) argued that complexity reduces planning effectiveness. From the perspective of our analysis, therefore, greater complexity of organisations must be balanced by a greater realism of what plans can actually achieve in practice, and there will be limits on their levels of effectiveness, degree of command and control, and amount of coordination in practice. Quinn (1978), for example, highlights that, in a complex organization, it is very difficult to achieve high levels of ‘optimal’ coordination as there are numerous internal and external factors that could render plans sub-optimal. A degree of sub-optimality will therefore be the norm, and indeed this becomes an important assumption underpinning the conceptual framework in the

following chapters (see chapter 4). Furthermore, Al-Bazzaz and Grinyer (1980) suggests that the relation between complexity and plan development are disproportionate or even inverted in some cases. He argues that the rate of plan development is slower than the organizational growth rate, which subsequently leads to slower response time and greater bureaucracy. Moreover, any greater degree of organizational complexity can be associated with a significant amount of responsibilities towards other stakeholders which further exacerbates the situation. The former will eventually lead to undesired issues and sub-optimal outcomes that require effective management. Such inability to understand the plan, a loss of support towards the stakeholders and most importantly the inability to foresee future challenges (Lorange and Vancil 1976; Al-Bazzaz and Grinyer 1980) represent often cited examples that lead to sub-optimal outcomes due to complexity.

Several authors have argued that comprehensive plans should exhibit certain characteristics. Complete plans should contain explicit goals and objectives - along with methods and procedures - as a means of ensuring better implementation and control (Ansoff 1965; Steiner 1969; Ackoff 1970; Drucker 1970). Furthermore, Song et al. (2015) and Adler and Borys (1996) specifically argue that, in order to augment planning efficiency, planning processes should foster the additional characteristic of flexibility. These authors explain that flexibility enables the stakeholder to solve issues and system breakdowns, which will subsequently grant them more freedom, along with greater exposure to the plan, thus enhancing their knowledge and understanding of the plan. This will reflect positively in terms of boosting overall performance, increasing innovative behavior and reducing rigidity. Organizations that pursue this behavior tend to promote autonomy and innovation (Pérez-Luño et al. 2011).

The majority of the literature suggests that planning hinders innovation (Benner and Tushman 2002; Jansen, Van Den Bosch, and Volberda 2006;

Song et al. 2011). Kanter (1986) stated that planning creates a viable environment for innovation, yet the presence of this viable environment is controlled by the overall organizational attitude towards planning, as it can present it as an enabling or a coercive factor (Huntsman 1994; Adler and Borys 1996). Moreover, those organizations, which prioritize efficiency and profitability, tend to implement planning in a coercive manner, thereby increasing rigidity and reducing innovation (Song et al. 2015). Leonard and Barton (1992) stated that planning can hinder or enable innovation, which affirms Huntsman's statement. Slotegraaf and Dickson (2004) and Leonard-Barton (1992) argued that planning increases rigidity by implementing standards which obscure external knowledge transfer and subsequently disable innovation.

Discussions from planning theory and planning tend to reaffirm the importance of key aspects of efficiency, complexity and flexibility. In this section, we can observe that there are repeated common patterns and themes between standardization and planning, as both require a certain degree of flexibility in order to optimize efficiency and control. Another common pattern is the controversy in the literature with regards to their effect on innovation and knowledge transfer. In this literature review, the general observation was that plans acquire the attributes of standards used to designed it. However, a more comprehensive understanding of standardization is also somewhat lacking, as well as how issues of standardization become one arena where these aspects are attempted to be managed. In other words, if the standards being applied are flexible, then plans will gain the advantages and disadvantages of flexibility. On the other hand, if the applied standards are rigid, then plans will gain the advantages and disadvantages of rigidity. Thus, like standards, plans with an acceptable degree of flexibility will combine the best of both worlds

2.4) Formal Planning / Informal Planning:

The complicated relationship between principles of efficiency, complexity and flexibility have also found more concrete realities in discussions of 'formal planning' and 'flexible/informal planning'. In this case, it is worth exploring a little further to see if there is added value from the perspective of standardization.

Formal planning is a process by which an organization determines their goals, strategies and resource allocation to fulfill desired objectives (Pearce et al. 1987). Furthermore, formal planning establishes the extent of objective formalization and documentation (Dibrell et al. 2014). It also explicitly establishes the involvement and commitment of stakeholders throughout the plan formulation, implementation and evaluation (Hopkins and Hopkins, 1997; Effendi and Titik, 2015). Moreover, formal planning is based on a detailed anticipation of future events and pre-installing a set of decisions which will standardize and facilitate recent and future practice (Armstrong 1982; Krabuanart and Phelps 1998). The ongoing debate among researchers is whether organizations should use formal-deliberate planning methods (Selznick 1957; Chandler 1962; Ansoff 1965; Sliverblatt and Korgaonkar 1987) or adapt emergent flexible methods

Author	year	Statement
Song et al. Adler and Borys	2015 1996	• Flexibility enables problem solving attitude. • Flexibility enhances knowledge sharing and communication. • Flexibility enhances performance and increase innovation
Perez-Luno et al	2011	Organizations with high level of flexibility promote autonomy.
Slotegraaf and Dickson Leonard-Barton	2004 1992	Low levels of flexibility and high levels of rigidity obscure external knowledge transfer and hinders innovation and intuition.

Table 2 Standards flexibility levels effect. Source: author.

(Mintzberg Et al 1976; Mintzberg 1978). In other words, should the level of standardization be highly detailed and rigid or it should be kept minimal and with a substantial level of flexibility. Song et al. (2015) stated that formal planning has a positive overall impact as it enhances control. Additionally, some authors suggested that detailed formal planning practice adds better insight to the organization, along with superior evaluation and control, which eventually leads to better performance (Leontiades 1983; Silverblatt & Korgaonkar 1987; Piercy & Morgan 1994;

Ansoff 1994; Miller & Cardinal 1994). Moreover, it produces a stronger ground for compliance among stakeholders and participants, and also potential grounds for later review and even future litigation (Dutton and Duncan 1987).

On the other hand, Dibrell et al. (2014) argued that the control levels drop with uncertainty, which subsequently reduces the value of formal planning in unstable environments. Mintzberg and Water (1985) argue further that emergent methods (planning) is more dynamic as it gives greater room for flexibility, innovation and improvisation, thus being more suitable for unstable situations. There was a general assumption among researchers that both schools of thought are placed in a competitive position (Wolf and Floyd 2013), whereas they actually complement each other (Sadler-Smith and Shefy 2004). This ambidexterity fuses desired attributes of emergent school of thoughts to formal planning, subsequently enhancing planning performance and efficiency.

The relation between formal planning and performance has been controversial. Many scholars have examined this relationship closely in order to measure the impact of formal planning on performance (Effendi and Titik 2015). Delmar and Shane (2003) and Miller and Cardinal (1994) stated that formal planning has an enhancing impact on performance, whereas Honing and Karlsson (2004) along with Fulmer and Rue suggested the opposite. Moreover, Pearce et al. (1987) highlighted that the impact of formal planning on performance is linked directly to the external environment. The author explained further by saying that a key point of failure is caused by the inconsistency between formal planning and the external environment. Christopher and Holweg (2011) stated that formal planning is most beneficial in an unstable environment, which contests Mintzberg's argument. Mintzberg (1994) asserted that formal planning is optimal in a calm environment where prediction of the future is easier the make. The author explained that formal plans are rigid and inflexible by

nature, making them unsuitable for unstable environment. Wiltbank et al. (2006) added that there is an emphasis on the objectives of formal plans, which put the formal plans at a further disadvantage in an uncertain environment. Kamoche and Cunha (2001) argued that emergent planning is more effective in a turbulent environment as it is flexible enough to deal with uncertainties. Grant (2003) stated that organizations using formal plans should alter their plans in order to cope with these external environments. The author further explains that organizations that use structured plans should develop a decentralized decision-making mechanism to gain more flexibility, subsequently making it more efficient. Additionally, Kukalis (1989) and Barringer and Bluedorn (1999) emphasized the importance of integrating flexibility into formal planning, as it helps to achieve planning objectives and the ability to seize unplanned opportunities. There are some important internal factors which cannot be ignored, such organizational age and size, as both impose great challenges in regard to integrating flexibility into formal plans. Bouncken et al. (2016) stated that since levels of rigidity and complexities of bureaucracy increase with organizational age and size, younger and smaller organizations tend to be more flexible. Additionally, Bouncken stated that this inverted relationship can hinder the growth and success of the organization. He suggested that effort should be made to reverse this inverted relation; old and large organizations need more flexibility, and young and small organizations needs more rigidity. This raises the suggestion of the presence of a direct relationship between the details and complexity of standards and the age and size of a given organization (since standards are a crucial part of a plan). Both formal plans and standards are affected similarly by these factors, therefore, as with plans, the level of detail and complexity in standards increases with rigidity, which suggest that both have (as part of the same entity) the same reaction and behaviors to internal and external factors.

On the other hand, flexible formal plans encourage organizational intuition development (Dane & Pratt 2007), which will aid in coping with ill-structured problems and manage it by resources in hand, subsequently forcing organizations to improvise and innovate.

Innovativeness "is universally perceived as exploring something new that has not existed before" (Cho & Pucik 2005, p. 556), thus it is an important element for any organization to overcome new challenges. Eisenberg (1990) stated that innovation and improvisation is possible when there is a well-defined set of rules and roles to work against. This suggests that formal planning can encourage an innovative attitude within the organization (Kamoche and Cinha 2001), subsequently enabling them to renew their objectives and strategies by exploiting existing knowledge, resources and agreement, and exploring new ones (Floyd and Lane 2000; Benner and Tushman 2003). Cardinal (2001) stated that innovation is dictated by the type of control (plan) used. The author elaborates further by pointing out that, if the used plans are formal, then innovation will be exploitative, and if plans in place are more informal, then innovation will be exploratory. Many scholars have suggested that the tendency of formal plans to deviate toward exploitative innovation is caused by the hierarchical nature of formal planning. Formal planning consists of 2 elements: centralization and formalization (Miller and Droge 1986; Cardinal, 2001; Lin and Germain, 2003). In centralized structures, formal planning's exploitative innovation dominates, since the information-processing is efficient at increasing the organization's internal self-awareness (Jansen et al. 2006). Moreover, formalization acts as a frame of reference which constrains exploration attempts (Weick 1979), yet it facilitates the improvement of existing routines and legislation, subsequently stimulating and enhancing exploitative innovation. The aforementioned constraints are presented to a much milder degree in informal planning, as it is based on a more voluntary framework rather than hierarchical ones (Tsai 2001). This will allow better development of

new knowledge, exploration and sharing, thus enhancing the exploratory type of innovation.

The literature discussed above suggests that external environmental factors as well as internal factors should be considered when designing standards and plans in order to optimize the outcome. Moreover, standards and plans exhibit similar behavior to internal and external stimuli, which suggest that they belong to the same entity (refer to section 4.1). Furthermore, the focus on innovation in this literature has an important role in how we understand flexibility. It helps us to conceptualize a link between more flexibility and a greater innovation (see section 4.1.2 and section 4.2.1.1).

2.5) Disaster Management Response planning:

In recent years the world has witnessed a substantial increase in the frequency and complexity of disasters, which has significantly changed the way that populations and organizations view disasters (Alexander 2005). Furthermore, future predictions point towards a further increase in the frequency and complexity of these disasters (OECD 2003; Perrow 2007).

This complexity is attributed to the heavy modernization of societies, which subsequently render them more prone to effects and consequences of disasters (Turner 1978; Perrow 1984). Yet these sequelae could be managed and contained more efficiently and systematically by implementing a response plan (Atherton and Gil 2008; Broadribb 2015). Additionally, the sheer complexity of disasters creates considerable interdependencies and conflicts between different stakeholders (Tang and Shen 2015), as it blurs the boundaries of authorities, jurisdictions and responsibilities (Smith and Dowell 2000). This adds to the importance of having a preexisting and practiced response plan, to ensure that the questions of what to do, and who will do it, will be answered prior to, rather than during, the chaos of disaster (Alexander 2002). However, this

view is fairly generic, as there are many differences in disaster plans among stakeholders, rendering them incompatible and negatively affecting organizational interoperability. Alexander (2005) stated that the reason behind this incompatibility is the lack of common, agreed upon standards. Moreover, to overcome this diversification and achieve an acceptable degree of uniformity, Alexander proposes that standards should be emplaced to create, evaluate and approve emergency plans. He further emphasizes the benefit of standards in disaster management planning by pointing out that standards will set a minimum acceptable level of functionality and accountability among stakeholders.

Rosenthal et al. (1989) and Perry and Quarantelli (2005) described disasters as a disruptive event which negatively impacts a given population's core (day to day) activities, subsequently requiring an immediate intervention under uncertain circumstances. Alexander (2005) defined disaster in similar ways – yet also added the proviso that any immediate intervention requires also planned coordination in order to achieve a rapid response.

These definitions necessitate planning as a prerequisite to achieve better results in minimizing losses of life and property in these events. Furthermore, planning helps to achieve a certain degree of synergy, resulting in superior performance and efficiency (Perry et al. 2001). Moreover, planning enables the response process to achieve efficiency more broadly. For example, it facilitates the accomplishment of multiple tasks in uncertain environments via heterogenic organization, reduces conflict created by overlap of organizational responsibilities, and minimizes duplications (Tang and Shen 2015). Moreover, Turoff (2002), Chen et al. (2005) and Chen et al. (2007) stated that most of the existing literature verifies the positive role of planning in superior performance and effective coordination in larger scale disasters. They point to the crucial role of pre-existing plans, and planning in general, in effectively handling

the rapidly changing environment in disasters, as well as maintaining a coherent response process. On the other hand, Foster (1980) argues that in spite of the important role of planning in managing disasters, any inefficiency could lead to undesirable consequences, such as delayed response or work duplication. Furthermore, the author argues that insufficient disaster planning could cause a noticeable discrepancy between resources and procedures, as well as disaster management needs and business-as-usual requirements. Therefore, plans need to strike a balance between the aforementioned factors.

This balance is achievable by applying standards, which ensures efficient functionality and compatibility (Alexander 2002; Alexander 2005). However, regardless of the importance of disaster plans and the planning process, and how critical they are to achieve optimal efficiency and compatibility, they have to be tempered by political and legislative support (Tang and Chen 2015).

Policies and legislations are created and implemented before, during and after disasters. Furthermore, this process varies in shape and form from one organization to another. McConnelln and Drennan (2006) stated that organizational approaches to legislation related to disaster management varies, and tools used to apply these legislations fluctuate according to the current situation. Tang and Chen (2015) further explained that in emergency response plans, decisions should be supported and formalized by explicit laws which should be abided by. These laws maintain a level of obligation and accountability among stakeholders (McConnell and Drennan 2006) and subsequently add a degree of clarity among stakeholders, as well as enhancing the coherence of performance, eventually bringing order to a chaotic situation. On the other hand, Dynes (1998) stated that high levels of informality in disaster plans can negatively affect the response process by imposing a great deal of confusion. He explains that informality adds an element of ambiguity, leading to the

vague distribution of assignments among stakeholders that eventually blurs their lines of jurisdictions and causes overlap and duplication, contributing more confusion to preexisting chaos. However, Boin et al. (2010) stated that the formal structure in disaster management plans should play a facilitative role in the information flow rather than being a tool which creates rigidity, adding that disaster plans should allow a room for flexibility. The former assertion was augmented by Kartez and Lindell (1990), who emphasized that flexibility in disaster plans assists in coping with the sheer amount of requirement.

In the same way, standards should maintain a balance between formality/rigidity and informality/flexibility. Alexander (2005) affirmed that rigid application of standards could lead to plan rigidity, yet plans must be adaptive, therefore standards should be flexible enough to be amended accordingly. Disaster management planning/standards are built on principles that allow rigidity and flexibility to coexist and complement each other (Boin et al. 2010). For example, Alexander (2016), stated that disaster emergency plans should run in a hierarchical (top-bottom) fashion, yet should also simultaneously run in a horizontal (side-to-side) fashion. The misinterpretation of this nature in disaster management planning and standards leads to some conflicting tendencies within the field.

Indeed, this notion of top-down and bottom-up becomes very important later in this thesis as it has a direct effect on the movement across the continuums as it leans toward rigidity (see chapter 4), unlike the side-to-side system which has more affinity towards flexibility. For example, the Omani system's movement across the continuums is heavily influenced by the top-down system, confiding it certain quadrant in the conceptual framework (see Chapter 5). Another example which illustrates the difference between both pathways on a different level (innovation and hazard anticipation) is what Boin and t'Hart (2003) identified in terms of a conflicting tendency between conservatism (the party leaning towards

rigidity) and reformism (the party leaning towards flexibility) in disaster management. The general attitude of the former was a *can cope* attitude, whereas the latter adopted a *can pose* attitude. The author further explained that the can cope attitude was resisting any exploration effort for new resources and any investigation for new hazards (Kam 1988; Pauchant and Mitroff 1992; Turner and Pidgeon 1978), whereas the latter did completely the opposite (Rosenthal 1998). This example illustrates how plans' attributes and managers' attitudes (culture) can affect organizational behavior. Consequently, this dictates the type of standards used which will eventually place the organization in one of the conceptual quadrants that will be explained later (see section 4.2.2).

2.6) Health emergency plans standards:

Disasters pose great challenges to governments as well as local communities (Reilly and Markenson 2011). These challenges are generated from a profound damaging effect of disasters on existing infrastructure (Institution of Medicine 2009). Hanfling et al. (2004) observed that the healthcare sector is a crucial part of the critical infrastructure, and it should be given special attention. Moreover, Hodge et al (2013) stated that during disasters health and public health should be paramount. This was further augmented by Hodge (2006), who clearly stated that health issues during disasters should be of principle concern and thus treated as a priority. Such assertions portray the importance of health response plans to mitigate mortalities and morbidities as much as possible (Hodge et al. 2013). However, with the chaos brought by disasters and the lack of already limited resources, health plans cease to be executable (Reilly and Markenson 2011; VanVactor 2012), which leaves health personnel in an ethical and professional dilemma of how to utilize the scarce resources, and on whom (Government Accountability office 2008; Hodge et al. 2013). Therefore, in order to achieve better resource

utilization and superior plan execution, a shift in healthcare standards should take place in such circumstances, from routine care standards to patient-centric standards (Institution of Medicine 2009). However, when it comes to the evaluation of standards, it is found in pieces over a widely spread area. In other words, the work presented in the literature in terms of health care disaster management standards is relatively fragmented.

This substantial shift of practice standards, known as crisis standards of care (Institute of medicine 2009), helped to add a degree of flexibility to health standards and health emergency plans. Hodge et al. (2013) argued that health responders should be given sufficient room for maneuverability to take life or death decisions without feeling overwhelmed or threatened by second-guessing process. The author elaborates further that the this will allow them to be more efficient in field decision making, thus saving more lives. Additionally, he argued that standards shift according to existing circumstances, and therefore there is no one-size-fits-all (fixed) standard. In other words, the defined legal duty of a practitioner is situational and so are the medical standards (Hoffman 2007; Institution of Medicine 2009; Rothstein 2010; Khan 2010; Annas 2010). Put simply, there are no absolute standards for all situations, and the shift in standards occurs in accordance to the situation, whether it is a day to day situation or a crisis situation. This will eventually encourage the assistance and participation of more medical relief personnel, as they will be less legally liable (Schultz and Annas 2012). This reduction in legal liability will result in greater efficiency in resource management and field decision making. For example, if an 80-year-old patient is present with a ruptured aortic aneurysm, should the assessing practitioner treat him or reserve the extremely limited resources for a younger disaster victim?

In a routine healthcare standard, the course of acute intervention should take place, yet a crisis standard of care provides the medical practitioner the choice (flexibility) of preserving scares resources for other cases.

However, the maintenance of minimal standard of care should be emphasized (Schultz and Annas 2012). The minimal standard of care during disaster was further explained by the Institute of Medicine in 2009 (Institute of medicine 2009). These standards consisted of 3 substantive principles and 3 ethical principles. The first substantive principle is fairness, by eliminating irrelevant factors such race, ethnicity, etc. The second is duty of care: the ability to provide healthcare for individuals as well as populations if needed (AMA 2004; Wynia 2007). The duty of care in the health response period of a lot of on-the-ground crisis standards presents itself as what could be minimally provided to a succession of individuals which are part of a greater entity, and the ability to transcend. The third substantive principle is the duty to steward resources: fulfilling the duty of managing scarce resources and balancing them with the duty of care (Pesik et al. 2001). The ethical principles comprise of transparency, proportionality, and accountability. These standards should be the principle keystones of any health emergency framework or plan.

It is crucial to accept that no amount of advanced planning can fully protect a health organization from the consequences of a disaster (Hodge 2006). Yet Hick et al. (2004) highlighted that preexisting plans in a health facility improve the response to large scale events because it pre-sets an information exchange mechanism among stakeholders, eliminates duplication, sets jurisdictions and improves resources management. In other words, emergency plans predetermine the role and responsibility of each stakeholder prior to the event which subsequently reduces the response time (Hick et al. 2004) and leads to better resource management and better patient care. Moreover, it is important for any health organization to develop an all hazard emergency framework which is relevant to organizational size, type and location (ACHE 2018). Furthermore, it is key to ensure that this plan is evaluated, practiced and updated (Wapling 2016). By doing so, the organization ensures superior integration at local, regional or national levels (ACHE 2018). This

repeated cycle of planning, exercise and evaluation exposes the weakness of each stakeholder, which will subsequently create a transparent environment where all stakeholders are well informed about each other, consequently leading to an efficient and cohesive response (Gostin et al. 2009; Hodge et al. 2013). Hick et al (2004) stated that health emergency plans should be malleable and scalable so as to accommodate patient surges during disasters. To elaborate, the health emergency plan should be able to activate at all three levels (local, regional and national) according to the need of the affected facility or area. This scalability guarantees that health emergency plans are able to address static as well as dynamic events and manage different types of resources in several timelines (Koenig et al. 1996).

As mentioned earlier, no matter how prepared an organization is there is always a set of obstacles which render the plan incomplete or, in extreme cases, ineffective. Derlet et al (2001) stated that one of the most frequently faced obstacles during a health emergency is the sheer number of casualties. Bloem (2001) further explained that this failure is usually caused by the failure of the planner/plan to recognize human resource shortages, resulting in a paralyzed response. The author pointed to another possible point of failure, which is the failure of public-sector leaders to coordinate or even communicate with the private-sector for an effective response. This fragmentation leads to a substantial waste of available resources and eventually leads to a suboptimal response. It is worth mentioning that these obstacles could be conquered by adhering to the above-mentioned principles (n this case the third substantive standard which is Duty to steward resources).

Standards in health emergency planning have a distinguished and unique theme to them, as they are an extension of some routine health care standards but modified to be highly flexible. This flexibility grants them a fundamental position in health emergency planning. Applying standards

causes a significant reduction in legal liability and help to optimize health response outcomes and resource management.

The importance and relevance of the previously discussed literature is largely that it lays a foundation that facilitates the empirics in answering the proposed research question. This foundation was gradually built throughout the sections of the literature chapter by illustrating the commonalities between attributes of standards and plans in addition to how these attributes have the same dynamics when interacting with each other in both plans and standards, which further demonstrates how entwined plans and standards are[4]. Furthermore, attributes such as flexibility and rigidity will form an anchor point in the conceptual framework, consequently helping us in further understanding the perception of standards through a functional scope (see chapter 4 and 5).

[4] This aids in answering the second research question.

Chapter Three: Methodology

3.1) Aims and Objectives:

The frequent involvement of the health sector in the vast majority of natural and man-made disasters makes it a key component in terms of disaster response. Therefore, the actual health response, and the specific roles and participation of the health sector and respective health stakeholders, should be well planned in order to ensure effective coordination among the different healthcare providers and stakeholders. However, to achieve optimal performance results and better coordination, the plans and planning of the participating healthcare providers' plan needs to also include some degree of agreement upon standards.

However, how can organizations have emergency plans which presumably highlight the importance of standards within them, yet do not possess a sophisticated and effective way of understanding, differentiating and operationalizing different types of standards? This research aims to develop a standardization perspective which can provide insight into how health emergency planning can be understood more effectively and provide further value when applied to health emergency management in Oman. This dissertation argues that there is a pressing need to develop a standardization perspective which can provide value added to health emergency response planning. Thus, a more detailed standardization perspective may contribute, albeit to a limited extent, to increasing health emergency response planning efficiency in Oman. In order to do this, this dissertation considers, in line with the aims and objectives of the dissertation (see section 1.2), the following research questions:

- Can we further understand the use of standards through an extensive analysis of the perceptions of end users (the people who use standards)?

- Are health emergency response plans (HERP) and their related standards the same?

These research question will be addressed through the following process:

- To identify - via an extensive literature review – the nature, form, and character of standards and standardization in health emergency management and response planning.
- To develop a conceptual framework that can offer new perspectives on standardization and provide value-added to explaining balances and tensions to the imperatives of flexibility and rigidity.
- To evaluate how standards are viewed and understood in practice in relation to health emergency response plans in the particular case of Oman.
- To provide academic and policy recommendations to promote multi-agency standardization in health emergency response planning in Oman.

3.2) Ontological and epistemological positions of the research:

As Bracken (2010) argues, the practical implications of understanding research philosophy are fundamental. By understanding where the research stands ontologically and epistemologically, the researcher will have a more profound insight into the structure of the proposed research and why this structure was chosen. Moreover, the researcher will be able to reassess and reflect upon the chosen research structure more efficiently (Bracken 2010). Briefly, research philosophy consists of two main aspects: ontology and epistemology. Ontology is the philosophical study of reality and the matter of 'being' (Saunders 2009). In other words, ontology is concerned about how social worlds and social world components are viewed (Matthew and Ross 2010). The importance of ontology - from a

research standpoint - is that it plays a crucial role in helping the researcher establishing his research design.

There are two main competing approaches to ontology, the first being the objectivism approach and the second being the constructivism (also known as subjectivism). Objectivism is an ontological position that states that reality exists regardless of the observer. Saunders (2009) highlights that social phenomena have an existence that is independent from the respective social player(s). It consists of a material structure which existed prior to any individual knowledge (Magrabi 2012), and is not influenced by the respective social actors. At the other end of the ontological spectrum lies subjectivism. Subjectivism views the social world as a collection of dynamic ideas created by involved social actors (Matthew and Ross 2010). Ciborra (1998) further elaborates that subjectivism considers social worlds as concepts, ideas and names, that are also used by the social players to describe the social world. These ideas and concepts are revisited and are constantly influenced and changed by the social actors.

The second key aspect of research philosophy is epistemology, which also plays an important role as well in establishing the research design. Epistemology is concerned about knowledge. Saunders (2009) states that epistemology is largely concerned with what shapes knowledge and ultimately make such knowledge accepted by, and acceptable to, a given field. Put simply, it examines and substantiates what can be regarded as potential knowledge (Matthew and Ross 2010). Epistemology, like ontology, is divided into two main philosophical approaches: the positivist approach and the interpretivist approach. Positivism suggests that the social world can be observed and recorded objectively rather than subjectively understood (Matthew and Ross 2010). Furthermore, Matthew and Ross (2010) note that knowledge should be observed by and via senses and therefore the respective researcher has no impact on the data. Positivist approaches are usually adopted by natural scientists, with the final product

and outcomes of such positivist research being treated with generalization (Saunders 2009). On the other hand, interpretivism as an epistemological approach attaches more importance to, and prioritizes, subjective interpretations. It considers positivism as unsuitable where humans are involved due to differences in data interpretation between different groups or individuals (Braa and Sorgaard 1997; Magrabi 2012). The aforementioned discussion (above) suggests that combining the ontological approach of subjectivism with the epistemological approach of interpretivism would be optimal in terms of underpinning the research assumptions of this dissertation. This selection is based on the nature of the identified research topic, as it seeks to explore nuanced and rather elaborate perspectives of key disaster managers, which could be subject to different interpretations by different people. Additionally, facts within the chosen research field are frequently intangible and thus sometimes difficult to quantify, since it explores the perceptions of individual disaster managers on standards in detail.

3.3) Research methodology:

3.3a) Qualitative vs Quantitative:

Qualitative research:

Quantitative research aims to understand practices and behaviour through investigating people's attitudes, opinions, believed values and what their general perceptions are (Silverman 2005). Quantitative approach researchers seek to understand the social world or a given social phenomena through social entities (Mason 2002). Creswell (2003) states that quantitative researchers usually engage in a constant and rigorous dialogue with people to gain an insight of what they perceive the world or

the phenomena as. Subsequently, this delivers an interpretation based on that insight (Creswell 2003). However, this author prefers to utilize a qualitative research approach since qualitative research emphasizes the individual's experiences, subjectively, providing a more naturalistic approach. Additionally, Bryman (2008) asserts that the flexibility of a qualitative approach allows the researcher to generate a greater amount of data through the direct interaction with the participant, thereby gaining better insight to the phenomena and a greater ability to give an in-depth analysis. This depth gives a noticeable edge to a qualitative approach in solving problems (Magrabi 2012), which properly aligns with this research. In other words, this research is aimed at understanding and examining in depth the perceptions of health emergency managers on standards.

Though the aforementioned data influx is considered as a positive aspect of qualitative approach, Piantanida and Garman (1991) argue that it requires a substantial amount of time and effort to examine. Therefore, samples in a qualitative approach tend to be kept reasonably sized, which again aligns well with this research since there are a limited number of senior health emergency managers in Oman.

The quantitative approach was not considered by this researcher for two reasons. Firstly, the quantitative approach does not allow this researcher to execute the necessary in-depth analysis of participant perspectives. Secondly, the available number of health emergency managers in general, and senior health emergency managers specifically, are far too small to allow a quantitative approach to be conducted.

Choosing the research approach:

Combining both quantitative and qualitative approaches is preferred by some researchers, as it merges the attributes of both approaches, resulting in a more comprehensive exploration of a given phenomenon. However, this dissertation applies a qualitative approach as it better aligns with this dissertation's aims and objectives (see chapter 1). Furthermore, standards in health emergency response plans are perceived differently among stakeholders (which is the case of Oman). The differences in standards perception could be found, even, within the same organization, which can render health response suboptimal. This calls for a suitable approach that will help this researcher to understand how different levels of response within different organization perceive standards, standards' attributes and effects. In other words, the shift of a given standards perception among stakeholders requires a deep subjective analysis to ascertain the reason behind this variation. Therefore, a qualitative approach was chosen over a quantitative and mixed approach, as it brings greater focus to the subjective aspect of standards. Additionally, perspective is very subjective in nature with less room for objective interpretation, which further affirms why qualitative was chosen over quantitative. Furthermore, the researcher favours the qualitative approach for this study because it is more appropriate from the ontological and epistemological standpoint of this study. Finally, the researcher believes that this approach is compatible with Omani social culture, as they are very verbally expressive by nature.

3.3b) Deductive vs inductive:

Deductive and inductive approaches were encountered twice while conducting the research for this dissertation. The first encounter was while working on the proposed conceptual framework and the second encounter was during data analysis. In a deductive approach the researcher sets a hypothesis to test an existing theory, whereas in inductive approaches

process is reversed. In an inductive approach the researcher's hypothesis is set to establish a theory (Matthews and Ross 2010; Lietz and Zayas 2010; Klakegg 2015). In short, the deductive approach requires that the research follow the theory and vise versa. Deductive approaches tend to create a numerical link between researched variables. On the other hand, inductive approaches seek to connect data by explaining existing or possible interaction between different variable. In other words, it aims at condensing raw data to a concise text (Thomas 2006). This researcher considered inductive approach in both theory testing and data analysis for two reasons. Firstly, this approach aligns with the research ontology and epistemology. For example, this research is not trying to prove an existing theory. It attempts to develop and offer more concepts that can provide a stronger overall perspective for understanding standards in health emergency plans and conceptualize the inter-relationships between key attributes of standards. Therefore, an inductive approach is more suitable in the context of this dissertation. Secondly, this researcher chose an inductive approach because it is more compatible with the chosen research method's technique of utilizing qualitative semi-structured interviews.

3.4) Research process:

Initially this researcher identified the need to acquire a deeper understanding of the rules and usage of standards in health emergency response planning. A literature review was undertaken in order to investigate topics related to disaster management, planning and standardization. Based on this literature review, this researcher identified a gap in knowledge which could be addressed by this research. This gap is related to the perception of standards in disaster planning in general, and health emergency response plans more specifically. Next, this researcher set out the research hypothesis and the aims and objectives of the dissertation. After this, the key research questions were formulated to

explore this hypothesis (see sections 1.2 and 3.1). Following that, a conceptual framework and the research's paradigm which will assess the researcher were designed. This framework will try to explain the relation between responders, the attributes of standards and perceptions of standards. Initially the study's ontological and epistemological positions were determined, then followed by the methodological structure. Since the researcher was aware that literature on the research topic is relatively limited, he opted for an exploratory approach to this study. While the former guided the adoption of a qualitative method, the latter directed the use of interviews as the primary data collecting technique. Moreover, the researcher believes that the selected methods and techniques are suitable for this research, since the research is trying to extract and understand people's feelings, behaviors and ideas. Next, the interview questions were formulated according to the data obtained from the literature, and then data collection commenced. The researcher decided to obtain samples from Omani participants from all national, governorate and local/corporate levels in order to have a wider view of current perspectives on standards and a future desired trajectory. The generated results will help to formulate academic recommendations which may have a practical use in the Omani health emergency response system.

3.4a) Data collection tool:

3.4a.1) Interviews*:*

Interviews are a common method in primary data collection. They allow the researcher to grasp the essence of what the interviewee is trying to convey. McGehee (2012) stated that interviews assist with attaining a deeper and better understanding of the participants' ideas and experiences. This is due to the very nature of this method, as it promotes a relatively comfortable environment for both the researcher and the participant, leading to better communication, engagement and understanding (Jordan and Gibson 2004). Interviews were considered in this research because it

aligns with the aim of this research; to understand standards from various perspectives. Moreover, the nature of this study necessitates a confidential and private setup, which can be provided by this method.

3.4a.1.1) Semi-structured interview:[5]

A semi-structured interview is a method where the researcher attempts to extract information from a participant by asking a predetermined set of questions (Longhurst 2003). These questions act more like a guide rather than a rigid structure, giving a chance to engage with and explore perceptions, opinions and feelings (Cohen and Crabtree 2006). Bernard (1988) stated that semi-structured interviews are considered a good method where the researcher has one chance to interview the participant. This method has been chosen for several reasons. Firstly, this method provides a useful structure to the interview, which minimizes side-tracking and dross rate (Jones et al. 2013). Secondly, the structure provides a good level of data comparability from different participants (Dawson 2007). In other words, the data is reproducible. Thirdly, the flexibility in this method allows the researcher to explain the question and the participant to elaborate their answer, which gives this method a good validity rate (Jones et al. 2013; Jennings 2005).

Although this dissertation adopts this research method, deeming it most suitable for this study, it is also recognized that there are some constraints and even disadvantages which should be considered. Jones et al (2013) point out that the quality of information depends on the interviewee, and this dependency can negatively affect the data quality and the overall end results. This is referred to as the 'interviewer effect'. On the other side of

[5] This researcher excluded focus group technique for three reasons. Firstly, the fact that the participant might not know each other can create an apprehensive attitude amongst them. This will negatively impact the quality of the data collected. Secondly, the researcher may face some difficulties in keeping the discussion on track due to the number of participants. Thirdly, since the interactive nature of this technique promotes discussion between participants, the risk of group conformity is high, which again, can negatively impact the data obtained.

the spectrum, the researcher's bias can also negatively impact upon the end result. This bias is generated when the researcher analyses the data according to his own point of view. Therefore, this dissertation includes interview questions that have been selected to avoid this bias as much as possible by keeping a neutral position and offering analysis in accordance with predetermined objectives.

Furthermore, in order to utilize the data in a way that is neutral and related to the research question, themes were generated using a coding technique (Braun and Clarke 2013). The coding process was facilitated through Nvivo. This researcher went through all the stages of coding: open coding, followed by axial coding, and finally selective coding (Strauss and Corbin 2008). In the first stage (open coding) this researcher studied the obtained data and identified common ideas (codes) which were repeated among the participant (Saunders et al. 2009). In the second stage (axial coding), this research attempted to connect these codes in order to build and establish their relation, and finally the third stage (selective coding) combined the connected ideas to develop a framework (Saunders et al. 2009).

3.4b) Sampling:

Sampling is a selection process of units. These units are part of a population of an interest. A purposive sampling method was used in choosing the participants. This method allows the researcher to select participants who have the required professional skills and experience (Saunders 2009). Neuman (2005) stated that this form of sampling method is best used in studies where the data obtained should be practically and technically relevant to the study. Another benefit of purposive sampling is that it allows the researcher to expand his sample collection in order to involve different stakeholders according to the subject's complexity (Yuskel et al. 1999).

An important consideration has been to include a representative sample of interviewees to be interviewed using semi-structured interview techniques.

There were a number of important considerations underpinning these choices. Firstly, the nature of this research touches on several interlinked and technically demanding fields (Omani healthcare emergency service systems and health emergency response management). This requires the participants to have a strong knowledge and background in at least one field in order to participate effectively, and this was taken into consideration when choosing prospective candidates for interview. The chosen participants had to fulfill at least one of two criteria in order to be included in the research. The first criterion required that interviewees were able to demonstrate notable experience in the field of health emergency response management. Interviewed candidates had to therefore have at least two years of experience in this field in terms of being in post and/or in designated employment roles. The second criterion was that chosen participants must demonstrate notable experience as a health care professional and thus have advanced technical skills. On this basis, candidates for interview must have at least two years of field experience within the Oman healthcare services system (first responders) (see table 3).

Secondly, this technique allows this researcher to include participants from different geographic locations and different concerned fields. Thirdly, the researcher is also aware that health care - as a distinctive sector - is also one with strong representation from both sexes, and on this basis, it was decided that the sample should also be balanced in terms of gender with an equal number of male and female interviewees taking part (see table 3). It is also important to acknowledge that – for whatever reason - participants may decline to participate. Therefore, this researcher had to use the flexibility offered by this method, which allows him to include other participants in case of a candidate's refusal.

Fourthly this method's restriction is determined and designed by the researcher. Therefore, in the case of this research, this researcher's only

exclusion criteria related to the respective years of experience in a specific field. Therefore, there is no restriction based upon whether the participant works at the strategic, tactical or operational level. Neither was there any restriction based upon gender or geographic location within the country. As a result, the obtained sample included both genders, from all three levels, and from various geographic locations, which helps to broaden the obtained data for better results (see table 3).

3.4c) Designing the Interview Guide and Questions:

The interview guide used in this research was designed to ensure that the chosen questions would enable data collection pertinent to the design and validity of the conceptual framework (see section 3.6) and also offer wider empirical findings in relation to key notions of rigidity, flexibility, explicitness and implicitness (see chapter 4).

The first set of questions (questions 1, 2, 3, 4) were designed to explore the general perceptions of the interviewee as an end user towards the relevance and use of standards in Oman, and in this way provide findings that were relevant in answering research question 1 (see section 1.2 and 3.1). The main focus was on analyzing the general perception on standards. This built up the researcher's insight of the participants' understanding and opinion (perspective) of the topic. Furthermore, the information which was provided here will be used in augmenting the findings in relation to the second and third group of questions.

The second group of questions (5, 6 and 7) addressed the first continuum (the rigidity and flexibility continuum) and how the participants view this continuum in terms of standards' functionality. Furthermore, this set of questions helped in building a clear picture of how the participant perceives standards at present and their future desire in terms of this continuum.

Participant code	Gender	Geographic location	Level	HERM Experience	HESS Experience
AW	M	Muscat	S*/T**	4+	2+
AA	M	Muscat	T/O***	4+	2+
FA	F	Muscat/ Dhahra	T/O	4+	2+
		Muscat	T/O	4+	2+
		Muscat	T	4+	2+
		Muscat	S/T	4+	2+
		Muscat/Dakhlia	S/T	4+	2+
		Muscat	S/T	4+	2+

Table 3 Participants information source author.

S*: Strategic T**: tactical O***: Operational

The third group of questions (8A and 8B), will focus on the second continuum (the explicit-implicit continuum). This group grasped the participants' perceptions of the execution part of this framework which is addressed by this continuum. Furthermore, it helped drawing participants' view of the current standards and the desired further trajectory. In particular, the second and the third group of questions provided findings relevant to answering the second research question.

3.4d) Data analysis (thematic analysis):

The process of data analysis starts as early as the literature review. At this stage, the researcher can extract relevant themes which will be investigated later. Once the primary data is collected the immersion process takes place, the researcher fuses it with the secondary data to create and actively develop themes (Braun and Clarke 2013). At this point the researcher

attempts to substantiate the primary data using the secondary date (Bazeley and Jackson 2013).

This researcher chose a thematic analysis approach for the following reasons: Firstly, as mentioned earlier, the technique of primary data collection is a semi-structured interview which has an interactive nature. This allows themes to be developed as the data collection process advances. Therefore, this researcher chose this approach as a mean of analyzing the primary data. Secondly, as mentioned in the previous sections, this researcher chose an inductive approach in data analysis; choosing thematic analysis aligns with that decision. Thirdly, since this research is aiming at studying the participants' perception of standards, it is important for the researcher to be able to elucidate both a participant's statements, and his interpretation. This researcher believes that this approach can achieve this.

3.5) Ethical considerations:

Maintaining anonymity and protecting participant identity is considered as paramount in this research. This assists in acquiring their honest opinion (Veal 2011), which could go against the participant's work or social culture. Any breach in this confidentiality could create a potential issue, placing him/her in an undesirable situation. This researcher maintained very close attention to this issue, due to the nature of this study, as it investigates and discusses disaster management and response planning in healthcare, which is considered to be a sensitive topic in Oman. Therefore, subject matter experts avoid participating in similar researches. Moreover, it is important to mention that all interviewees participated willingly. All interviewees were handed the participant information sheet, with a full explanation of their rights, as advised by the University ethical procedures and practice. Furthermore, this researcher shared and fully explained the researcher's aims and objectives. Subsequently, the participants signed an informed consent agreeing to actively take part in this study. All

participants were handed the researcher's contact details for further input if needed, and they agreed upon that.

3.6) Validity and reliability:

Valid Research means that the data gathered and used to address the research's question is reflecting social reality (Matthews and Ross 2010). On the other hand, reliability is described as the level of the study's reproducibility under constant conditions (Saunders et al 2009). The aim of reliability is to avoid errors and injustice in research (Amaratunga et al. 2002). This researcher has taken some measures to ensure that this study maintained an acceptable level validity and reliability.

- **Validity measures:**

i- All interviews were tape recorded and securely stored (as per the University ethical procedure guidelines) to avoid any misinterpretation during the transcription process.

ii- This researcher purposefully obtained a diverse sample to boost the study's applicability.

iii- Themes were confirmed, compared and matches according to the participant's level (National, governorate and local/corporate levels)

iv- The transcription's interpretation was confirmed by the participants when it was needed.

v- The analysis' findings were linked to and substantiated by the reviewed literature.

- **Reliability measures:**

i- The formulation of interview questions (interview guide) was discussed thoroughly and closely supervised by research supervisors and seasoned colleagues. Furthermore, the interview guide was also approved as part of the BU ethical procedures.

ii- The sampling pattern was discussed prior to the execution.

iii- The coding process, along with themes generation, was explained in detail during the data analysis process.

3.7) Limitations:

3.7.1) Research design limitation:

It is crucial to emphasize that this research is not aiming to develop a new comprehensive theory, or to prove a pre-existing one, but instead to design a conceptual framework that can provide an insight into what the current perception of standards is and its desired future trajectory (see section 3.3b). Therefore, this researcher opted for a qualitative approach to grasp the essence of this perception from the interviewee, as it provides the necessary tools to achieve this goal (see section 3.3a and 3.4a.1.1). That being said, the mere fact that this research is qualitative brings us to the research design's main limitation, the sample size, which is usually small in comparison to quantitative studies (see section 3.3a). This research's sample size is relatively small (8 deep interviews), but it still offers a highly reflective cross-section sample in which to explore the nuances of the perspectives of health emergency management professionals. Therefore, the generality of the framework will need further examination, possibly with a larger sample, and possibly a comparison between the health sector and other sectors in Oman. In other words, this conceptual framework is the start of a journey that will bring clarity to future research agendas in regards to the perception of standards.

3.7.2) Limiting Expectations of the Research

Due to the nature of this research, this researcher anticipated facing a few barriers, which could have acted as a limiting factor for this study. These limiting factors did not affect the outcome of this study, but rather slowed the progress in certain stages. The first limiting factor this researcher encountered was geographic. The researcher had to travel for eight hours

to obtain the needed data for this study. Furthermore, in order to avoid unnecessary expenditure on logistics, he had to practice some caution while designing the interview questions, which somewhat delayed the data collection stage. Secondly, due to the research topic's potential sensitivity, most concerned personnel tend to have data protective behavior (especially ones in written form). This generated a refusal to share any written documents, subsequently slowing down the research's pace. And finally, the lack of secondary data in this very particular topic (literature), posed a major challenge, as the researcher had to search extensively in the existing literature to develop the knowledge base necessary for this study.

Chapter Four: Conceptual framework

Discussion in the previous chapters has highlighted how the health sector is considered to be a key component during most disaster responses. It deals with a multitude of sensitive issues, such as patient care. Furthermore, the health sector is considered one of the most complicated sectors due to the involvement of multiple inter-organizational and intra-organizational stakeholders. This has been continually demonstrated in practice. For instance,[6] in the case of Hurricane Harvey that hit Texas in 2017, the Department of Health and Human Services (HHS) deployed over 1,110 equipped medical personnel and provided around 60 medical shelters (FEMA 2017). Furthermore, HHS personnel attended to 5,359 patients in non-medical shelters. In addition, the American Red Cross deployed over 3,000 staff and volunteers and provided further financial support (Red cross nd). The HHS was also heavily supported by other stakeholders that are not part of the medical function unit 8 (the public health and medical services unit) (FEMA 2017). Hence, it is crucial to understand how the health sector operates, and how it navigates and coordinates with other sectors during any disaster response phase.

Previous discussion in section 2.5 has also clearly demonstrated the importance attached to Health emergency plan (HEP) standards and, in particular, questions of where and how health response plans aim to optimize coordination through uniformity between health response stakeholders. In other words, HEP clearly aim to manage and overcome the dynamics of health response complexity by harmonizing and

[6] All of the provided information regarding Harvey was obtained from FEMA.gov (https://www.fema.gov/news-release/2017/09/22/historic-disaster-response-hurricane-harvey-texas)

synchronizing response efforts within this sector (Hick et al. 2004), subsequently eliminating or minimizing existing variation between different stakeholders within the sector. This is attained through the use of standards, but it is also clear that we need to think more clearly about how we conceptualize standards – to explore the differing perspectives that are important for conceptualizing the nature, use and role of standards.

In addition, conceptualizing standards must also be seen as affecting all aspects of when and how standards are applied. The importance of standards extends beyond merely their execution; standards can influence and impact upon key dynamics that shape the nature of plans and how stakeholders participate and interact; and can thereby even alter outcomes and the eventual end-result. In other words, plans follow standards (Nice 2014) and individuals (organizations) follow plans. Thus, it is important to uncover any sequencing and understand the way actors involved in health emergency response planning (HERP) perceive the role, format and importance of standards. However, achieving this can be challenging, not least because any controversy can be deep-seated within the very fabric of standards (see sections 2.1 and 2.3 and 2.4).

In one sense, standards have a complex identity which is passively transferred to plans in which they are usually incorporated and included. In terms of research, this enables this researcher to be able to approach standards from both a viewpoint of standardization, and that of the planning process. These dual 'access points' also allow four variables to be identified that can be considered as cornerstones in terms of standards and planning. However, before attempting to delve deeper into the specific nature of these variables, it is appropriate to set out two key caveats. First, while these variables may have constant, albeit limited, existing tensions among them, it is important to highlight that they co-exist in a largely complementary relationship with each other. Second, the variables are therefore not entirely exclusive, but rather can be seen as mutually

inclusive. Emergency planners may place differing emphasis on differing aspects at various points of time, and thus are better seen as being key components that form a part of continuums about standardization and planning in health emergency management. In order to manage these aspects, this researcher has further developed and located these variables in a conceptual framework via a number of key analytical steps. The three main steps include: the identification of variables extracted from appropriate literature informing this research; followed by assigning these variables to their respective continuums; and finally, explaining the applicability of the conceptual framework and, in particular, defining the quadrants.

4.1) Identifying variables:[7][8]

4.1.1) Understanding the Relationship Between standards with plans:

It is important to recognize that standards and plans are parts of a larger health emergency management system with sophisticated planning processes. This system comprises of different components; each component draws upon, is informed by, and therefore shares the overarching goal, aims and objectives of the system and collectively

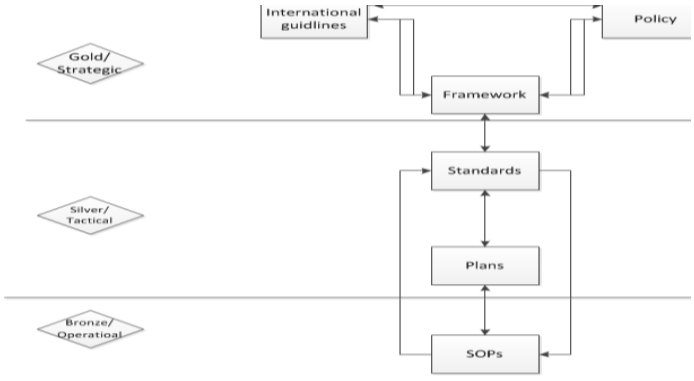


Figure 3. Disaster Management hierarchy of plans

***Source*: author.**

[7] This section is derived from the literature review chapter.
[8] This subsection is discussed from an emergency management literature aspect.

contributes to achieving them. Moreover, it is worth mentioning, albeit to a limited extent, that various components originate from, and often focus upon, different levels (international, national and regional). Therefore, it is important to understand the dynamics operating between these components to highlight the relationship between them in general, and their specific effects on standards and plans (Figure 3).

The disaster management system is a vertical hierarchical system. This hierarchy is presented throughout the disaster management cycle, yet with different levels of implementation. Furthermore, it helps to provide a certain degree of demarcation between the strategic, tactical and operational levels. Subsequently, the vertical hierarchical nature of the disaster management system may aid in eliminating at the 'top-down' any blurring effect in terms of responsibilities and accountability that may represent an important part of later discussion on standards. In particular, this dissertation assumes that, for the most part, the 'flow' of key strategies and decisions will be a 'cascade' from the 'top-down'. Nevertheless, we need to be careful here. The vertical nature of the hierarchical system does not entirely remove possibilities for lower level feedback emanating from the 'bottom-up' and lower parts of the disaster management system that may have a profound impact on the system (explained further in this chapter). However, the overriding assumption in this analysis is that the main trajectories of the disaster management system will be mostly 'top-down'.

4.1.2) Setting the terms of references [9]

To have a robust understanding of the disaster management cascade (see Figure 3), it is crucial to understand key components and their function within any disaster management system. This is particularly important

[9] Documents from Oman including the NCCD and the MHPS are restricted.

from the viewpoint of this particular dissertation since terms like guidelines, policies, standards, plans and standard operating procedures are often not clearly defined in the public domain and even in usage among emergency planners. There is a degree of practical imprecision at play here. Hence, it is worthwhile to outline key definitions of key components of any disaster management system that will inform later discussion relating to the conceptual framework developed in this dissertation[10].

Firstly, there are international guidelines. Nations often assemble to address and outline a guideline which helps to overcome certain present and future issues. Usually, these guidelines act to advise what should be achieved in certain situations. Furthermore, they do not possess absolute legislative power but are usually highly encouraged by senior political authorities (McConnell and Drennan 2006), thus making it difficult to avoid their implementation. For example, the European Union (EU) proposed a recommendation to their members to incorporate an avian flu response plan in their health contingency plan (McConnell and Drennan 2006). This recommendation was executed successfully amongst EU members due to the solid support of the members' governments to the EU.

Secondly, there are policies: a set of explicit high-level statements (possibly laws) that concerned organizations are obliged to follow and implement in disaster management[11]. In other words, policies are a high-level strategic declaration that act as a legislative anchor for following steps (Malawi government disaster risk management policy 2015). This boosts the level of accountability among involved organizations, or even among personnel within the same organization. For example, an incident command system was adopted by the fire department in California after the massive 1970s wildfire. However, most of the other states, including most other organizations related to disaster management, did not adopt this

[10] The main focus of this study is standards, plans and to a certain degree SOPs.
[11] In this context this definition applies to disaster management only.

system until the late 1990s.In 1993, Homeland Security used the incident command system during the first world trade center attack in late February of that year. Finally, on March 2004 a presidential directive policy was released that called for making this system mandatory in all concerned federal, state, and local agencies (FEMA 2017).

Thirdly, there are frameworks that are wider structures that guide and complement the construction of other accompanying parts of the disaster management system. Frameworks provide stakeholders with overarching goals and a common ground for the stakeholder to develop their framework and plans accordingly thus, facilitating a smoother plug-in mechanism for the involved stakeholders. For example, in Oman, the National Committee of Civil Defense (NCCD) was formed by a royal decree in 2007 as a direct result of cyclone Guno (another example of policy). The NCCD was, and still is, considered as an authority in disaster management in Oman, more or less equivalent to the Federal Emergency Management Agency (FEMA) in the United States of America. The NCCD (see section 5.1) created a response framework shown in figure 4 that assigned stakeholders to their respective sectors, where each sector has a set of goals that have to be fulfilled. These goals facilitate the achievement of the overarching goals. Consequently, each stakeholder has to form their own framework and plans in order to attain sectors goals.

Fourthly, there are standards. A standard is “an object or quality or measure serving as a basis and/or example and/or principle to which others conform or should conform or by which the accuracy or quality of others to be judged” (Alexander 2003, p.113). In other words, standards often outline the degree and nature of agreed-upon and accepted levels of attainment or core capabilities and capacities. Standards create and form a base level below which any performance is considered unacceptable. Subsequently, standards provide a level of “functionality” - a foundation that seeks to prevent performance from falling below that level, thus

contributing to the more efficient achievement of goals. To simplify further, standards are often considered as providing key norms of a given practice that set out achievable practical baselines. For example, in 2005 the World Health Organization (WHO) released the International Health Regulation (IHR). The IHR discussed several topics, including health response and surveillance. Different aspects of health responses were set out, such as surveillance, reporting, notification, verification, response and collaboration. Additionally, it discussed thoroughly what should be considered as the minimum requirements deemed acceptable in order to achieve sufficient functionality in the above noted elements. This provided a clear path for stakeholders and participants within a country, helping them to recognize their own deficits and make improvements.

Fifthly, plans are a "detailed proposal for doing or achieving something" (Oxford Online Dictionary 2017). From an emergency/disaster management perspective, an emergency plan "is a coordinated set of protocols for managing an adverse event, whether expected or untoward, in the future. It seeks the most efficient way to use essential resources to satisfy urgent or chronic needs under conditions of extreme duress" (Alexander 2005, p.159). Plans are a means by which organizations prepare for future events and tackle present issues. Its focus is narrower than frameworks and usually based on a set of international, national or corporate standards. It highlights the time and function relation between capabilities and capacities. In other words, it couples the available organizational capabilities and capacities in a timely fashion for maximum results. For example, the mass casualty plan in Oman's Royal Hospital is a timely cascade of steps. Each step will activate a mechanism (SOP) that the next step depends on (with the presence of alternative pathways in case of failure). For instance, when an overwhelmingly massive influx of patients is presented to the Emergency Room Department, a chain reaction of communication will initiate (capability). Subsequently, this triggers another chain reaction of staff and a bed surge (capacity). Plans are usually

reinforced by laws/policies that mandate stakeholders to adhere to it. Therefore, the level of accountability is high.

Finally, there are Standard Operating Procedures (SOPs). These are "detailed, written instructions to achieve uniformity of the performance of a specific function" (Jadad, A.R. 1998, p.1259). It is a set of instructions which explicitly describes a given procedure step by step. Furthermore, it aids involved personnel on a technical/operational level to successfully carry out a set of complex tasks with optimal results, minimal errors and maximal uniformity. Allison and Zelikow (1971) state that SOPs promote “isomorphism”. In other words, it seeks to omit the presence of any variation within that task or level of operation in order to achieve the desired uniformity in execution and outcome. Additionally, SOPs offer a high level of accountability since they are subject to rigorous procedures that require management approval as well as meeting strict quality assurance (Isaman and Thelin 1995). Additionally, SOPs, whether adopted from another organization or freshly designed, should be compatible with available capabilities and capacities, otherwise it could lead to endpoint/execution failure.

This brief evaluation of the components of the disaster management system highlights several key aspects. First, drawing from the prior observation relating to disaster management hierarchy (Figure 3), this dissertation assumes a strong inclusive and incremental relationship between the components, where each component sets the stage for the next. In other words, each element builds a foundation for the next. For example, plans determine who is supposed to be activated and when, subsequently outlining which SOPs need to be developed in order to achieve that goal.

It is worth mentioning that this hierarchical system has the tendency to act in a top-down way, yet, simultaneously, there is a presence of lower-level feedback which can be accountable for drastic changes in preceding levels.

For examples, if an SOP failed to deliver due to a premature activation, an inability to integrate or due to improper resource supply (such as needed expertise), the plan should be revisited and necessary amendment carried out. The presence of these types of negative and positive feedback create a dynamic environment where the system is regularly revised and modified. A classic example relates to the UK's experience after the 7/7 London Bombings (7 July 2005). This was an example of the existing emergency plan's inadequacy to coordinate between the SOPs of multiple stakeholders (Pollock 2013). Although each emergency service had their own well-developed SOP, they failed to integrate, adding more chaos to a disaster. This led to the Joint Emergency Services Integration Program, which initially aimed to revise and redesign available SOPs among emergency services, as well as their plans, in order to optimize them for maximum integration (JESIP 2017).

Second, for the purpose of this dissertation, a clear terminology is also being applied in terms of the developing perspective on standardization. Namely, that within the standardization perspective, there is a difference of role and function between standards, plans and standard operating procedures (SOPs). However, all can be affected by a general perspective of standardization since this involves strategic choices about when, where and how standards, plans and SOPs are developed and applied. Simply put, the standards will be informed by a standardization perspective, but the standardization perspective is more than just about standards, since it applies to, and has a bearing on, plans and even SOPs.

Third, this detailed analysis of the disaster management system shows us that the primary location and level of analysis for detecting variables and developing a standardization perspective will be principally at the national level as well as, to a lesser extent, at the sub-national level (and thus primarily in the mid sections of Figure 3). Hence, this dissertation will

primarily be focusing on perspectives of standardization that influence and shape thinking on standards, plans and to a lesser degree, SOPs.

Fourth, previous discussion has raised the point of the complex relationship between standards and plans and, in particular, whether respective elements are superior or subordinate to each other, or are actually equal and/or balanced in terms of importance**.**

As discussed in the previous subsection, plans are created in accordance to the standards provided, and follow the attribute of the standards used (Alexander 2005). Yet there are a couple of caveats must be pointed out and addressed in order to have a clearer view of this statement.

The relationship between standards and plans exhibits a degree of complexity in terms of their influence on each other. This complexity reveals a bidirectional influence which is characterized by the presence of a degree of imbalance between plans, standards and SOPs. The imbalance is embodied through the presence of a strong downstream control (i.e. top-down). This downstream has the propensity to drive the changes top-down from standards to plans to SOPs (see Figure 3). This downstreaming is promoted by the existence of higher, more senior authorities that strongly favour this type of streaming behaviour. Subsequently, there is some pressure encouraging stakeholders to follow and comply. Such downstreaming is somewhat countered by the presence of a relatively weaker up-steam, which runs from the 'bottom-up'. The upstream (bottom up), as the name implies, uses what could be called a reversal influence mechanism. In other words, it attempts to elevate any changes from a lower level of the hierarchy of planning (Figure 3), to a higher level. Moreover, these changes are usually generated from SOPs through plans to standards. However, unlike down streaming, upstreaming is relatively weaker and perhaps even lacks a strong drive given the obvious level of weaker support from respective authorities. Consequently, there is a weaker resonance throughout the system (refer to JESIP in section 4.1.2).

Regardless of these variations between the respective down and up streams, the presence of this bidirectional influence suggests that plans and standards could be considered the same from the standpoint of the perceptions of the end-users. Indeed, they could be perceived as mutually inclusive rather than mutually exclusive as they react to both streams identically rather than differently. This observed homogeneity therefore reinforces the validity of the second research question of this thesis (see section 2.1) that highlights the need to consider where there is uniformity and even unity between plans and standards.

Furthermore, the previous discussion suggests the relationship between standards and plans is largely passive. In other words, characteristics of standards tend to diffuse passively and manifest themselves also in the plan. For example, if a plan is based on complex and rigid standards then plans will be complex and rigid. Therefore, the perception of plans and standards by the participating stakeholders and/or personnel will be the same. Therefore, the general suggestion of this thesis is that plans and standards are neither sovereign nor subordinate to one another from the perception standpoint, but rather they are holistic and mutually inclusive. Moreover, since this thesis suggests that the underlying perception is the same, any focus on the demarcation between standards and plans provides little added value to the research at this time and could create unnecessary confusion. Therefore, it is important to note that this researcher henceforth will use the terms ‘plans’ and ‘standards’ interchangeably in the following sections.

4.1.3) Laying down the variables:

It is important from the outset to highlight that terminology such as uniformity, flexibility and rigidity are also used interchangeably – at least in the public domain when discussing aspects of disaster management. Therefore, it is highly appropriate that this dissertation seeks to define

these terms and their associated concepts a little more carefully and precisely, especially in the context of the proposed conceptual framework set out in this chapter. It is also important to recognize that their conceptualization remains at an initial stage and are part of the conceptual adventure being set out in this dissertation.

Turning to the first variable introduced in this chapter, it is important to remind the reader that this variable draws upon prior reflections set out in prior discussions on standardization and planning in the literature review (see sections 2.1 and 2.2). Concerning key definitions and end goals, Peebles, Ryans and Vernon (1978) as well as Keegan (1984) emphasized that an important target of standards is uniformity. This uniformity does not end at the action executing level, but rather extends to the generation of policies and procedures (Shierif 2006; Saltzman et al. 2008, Goa et al. 2014). Furthermore, Jeannet and Hennessy (1988) view standards and standardizations as a set of similarities that facilitate different applications – a key statement that augments the importance of uniformity from the standpoint of standards. Such uniformity recognizes organizational structure capabilities and capacities (Allison and Zelikow 1971) subsequently enhancing response efficiency in terms of performance and response time, since it reduces trial and error and pre-establishes connection and execution points (Ansoff 1991; Song 2015). In other words, standards promote uniformity that also cements the establishment of clear lines of command and control. As noted above, one of the key aspects and potential targets of standards is uniformity. Uniformity attempts to eliminate the presence of other possible entities which do not resemble the present standards, deeming them incompatible. Furthermore, this uniformity triggers an auto-rejection behavior which can affect organizations negatively, even rendering it obsolete (Lawrence 1969). This behavior paints standards with a rigid color, which will subsequently glaze the perceptions of the people linked to it. Based on the aforementioned argument and the need of standards to reach and maintain

uniformity as a target, this researcher was able to extract the first variable, namely rigidity. Drawing from the previous discussion, rigidity is an attempt at creating absolute uniformity and a stable organizational environment through strictly controlled timelined actions with the available resources.[12]

Building on the literature review (see section 2.1, 2.3 and 2.4), it is now appropriate to reconsider key reflections from differing schools of thought – in particular, the emergent and formal school of planning. The formal school of thoughts argues that the implementation of standards can be hindered by numerous factors, such as a lack of institutional cohesion, the availability of infrastructure and a lack of resources that can effectively frustrate the whole process (Roostal 1963; Lenormand 1964; Barker and Aydin 1991; Shoham 1999). Moreover, when standards are sought to be applied over multiple nations, other factors should be considered such as religion, culture and language barriers (Jain 1989). All of these factors can have a serious stagnating effect, complicating the implantation processes. Therefore, this school of thought suggests that organizations cannot achieve their goals through rigid standards. Furthermore, Onvisit and Shaw (1987) argued that uniformity is not necessarily achieved by rigid standards, and flexible standards can support the achievement of desired goals. Moreover, flexible standards help to dilute pre-existing limitations and overcome the aforementioned challenges (Lorange and Vancil 1976). Additionally, Bass (1977) mentioned that organizations tend to operate more efficiently when they have designed or modified standards themselves. This suggests that standards are adaptable and modifiable according to the user's need and there is no one standard which fits all. Thus, lesser levels of control are needed in order to achieve better results.

Proponents of the Emergent school of thought have a different understanding of standards which is very distinguishable from the rigid

[12] Absolute rigidity from the perspective of disaster management.

formal school of thought. They perceive standards as a flexible tool which can be used according to needs and available capabilities. Based on this perception, this researcher was able to extract the second variable: flexibility. Therefore, flexibility is an attempt to establish uniformity and organizational stability through adopting a liberally controlled timeline of action. [13]

Reflecting on these variables and analyzing the literature presented around them, this research suggests that there is a presence of tension between flexibility and rigidity. This tension is generated from a complex relationship between both that superficially presents both as contradicting entities with no common ground. However, fundamentally, they belong to the same continuum, one which shares the same aims and goals, though differing in command and control methods that affects the mode of execution. This leads this research to the next two variables.

Paying close attention to formal planning, planning in disaster management and Emergency health response planning sections (see section 2.2, 2.3 and 2.5), and building upon the above discussion between flexibility and rigidity, this researcher suggests the presence of two further variables that are closely related to the variables of rigidity and flexibility: explicitness(will be referred to as explicit standards or comprehensive standards) and implicitness (see table 4) (will be referred to as implicit standards or minimal standards). Throughout the literature, this researcher noted the presence of the same tension pattern which was seen between flexibility and rigidity. As both share the same differences and present the same type of argument, though in a different context, this researcher has placed them within the same continuum which is closely related to that of the first two variables.

[13] Absolute flexibility from the perspective of disaster management.

Explicit standards assume a high level of comprehensiveness and are close to being identified as comprehensive standards and have a particular focus/clarity regarding the sequencing of relevant procedures. In addition, they are usually regarded as an attempt to achieve organizational stability through very strict control and a cohesive sequencing of executions/procedures[14]. On the other hand, implicit standards assume a high level of minimalism and are close to being identified as minimal standards, paying less attention to, and having less focus and clarity regarding the sequencing of relevant procedures. Moreover, they are usually regarded as an attempt to facilitate the possibility of having greater discretion in achieving organizational stability with often looser forms of control and less cohesiveness regarding the sequencing of execution/procedures[15]

There is some controversy over which type of standards are preferable, but ultimately it depends on what objectives are being sought in terms of the writing and design of the standard. In his view, leonard-Barton (1992) argues that standards should be comprehensive, and thus in the context of this dissertation would seem to favour more explicit standards. In other words, standards should be well thought out in order to enhance clarity and cohesiveness among all aspects of organizational response, leaving no room for improvisation and omitting the individual scope (Hanseth et al. 2006;Alexander 2016). This will lead to further solidification of engaged units by eliminating any differences within, and thereby establishing a common ground which will abolish any residual incompatibility and implantation diversity. Here the focus seems to be on achieving superior performance and effective coordination (Turoff 2002; Chen et al. 2005; Chen et al 2007). Furthermore, Tang and Chen (2015) argue that comprehensive – here more explicit - types of standards are also usually supported by explicit rules and legislation which had to be complied with

[14] Explicit standards definition.
[15] Implicit standards definition.

and followed. This renders it a valuable tool for multiple stakeholder operations, as it maximizes unified implementation by reinforcing clarity among them (Daniels 1987; McConnelln and Drennan 2006).

However, even where there may be a tendency for more explicitness within standards, this does not mean that having explicit standards are without critique. Several scholars argue that explicit standards are not favorable, particularly for environments with high uncertainties. Dibrell (2014) further elaborates by pointing out that explicit standards tend to reduce the level of control during uncertain conditions, due to a multitude of reasons such as an inability to foresee future threats (Lorange and Vancil 1976; Al-Bazzaz 1980). This is due to the restrictive environment which causes the level of improvisation and innovation to drop amongst the involved stakeholders. Furthermore, other scholars do not favor explicit standards due to their complex nature. Al-Bazzaz (1980) argued that this complex nature leads to a slower rate of their development – placing adherents to explicit standards at a distinct disadvantage when facing new uncertainties and threats. Furthermore, this slow rate of development increases bureaucracy. Additionally, this complexity can cause a lot of confusion among stakeholders as they can frequently misinterpret key standards, or parts of them.

Therefore, at the other end of the continuum, there is scholarly support for highly implicit standards as a better option. Samiee and Roth (1992) suggest that implicit standards seek to be adaptive which also requires a strong degree of consensus within an organization, where organizations that prefer to adopt this type of standards display a strong sense of ownership and belief that they can easily modify and reform standards according to their needs and in response to changing situations. Furthermore, implicit standards encourage innovation and improvisation, - subsequently giving them a somewhat organic nature - which is more resilient to future challenges (Mintzberg and Water 1985; Mintzberg

1994). However, it is worth mentioning that implicit standards often assume a high level of informality, which can have a detrimental effect (Dynes 1998). Often, there is a lack of rules or legislation that can bind participating stakeholders, which can have a negative impact on the level of accountability.

In short, explicit standards are an organizational attempt to achieve maximum clarity and cohesion in action implementation through a predetermined, tightly sequenced procedure which is executed by a pre-designated stakeholder. Alternatively, implicit standards achieve the desired clarity and cohesion through procedural innovation and improvisation, along with being more liberal with the designation of key stakeholders (see Table 4).[16]

4.2) Connecting the variables, Introducing the 4Cs and Understanding the continuum:

A continuum is defined as a subject which changes in character gradually, in narrow stages with no clearly distinguished point of change, yet with an extremely different end (Cambridge 2017). That being said, and with reference to subsection 4.1.3, this researcher identified two pairs of variables. All of them share the same goal but differ in their approachability, and each couple shares a single approach.

	Command and control	**Clarity and coherence**
Rigidity	**Rigid C+C**	**-**
Flexibility	**Flexible C+C**	**-**
Implicity		**Implict C+C**
Explicity		**Explict C+C**

Table 4 the 4 C's in relation to the framework continuums source: author.

[16] Absolute implicitness and explicitness from the perspective of disaster management

The rigidity-flexibility continuum is one that answers the questions of ‘what’ and ‘when’. In other words, this continuum attempts to achieve the desired goal through determining what should be done and when it should be achieved. Thus, the focus is often on addressing, stipulating and enforcing the overall structural outline rather than delving into fine details. Attention is also often placed on suggesting and focusing upon aims and objectives rather than execution/implementation. In other words, the focus is on presenting the overall commanding element (the ‘what’) side by side with the key timeline of governing command and the permitted timings for key decisions affecting the operation of disaster response (‘what’ and ‘when’).

In contrast, the second continuum - called here the explicit-implicit continuum - endeavors to answer the ‘who’ and ‘how’ questions. This continuum looks at the process of goal achievement from the perspective of execution, its main interest being to display and show which organization/individual is responsible for the task and the details of how it/he would accomplish it. This is rather important, as it provides sufficient clarity that facilitates a cohesive operation (especially if multiple stakeholders are involved).

This researcher suggests that there is an external element which is not a part of the continuum yet acts as a crucial factor in this mechanism. The presence of this element can act as an important anabolic or even a catabolic factor, as it could initiate or disrupt the continuums. This element is policies.

4.2.1) Connecting the variables:

As discussed in the previous section, this researcher identified four variables which belong to two different yet relatively similar continuums, in which they share certain commonalities. Moreover, the perception of

these commonalities by the involved stakeholders or individuals act as intersecting

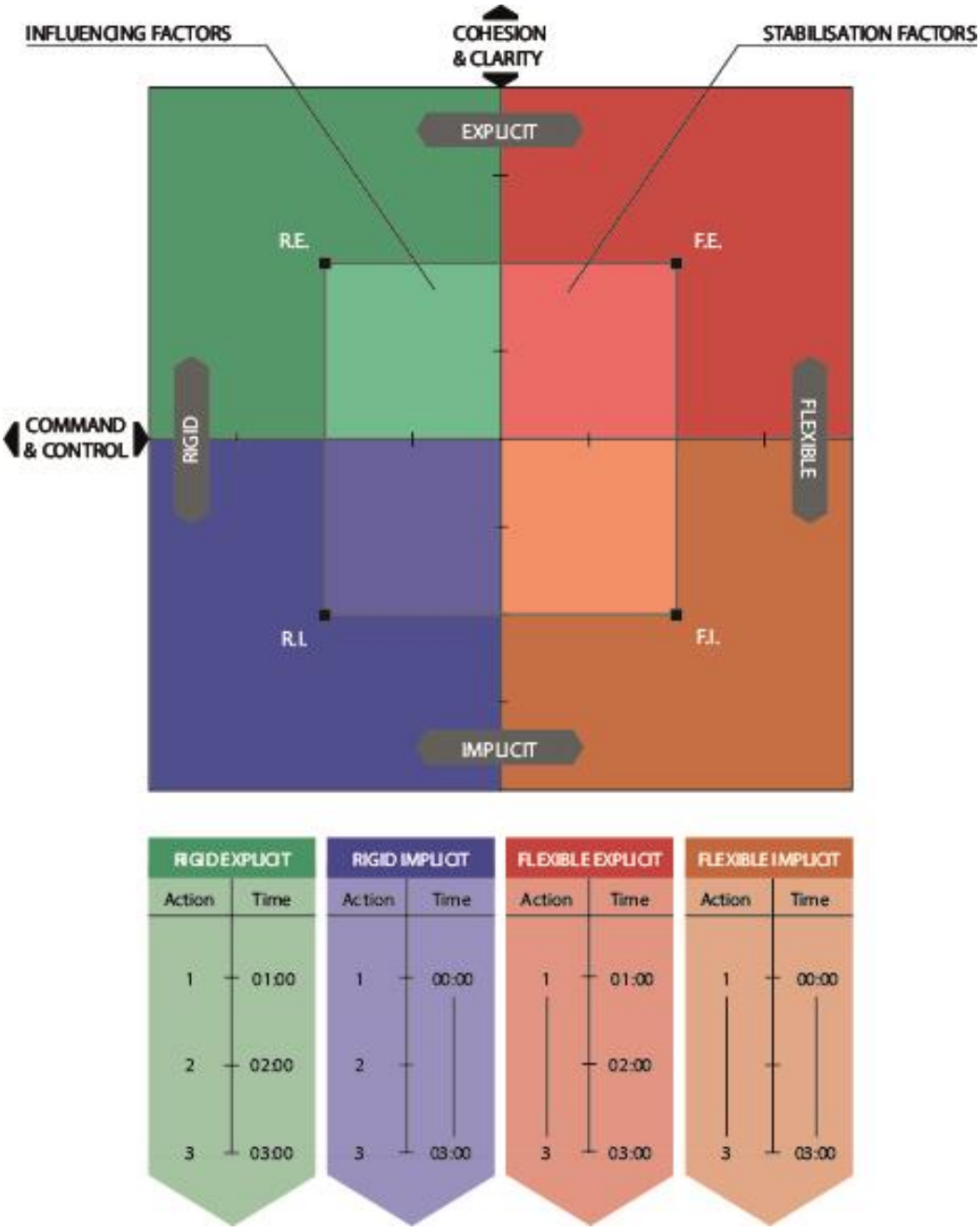


Figure 4 Continuums interaction, source: author.

points (see Figure 4) which further diminish the gap and strengthen the bond between these continuums. However, in order to demonstrate this

relationship, this dissertation will now introduce a conceptual framework which will aid in translating the subjective nature of perceptions on standards (in an accessible visual form) and show how the presented variables are interlinked in a practical way.

4.2.1.1) The Quadrant framework:

A quadrant framework is widely used in practical and academic applications by various scholars. For example, Geltner et al. (2001) used this mode in illustrating the relation between four core factors that affect analysis of the real estate market. Another example is Daniel Ofman (2001), who uses a similar framework to visualize human core qualities with external factors. Nevertheless, and as Chapter Two shows, no previous applications of quadrant frameworks have been used in the context of perceiving standards. Therefore, such an application as proposed in this dissertation represents a distinctive contribution to knowledge and an exciting academic and practical opportunity.

This researcher opted to utilize the concept of a quadrant for several reasons. Firstly, a quadrant enables the visualization of the relationship between both the aforementioned continuums and their related variables, and in this way can also convey and illustrate areas of tension and intersection. Secondly, the concept of a quadrant can also highlight areas of compatibility, if present. Thirdly, it helps to demonstrate the influence of variables on each other and whether they belong in the same continuum or the other one. Fourthly, the conceptualization of a quadrant allows for the creation of a future classification that can be useful in interpreting key empirical findings and their location within the available quadrants. Finally, this researcher suggests that the simplicity of using quadrants as a concept can facilitate more informed data analysis and enhance reproducibility.

4.2.1.2) How can this framework relate to health emergency management response plans/standards?

As mentioned earlier, health emergency response is a complex process which requires a multitude of players and consists of multiple operations running simultaneously. This sheer complexity dictates the presence of several options to clarify and control the process which will influence the desired outcome. Each option is comprised of a mixture of the above-mentioned variables. Moreover, as each concoction will have its own characteristic, this framework will have the ability to categorize how involved personnel and stakeholders perceive it. Therefore, this researcher suggests that there is a pressing need to assess the produced variable combinations in order to enable him to classify the associated perception.

4.2.2) Establishing typology through Quadrants:

4.2.2.1) Quadrant 1 (rigid explicit):

Standards presented in this quadrant (green quadrant C-2) are perceived to be rigid and explicit standards. These standards are highly prescriptive with the intention of tightly controlling timeline and execution. They tend to include very rigid aims and objectives that have to be achieved in a sequential and timely manner, along with a very clear set of sequential actions to be followed. The aforementioned sequential clarity is often paramount in this type of standard, especially for involved stakeholders, as they are allowed only minimal or no room for improvisation, with zero tolerance for error. Furthermore, the level of accountability is considerably high which can lead to a notable level of legal liability. Thus, these standards are well documented to the finest detail and supported by explicit legislative clause(s) which ensures the level of accountability and affirms the legal liability. In short, standards presented in this quadrant provide for

strong control of the time and procedural sequencing and execution that is also clear and coherent among stakeholders.

4.2.2.2) Quadrant 2 (flexible explicit):

As mentioned above, each quadrant is represented by two distinct variables. Flexible-explicit standards (as represented by the red quadrant in figure 4) illustrate rather malleable aims and objectives, and looser control of the action sequence in terms of the timeline[17]. It provides a very rough outline of what should be achievable and when, but it runs a highly regulated procedural execution operation which explicitly addresses the 'who' and the 'how'. Simply, it provides a relatively malleable time schedule, but very strict executional behavior.[18]

4.2.2.3) Quadrant 3 (rigid implicit):

This type of standards is perceived as rigid implicit standards (as represented by the blue quadrant in figure 4). It is characterized by the presence of a degree of liberty at the executional level. Put simply, these types of standards are concerned about getting from point A to point B within a firmly controlled time sequence and frame, with less concern over how to do it. Despite the presence of a structured command and control, which clearly outlines the 'what' and 'when', the involved stakeholder will have some degree of freedom in distributing the responsibilities and choosing the means of executing them. These standards are usually considered as fertile ground for improvisation and entrepreneurial behavior. Moreover, a number of legislative clauses used here is still present. Therefore, legal liability still exists.

4.2.2.4) Quadrant 4 (flexible implicit):

Another type of standards is perceived as flexible implicit standards (as represented by the orange quadrant in figure 4). It completely lacks or has

17 Refer to rigidity definition.
18 Refer to explicit standards definition.

significantly reduced control over the timeline (command and control). Even if the desired aims and objectives are clear to some degree, the triggering point within the timeline is quite vague or nonexistence. Thus, different tasks could be carried out in an untimely fashion. Furthermore, this quadrant is characterized by a high degree of liberty in execution (implementation), which grants freedom in choosing the means of execution. Moreover, these types of standards promote an experimental behavior by allowing involved stakeholder to adopt a trial and error mentality and explore possible outcomes using several methods, rather than confining themselves to a compulsory method to apply. It is worth mentioning that this behavior could have either a positive or a negative impact on cohesion as well.

4.3) Summary and reflection:

Turning now to our respective research questions, this chapter has illustrated the relationship between standards and plans and demonstrated how both are mutually inclusive rather than exclusive. This is of notable significance in terms of addressing the second research question of this thesis (see section 1.2). In addition, this chapter has sought to outline a preliminary conceptual framework, and key identifiable variables within it, that will act as cornerstones and offer insight into key dynamics shaping their interaction that may help to inform the production of a typology of standards. This typology will – as the next chapter discusses – provide a platform for interpretation that can be used to reflect upon empirical findings discussing perceptions of current and future standards that may shape Omani health emergency management. In this way, this will also provide value added in addressing the first research question (see section 1.2) and it is to these aspects that the next chapter will now turn.

Chapter Five: Findings and Discussion:

5.1) Disaster Management system in Oman:

The Sultanate of Oman is a coastal country located on the periphery of the Arabian Peninsula. The country's coast is actually in close proximity to the Mekran Trench, which is a seismically active area (Mokhtari et al. 2008). Oman's neighboring countries are the United Arab Emirates (UAE) to the north east, Saudi Arabia to west, Iran to the north and Yemen to the south west. All of Oman's neighboring countries are involved in a war, either directly or by proxy (Aras and Yorulmazlar 2017). Oman overlooks three huge water bodies the Gulf of Oman is at the eastern side, the Arabian Sea to the south and the Persian Gulf to the north. This basin is well known in generating powerful cyclones – usually in categories three, four and five, such as cyclone Guno, which is considered one of the most powerful cyclones that has hit the Arabian Peninsula (Fritz, Blount, Albusaidi and Al-Harthy 2010).

Category	Wind Speed	Pressure (millibars)	Storm Surge	Damage
1	74–95 mph	>979	4–5 feet	minimal
2	96–110 mph	979–965	6–8 feet	moderate
3	111–130 mph	964–945	9–12 feet	extensive
4	131–155 mph	944–920	13–18 feet	extreme
5	>155 mph	<920	>18 feet	catastrophic

Table 5 Adapted from Saffir-Simpson's Hurricane Scale. source: www.contactrelief.com [19]

The above factors expose Oman to both natural hazards and man-made threats. Moreover, rapid economic growth, which has been witnessed in Oman in the past few decades, especially around the capital Muscat,

[19] The Saffir-Simpson Hurricane Wind scale is based on wind speed and estimates potential damage.
(https://www.nhc.noaa.gov/aboutsshws.php)

increase the country's vulnerability, since it is sitting opposite to the Mekran trench (El-Hussain et al. 2017). As a result, the capital is prone to earthquakes and tsunamis. Furthermore, the geographic and geological nature of the country makes it prone to cyclones and flash floods, such as the Cyclone Gonu in 2007, and the 2003 Salalah Flash floods (Al Shaqsi 2010). Additionally, the fact that Oman is a part of the Middle East, which is relatively an unstable area, makes it more susceptible to terrorism and other political hazards, exemplified by the Al Dakhiliyah security incident in 2003, and the 2011 Northern strikes (Al Shaqsi 2010).

Given the growing awareness of the aforementioned risks and hazards, it was apparent that there was a pressing need to develop a system by which the country can face and manage these hazards and respond to them efficiently and in a timely fashion when disasters occur. Therefore, his Majesty, the Sultan of Oman (Sultan Qaboos) issued a royal degree in 1988 stating the formation of an organization which was delegated the responsibility to manage disaster and emergency responses (NCCD 2016). The organization was called the National Committee of Civil Defense (NCCD). The NCCD was placed under the control of the Royal Omani Police (ROP) that is responsible for civil defense in the country (Al-Naamani 2016). It is worth mentioning that in Oman, the term 'civil defense' is synonymous with the firefighting unit and other search and rescue units. Therefore, the NCCD was brought under the ROP flag and generally took the leading role given that most incident management was carried out by the ROP. In 2002 the NCCD gained a degree of operational autonomy – yet remained largely under the direct command of the ROP (Al-Naamani 2016). In other words, the NCCD still retained the ROP's top-down structure which pays an acceptable degree of attention to multi-agency cooperation, which will be explained later in this chapter.

According to Al Shaqsi (2010), cyclone Gonu was considered a wakeup call for the country because it revealed the weakness and challenges the

country has to overcome in order to have a functional emergency response. However, before addressing some of these challenges, it is worth mentioning that most of the damage in Muscat and the affected peripheries was done by floods rather than the cyclone itself. Though cyclone Gonu was considered to be a CAT 5 cyclone (see Table 5), the epicenter of the cyclone's eye was about 290 Km from the Omani coastline, so it did not make landfall (*Joint Typhoon Warning Center 2007)*. However, several regions of Oman witnessed substantial rainfall of up to 24 inches (Al-Shaqsi 2010). This led to massive floods in several regions within Muscat and other governorates (Al-Shaqsi 2010; Al-Naamani 2016). Although most prior estimates envisaged that the main danger and cause of damage would come from the sea, it was actually the flash floods that caused the majority of the damage (Al Barwani 2016). The surprise presented by the flash floods brought to the attention of concerned authorities the presence of some gaps in all phases of the disaster management system. For example, in terms of preparedness, floods caused by the heavy rain illustrated that the flood early warning system is underdeveloped, to say the least (Al Barwani 2016). As a result, the authorities responsible for response activities had minimal time to prepare appropriately. This affected the quality and speed of the response, which explains why the armed forces took over the response phase almost entirely, since they possess most of the needed resources, along with a high level of standardization and plan unification (Suliman and Nasser 2010). Therefore, the authorities realized that they have to pay closer attention to the NCCD, and thereby shift from a reactive attitude to a proactive one in order to achieve a better response. Henceforth, some fundamental alteration was made to the NCCD's structure and its commanding hierarchy, and it was no longer under the command of the ROP but rather under the direct command of the ROP Chief Commissioner (but, the working personnel are still a uniformed ROP personnel[20]). In practice, the

[20] Uniformed services: arm forces or Royal Police of Oman.

Chief Commissioner works under/with the command of the National Security Council in cases of disaster response. Therefore, the NCCD were granted the lead position to command natural and some man-made disaster response related operations, and therefore were provided the tools needed to carry out its duties to the best of its ability (see Figure 5).

The aforementioned authorization, along with the fact that the NCCD was part of the ROP, further established the hierarchical nature of the Omani disaster management in general, and the NCCD specifically. Moreover, it augments the top-down Omani system. Additionally, and as a result of what happened during cyclone Gonu, the NCCD focused on multi-agency cooperation and, being the focal point of this integration, it passed that hierarchical attitude to the rest of the sectors, including the health response sector (Abdul Rashid, Sambasivan and Johari 2003) (see Figure 6).

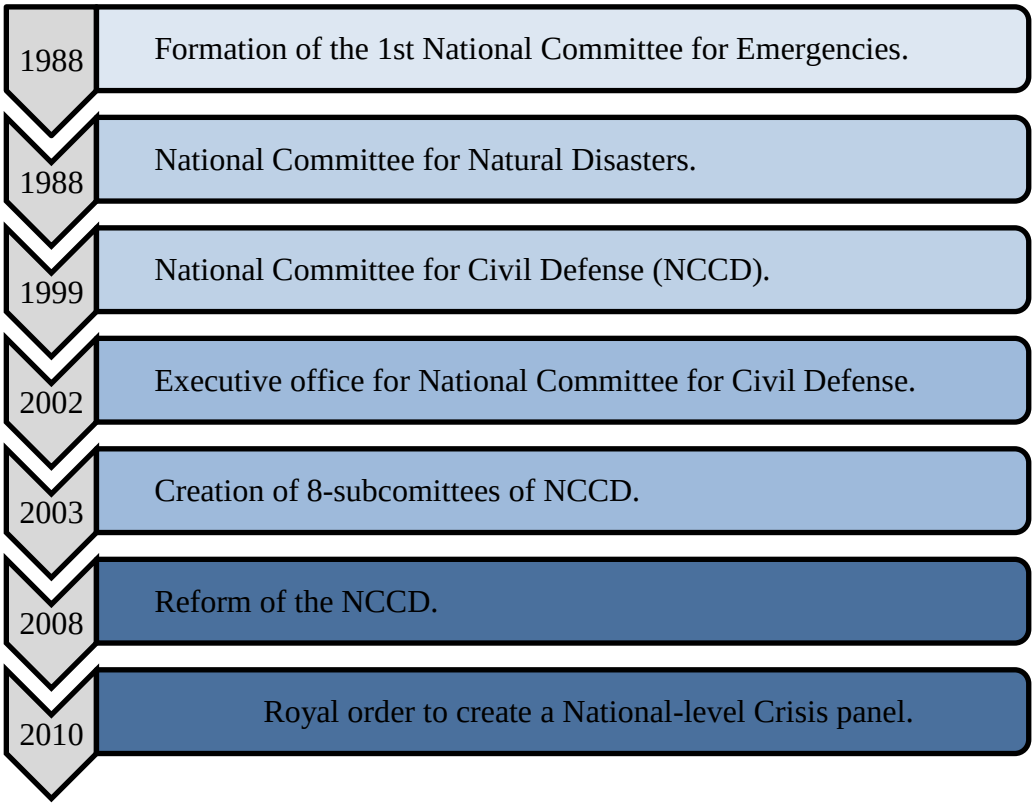


Figure 5: NCCD evolution timeline. Source: Adapted from Al Shaqsi (2010).

As mentioned previously, the disaster and emergency response in Oman is a hierarchical system (NCCD 2016; NCCD 2017). This system was created in accordance to the Royal Civil Defense Law decree number 76/1991 as well as the State of Emergency Law number 75/2008 (MLA 1991, 2008; Al Hanai 2016). According to these decrees, the response level is divided into a local, regional and national level, with the NCCD being in the national level under the National Security Council. The other sectors are under the NCCD. It should be noted that any incident which is security related, for example terrorism-related incidents, is managed by the Committee for Joint Security Operations (CJSO), which is also directly under the command of the National Security Council.

The NCCD is composed of 12 different sector heads (12 spokespersons), headed by the police high commissioner who directly command the NCCD Executive office, which contains the National Emergency Operation Center (NEOC) (see figure 7). The representatives of the 12 sectors are present in the NEOC — establishing a direct connection between the NEOC and the sector's EOC. Nevertheless, in order to maximize the benefit of the presence of this direct connection, all the sectors should stand on a common ground and be able to understand each other. Therefore, the NCCD emphasizes the standardization of emergency management systems, field command and control systems and operations response systems.

Referring back to discussion outlining the framework (Chapter 4), and in the context of the prior discussion of the Omani disaster management system, it is important to point out that the hierarchy of plans (Figure 3) presents itself in the Omani systems in an organized way. Generally, the determination of what is needed to conduct or perform a given activity during the response is set at the national level. This is due to the governance system which is centrally focused within an administrative top-down hierarchical system, mentioned earlier in this section. However,

milder forms of centrality exist because decisions about standards are taken at the governorate level. The governorate level is considered as a higher authority, and ranks higher in the hierarchical system. Put simply, there is a strong top-down standards system as opposed to a weaker bottom-up system. Nevertheless, there is a weak bottom-up influence. Furthermore, plans have the same dynamics and move in the same manner. On the other hand, and unlike standards and plans which are created at the national level, SOPs are constructed at the subnational levels (local/Governorate), yet are heavily influenced by standards and plans created at the higher level.

5.1.1) Health response system in Oman:

The health sector is considered among the most active sectors in terms of its involvement in most incidents and disasters, including the activity among stakeholders within the sector. The creation of the emergency health response sector and the other sectors occurred simultaneously between 2010 and 2011. The Ministry of Health (MOH) paid close attention to the sector and recognised its importance, therefore the MOH displayed great support in building the sector's disaster and emergency management systems and plans. Furthermore, the MOH initiated the formation of the sector Emergency Management department in 2012, which was restructured in 2014. The Health emergency response plans were built in such a way that it would be compatible to the NCCD's framework, as it uses the same local and regional, subnational and national structures. Furthermore, similar to the NCCD framework, the MOH adapted the incident command system and used it as a standard form of command and control (governorate health response plan 2016). However, it is worth mentioning that the national and governorate plans are still in an early stage of maturity and are still evolving and developing.

In late 2016, the first governorate emergency response plan was signed by the Under Secretary in the Ministry of Health. This formalized the plan

and it became operational in every governorate from early 2017[21]. As a result, this established a unified plan at the governorate level that was both compatible and integrated. Since the system is still at its early stages, the unification of response plans did not reach the local and corporate levels. Moreover, the private sector remains a neglected partner in the development and implementation of integrated emergency response plans. This discrepancy between the governorates, local, corporate and private sector levels can result in a critical malfunction of the system, since the understanding of standards and presented plans lacks uniformity. Consequently, this causes performance and efficiency variation amongst involved stakeholders, or even communication and engagement failure. In other words, this results in failure to establish a unified command and control with a clear and cohesive execution system. However, the fact that the NCCD is a uniformed authority, which was a part of the ROP and still under the command of the chief police commissioner, buffers this variation due to high levels of rigidity and explicitness during the response phase. But in return, the health response system inherits a high level of the ROP's rigid protocols and authoritative attitude.

5.1.2) Understanding the role and dynamic of standardization and planning in Oman's health response:

Prior to the renaissance[22] of Oman in 1970, the health system was relatively non-existence. The country lacked basic healthcare infrastructure, and the vast majority of the population had no real access to healthcare. This was complicated further by several factors, such as the sheer size of the country, the geographical diversity of the country's landscape, as well as constant tribal conflicts to name a few. These factors hindered access to the already scarce health facilities for the

[21] All of the plans were designed by the MOH EOC team and modified by the governorate.
[22] The Sultanate of Oman's renaissance day is on the 23/07/1970. It marks His Majesty Sultan Qaboos bin Said ascending the throne and ending Oman's period of isolation.

majority of the population. Strictly speaking, there were two hospitals available in the country and both were based in Muscat, the capital city of Oman, one being the American

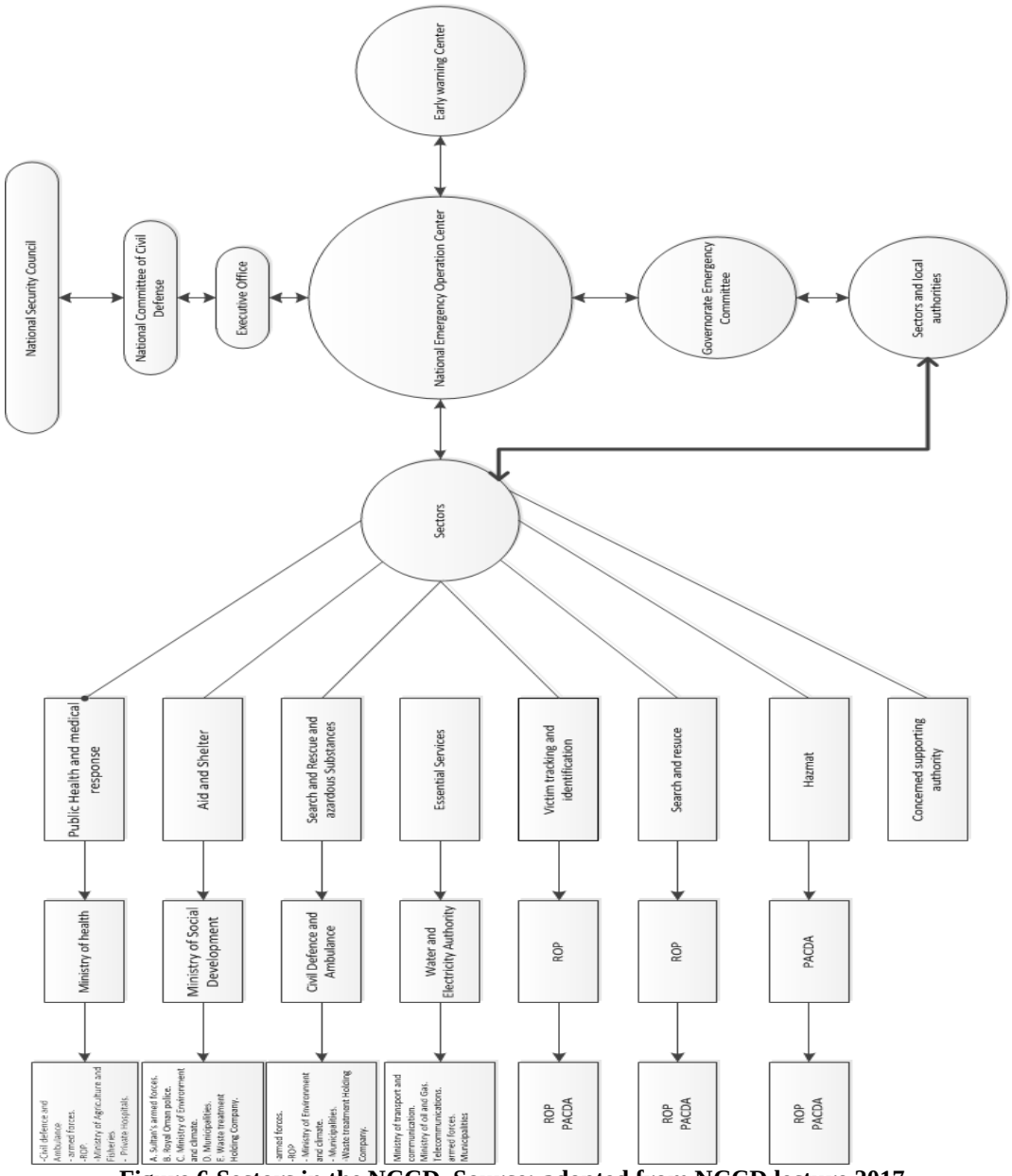


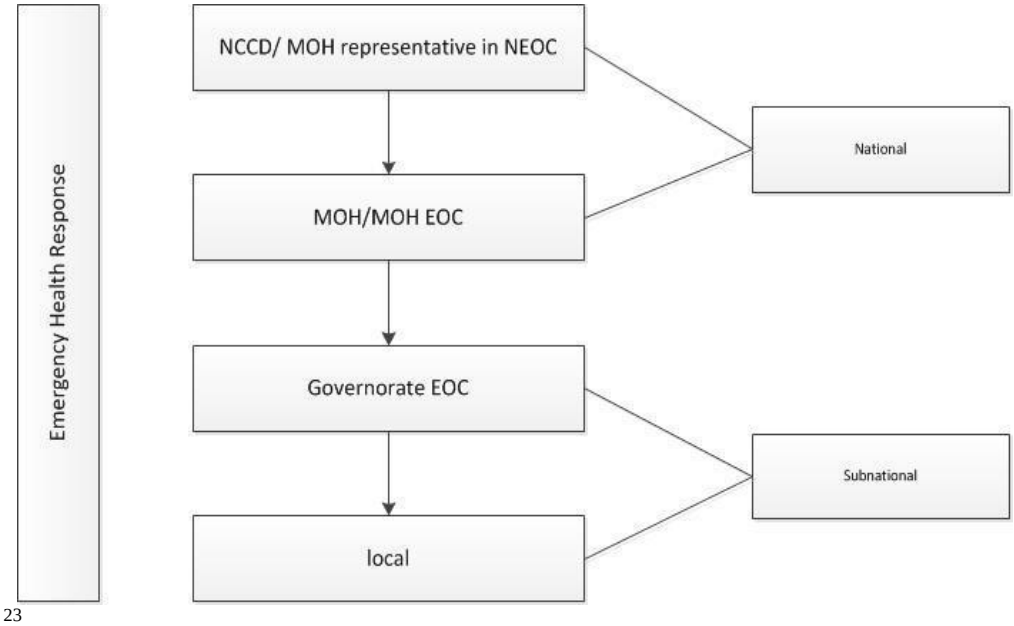
Figure 6 Sectors in the NCCD. Source: adopted from NCCD lecture 2017

Arabian Mission Hospital, established in 1953, and the second was the Knox Memorial Hospital, established in 1948.

Nevertheless, after 1970 the health system in Oman witnessed a revolutionary leap in terms of the availability of facilities, expertise and necessary equipment. Moreover, the health system, led by the Ministry of Health, experienced a very noticeable improvement in terms of structure and coordination from a bureaucratic and technical standpoint. This structure was characterized by a high level of centrality, where all strategic and operational processes were generated in the capital and pushed to the peripheries. This centrality is based on the fact that the capital's infrastructure was established before the rest of the governorate, with all concerned stakeholders and expertise being available almost exclusively in Muscat at the time. As a result, the rest of the governorate was dependent on the capital, consequently promoting and establishing a top-down bureaucracy culture in managing medical and public health plans and services.

Fast forward to recent years, the health infrastructure has experienced an exponential growth in terms of the increase in health facilities and healthcare more generally. Nowadays, there are more than forty-nine hospitals and health centers that operate under the auspices of the Ministry of Health, with over fifteen thousand health professionals within these facilities (Al Sawai et al. 2015). Moreover, other health providers have a rather strong presence, such as the armed force medical services, Al Diwan medical services, Sultan Qaboos University medical services and the private sector to name a few. Indeed, most of these stakeholder activities are to be found in Muscat, demonstrating the dominance and centrality of the capital in terms of medical provision and services in Oman. Moreover, public health is still dominated by the Ministry of Health, with the capital being its stronghold and main center of coordination and operation. Consequently, this disseminates a similar attitude to the health system,

further supporting the previously mentioned strong top-down system that is underpinned by the centrality of most standards and plans, which is pushed outwards to the periphery. Similarly, the health emergency response system in Oman bares the same characteristics of the medical and public health system, since the center of health emergency management is based in the capital. Furthermore, it is under the direct command of the Minister of Health's office. Here, the health response standards and plans are formulated and passed to their governorates' counterpart. The governorates in turn adopt the pre-set standards and plans and return feedback for the center to adjust accordingly, thus suggesting the presence of the same characteristic presented earlier. This centrality results from an accumulation of cultural and historical factors, which are still strongly embedded in the system (as previously described). Therefore, standards and plans are coated with the same color of centrality: they follow a strict and firm top-down drive with a barely audible bottom-up resonance. From the survey of key documents, it appears that the byproduct of this disrupted and imbalanced equilibrium is rigid standards and plans. As a result, this increases the level of dependency of lower operational levels on the existing hierarchy to explicitly state their duties. Put simply, vital questions of what and when (see section 4.2), along with the questions of who and how (see section 4.2) would be answered to a large degree by the central authorities. This eventually generates very rigid and explicit standards and plans, thus, inheriting their pros and cons, as mentioned in the frameworks chapter.



[23]

Figure 7 Emergency health response operation center level hierarchy. Source: author.

5.2) Returning to the framework context:

Drawing from the framework chapter, this researcher has suggested that attributes of standards are transferred to the plans that they are used in. From this perspective, the people in charge of executing the plans will have the same perception. If the standards have a certain level of rigidity, this degree of rigidity will be transferred to the plans in which the standards were used. Indeed, if the standards are explicit, the plan will also be explicit. Moreover, this research suggested, in the framework chapter, the presence of the planning hierarchy in disaster management. Within this hierarchy, the formulation of both plans and standards can occur at the same level or even at different levels (national or local). Therefore, in order

23 EOC: Emergency Operation Center
NEOC: National Emergency Operation Center

to grasp the essences of this perspective and attempt to have diverse perspectives, this researcher opted to use semi-structured interview as a means to generate the research data (see section 3.4a.1.1) The interviewees were senior health professionals'/emergency managers (medical doctors). These medical doctors are directly involved in disaster management in general, and in disaster health response systems specifically. They have a minimum of two years' experience within the field of emergency health response management. Moreover, in order to have a clear understanding of this perspective throughout the whole health response planning process, this researcher purposefully selected the participants from all different levels of the health response system (national, regional and local).

As mentioned in the methodology chapter, the aim of the participant selection process was to cover the levels relevant to this research: the national, regional and the local level to some extent. The selection of these levels promoted a better understanding of the standardization perception from the participant's standpoint (see section 3.b). Furthermore, it facilitated this research in displaying their perception in relation to the suggested continuums, since standards and plans in Oman are usually generated at these two levels. Moreover, the selected participants were based in the capital Muscat, which further enhanced the chances of understanding the mentioned centrality. Some of the participants had a reasonable experience at the governorate and local level, which gives an added value of having people with both central and peripheral experience. Additionally, the inclusion of the corporate/local level was crucial for several reasons. Firstly, it allows this research to include the first responder's viewpoint and relate it to the suggested framework, which consequently allows the research to broaden the data at the end point levels, since most ground level implantation and feedback evolve and generated there. Secondly, the involvement of this level allows the inclusion of SOPs as an entity, thus providing better insight and

understanding of what the participant's perception of SOPs is (see Table 6).

5.3) Identifying themes:

In order to utilize the data collected from the participants efficiently, it was important to identify and note any existing common pattern and pinpoint the differences in information obtained from the interviews. Therefore, the interview transcripts were reviewed in detail and data extracted in a systematic manner. That was achieved through a coding process which later helped in generating distinctive themes, which was built into a framework that assisted in answering the research questions (refer to section 3.1 and 3.4a.1.1).

Participant code	Profession and facility	Level
AW	Medical doctor and disaster manager / MOH EOC	National Level
AA	Medical Doctor and disaster manager / Royal Hospital	Local/Corporate level
FA	Medical Doctor disaster manager / Royal Hospital	Local/Corporate level
MA	Medical Doctor disaster manager / Al Nahda Hospital	Local/Corporate level
SW	Medical Doctor and disaster manager / Health directorate of Muscat Governorate	Governorate/ Governorate level

Table 6 Research participant information. Source: author.

A total of twenty-two codes were generated from all eight interviews. The pattern of data repetition within the codes gave raise to two main themes. The first theme was the flexibility and rigidity perspective theme, and the second theme were the implicit and explicit perspective theme (see section 3.4a.1). It is worth mentioning that the interview's questions assisted in

generating these themes, since the data provided by each group of questions helped in targeting a specific theme, and the content of both themes helped in answering the research questions.

5.4) Interviews data analysis:

Initially it was crucial to explore the participant's understanding of standards, in terms of what they are, and their role and impact on the Omani health response system. Four out of eight participants (50%) showed a clear understanding of what constitutes a standard, whereas the other four participants (50%) were not able to demonstrate a clear demarcation between standards and SOPs. Basically, half of the participants did not fully understand the difference between standards and SOPs, confirming assertions that these terms are often used interchangeably (see chapter 3). Subsequently, this affects the perception of standards, which reflect the importance of setting the terms of references in this regard (refer to section 4.1.2). Furthermore, all of the participants (100%) agreed that standards (from a plan standpoint) have a functional enhancing impact in terms of improving response efficiency, response time, delegation and accountability. This augments the finding in the literature review section which addresses the importance of standards in enhancing response outcomes. Furthermore, it shows that standards are of great importance in the Omani system, as it provides a level of needed cohesion between stakeholders. In terms of information flow and knowledge transfer, seven participants (87.5%) agreed that it has an enhancing effect. The general observation here suggests that the Omani participants consider standards as a pillar in providing clarity during the response phase, which is paramount in a chaotic environment (see section 2.5).

In other words, the findings discussed above demonstrate that standards in the Omani emergency health response are perceived from a functional standpoint. Moreover, in terms of the effect of standards on health response uniformity, all of the participants (100%) agreed that it has an enhancing impact. In addition, eight out of eight (100%) participants expressed the importance of the presence of rigidity in the standards. Five out of eight (62.5%) agreed upon the need for the presence of a considerable degree of flexibility. The other three participants (37.5%) agreed that the level of flexibility should be kept minimal. The three last findings clearly illustrate the participants' understanding of the dynamics and variables identified in the previous chapter on the continuums. Furthermore, it shows the variation in preferred level of blend between both ends of the continuums, which further illustrate the presence of movement within the framework.

5.4.1) Understanding of standardization via standardization perspective:

The importance of understanding standards as an entity is key for the involved stakeholders. It is crucial to recognize that this entity is not confined to a single aspect of the response process, but rather impeded as a base component throughout this phase. Therefore, the ability of stakeholders to define standards is paramount, as it will serve as the very foundation for the response plans, which will be based on them. When the first question was asked about the participants' opinion of standards and what the role of standards is, most of the respondents provided different answers. However, they agreed on a common theme, which will be discussed later in this section. One participant stressed the importance of defining standards, stating that:

> *"…. we should be able to define, when we standardize emergency response... We should be able to define what is our acceptable minimum standard for the response. As far as if we're discussing about time, capabilities, resources, logistically, as well for continuation. But, the most important thing is that we have to define what that minimum standard is, for our setting…." AW.*

This statement demonstrates that the Omani system's interest in standards is derived from a functional aspect. In other words, the main objective when defining standards is to provide a functional foundation for whomever is to be involved in the response. Standards provide a level of similarity among the involved stakeholders, whether organizations or individuals, in terms of the preparation and application of a health response (Picard 1978; Jeannet and Hennessey 1988). This launches a neogenesis to uniformity which is a rather desirable outcome of standardization (Shierif 2006; Saltzman et al. 2008, Gao et al. 2014), which begs the question, why do Omani health response stakeholders aim for uniformity?

To answer this question, it is important to acknowledge that disasters are complex in nature (Alexander 2005). Moreover, numerous interdependencies will, and should, be created between involved organizations, and even within the same organization (Tang and Shen 2015). These interdependencies can cause a blurring effect in terms of duties and responsibilities (Smith and Dowell 2000).

"…Standards provides you actually with a skeleton of practice that actually can be applied to everyone to the most junior physician to the most senior by eliminating or by minimizing the variation in the practice…" AA.

This statement was further supported by both participant AW and SW who highlighted that:

"…we already know the responsibility and who is responsible about what part and what is the role that they play it will be easier if it is standardized earlier so everybody knows what they are doing, what are their roles and responsibilities and what is required from them earlier…" SW.

"…when you standardize a system, basically, everyone walks into that system understanding that they've attained a certain level. So, you already remove cultural, or social, or mental biases that people may have in an emergency response. Because, unfortunately, or fortunately, emergency response managers come from all different fields…" AW.[24]

These statements suggest that there is a general understanding among the respondents that organizations/personnel involved in the Omani emergency health response process consider standards to be a key asset

[24] Has relevance for both continuums

and contributor to attaining optimal efficiency during the response (Bjorn et al. 2009) as it provides a functional common ground for consensus and mutual action between stakeholders. An established common ground has the tendency to reduce individual mentality and bias (Hanseth et al. 2006), which facilitates better integration at an organizational level, eliminating organizational and individual freedom, latitude and personal scope (Alexander 2005). This will aid in harmonizing different systems from different backgrounds, which lead to uniformity.

"…we have people from the army, from the police, from the government sector. This, in itself, culturally or mentally, causes the responder to feel that there is a hierarchical distance... difference. So, if you feel that you have attained a minimum standard that is acceptable, therefore you feel you're already on equal par at some level…" AW.

Although uniformity is a sought-after end goal in standardization, it sets the stage for a fundamental bifurcation in the standardization pathway where standards are utilized in plans and transfer their attributes to them. This absorption of the key attributes of standards into plans also facilitates and initiates a process of fusion between both standards and plans. Moreover, it illustrates a high level of interdependency and interconnectivity between them, rendering them as a single unit from the perspective standpoint. This unity between standards and plans from a perspective point of view was evident when the participant MA stated that:

"…If you've got a standard that these wounds should be considered as contaminated wounds, and we'll not suture them the moment they come to the emergency department. So, this is our standard…" MA

This statement shows how the respondent replaced the word plan with standards. To elaborate further, the example that respondents used earlier clearly discuss treatment plans rather that standards, yet he opted to use the word standards. This suggests that the interviewee's perception for both is the same, justifying his usage of both words interchangeably. In other words, this statement illustrates how health professionals perceive standards as an entity that plans are written around and designed to preserve their integrity. Put simply, this statement demonstrates how standards and plans belong to the same being, and how they are perceived

as a part of a whole. Consequently, they interact and influence each other and intimately coexist with each other (refer to chapter 2 and chapter 4).

On the other hand, some participants did not use both words interchangeably. However, they illustrated that plans and standards share the same perception but from a different angle, as demonstrated in the statement given by AW:

> *"... First of all, you'll have negativity from the responders, because they believe now that there's a plan, and they've trained on it, and now, suddenly, they're bringing us standards that we can't achieve, therefore we'll always be failures. Which we're not, because you have to realize they have a certain set of capability for that plan..." AW*

From the above statement, we can observe that this respondent was constantly looking at both standards and plans with a performance-related mentality. The respondent ties the outcome of plans to the standards used. The failure and success of a plan depends on the standards used, therefore from an outcome point of view there is no difference between the two. Indeed, from the end user perspective, they are considered the same entity with different names. Therefore, to eliminate any further confusion in this chapter, this researcher, will refer to both standards and plans as standards, from this point onwards, since both are perceived to be the same.[25]

Referring back to the split in the standardization pathway, it could be appreciated (the split) in two points. Firstly, in the timeline control pathway (command and control) in the form of rigidity and flexibility continuum, and secondly, in the execution line (clarity and cohesion) in the form of the explicit and implicit continuum. In other words, different approaches could be taken to achieve the desired uniformity, and each approach or pathway will determine the perspective of standards/plans. Furthermore, the type of standards used will shape the final form of the

[25] Plans and standards will be referred to as standards from this point forth.

plan in reference to the continuum and locate it into one of the suggested quadrants of the framework.

5.4.2) Standards in view of the Rigidity and Flexibility continuum through participants' perspectives and its movements in the continuum:

Reflecting back to the framework chapter (section 4.1.2), standards are the minimal requirements needed in order to reach acceptable functionality. This begs the question: what are the minimal standards needed in disaster management in general, and health emergency response in Oman in particular? And what are the elements involved in determining this minimal level? And most importantly, who is supposed to set this benchmark? Despite the importance of all of these questions, this research does not attempt to answer them, and they are a subject for future research[26]. Instead, this research will discuss and try to understand the current standards in Oman through the perspectives of involved personnel/stakeholders.

As explained earlier in this chapter, much of the Omani health response system is centrally controlled. Therefore, the command and control is often run centrally, tightly and formally. In most cases, this type of system has pre-set goals, objectives, strategies and predetermined resource allocation (Pearce et al. 1987; Dibrell et al 2014). Moreover, the findings reflect a tendency or preference in the Oman health emergency management system towards a top-down and command and control system. Additionally, the findings from the interviews largely suggest that the focus is very much on securing better outcomes and clarity within the system. This was strongly confirmed by the respondent SW, for instance, when he/she stated that:

[26] See section 6.2

"…if I have standardized for example a plan it will be easier for me to know who is responding and at what point they are responding. The distances have already been pre-calculated, the resources have been pre-calculated, the resources are already allocated so it would be easier for us to arrange ourselves and get everything done at that point…" SW[27]

This indicates a high level of rigidity in that system, though this method (rigidity) is perceived as more efficient from a control standpoint. This is very noticeable at the central level (being organizational or national), which is extremely beneficial during the chaos of a disaster (Leontiades 1983; Silverblatt & Korgaonkar 1987; Piercy & Morgan 1994; Ansoff 1994; Miller & Cardinal 1994). However, efficiency can be curtailed in highly uncertain conditions such as disasters. In addition, extreme rigidity in command and control can lead to an unavoidable system failure. Referring back to the framework (section 4.1.3), rigidity is defined (placed in the continuum which represents the command and control) as an extreme control of the timeline in a sequential manner. Every step has to be done at an exact, designated time. The golden question, however, is what would happen if there was a failure in the completion of a given step within this timeline? After all, during disasters, especially during the response phase, the level of uncertainty is very high. This increases the chances of suboptimal performance and the possibility of failure in achieving the task in the assigned and pre-set time frame (for whatever reason). Moreover, since the timeline control is designed in a strict sequential manner, the failure of a step could undermine, even paralyze, the whole system as each step is dependent on the previous one. An interviewee commented that:

"…And I think if something is rigid, it breaks. It's... It can't move. That's in my opinion.", "…if you bring in a standard that is too rigid, or is too overburdening on the staff, or on the responders …It's not like, every response is going to be the same. So, if... I believe, in particular, a rigid plan, you have failed to prepare and, therefore, prepared to fail…" AW

[27] Relevant to the explicit implicit continuum.

Therefore, several of the interviewees asserted that added flexibility should be beneficial because it adds room for maneuverability (see table 7) (Hodge et al. 2013). They also intimated that this had resonance during a health emergency response, where the lack of resources and the inability to apply rigid standards can lead to a major ethical dilemma (see also Government Accountability offic 2008; Reilly and Markenson 2011; VanVactor 2012; Hodge et al. 2013). Therefore, challenges posed by disasters should be allowed a context of flexibility that will give room for innovation and improvisation in order that they be overcome (see Table 7).

"…a health care provider with standards need to be realistic, you need to be flexible, when we plan our responses it has to be actually in a balanced way that doesn't deviate from our resources…" AA.

Overall, the findings so far illustrate that the interviewed Omani health professionals are also aware, to some degree, of the constraints and potential dangers of too much rigidity. They also think that the incorporation of flexibility would be beneficial to the current standards (see Table 7). The aforementioned necessity of incorporating flexibility and rigidity (see section or chapter 2 and chapter 4) suggests the relation between both ends of this continuum is close, rather than being apart. Furthermore, they function in close proximity to each other. Thus, the success of one end of the continuum does, in practice, have implications for, and even depends on the other. There is a mutual relationship between them, which is inclusive rather than exclusive, and with the joint aim of facilitating better functionality and achieving the standards' desired end goals. Therefore, we should recognize that standards, which will be applied by stakeholders, should be composed of a mixture of both elements of this continuum rather than consisting of a single element. This mixture establishes standards from the participants' perspective as a dynamic entity which moves along the continuum rather than being a static object that imposes an auto-rejection to any given changes. This was evident through the responses (Table 7) when participants were asked about the type of

standards currently available, and what types of standards were desirable in the future.

5.4.2.1) Findings on Current Standards:

As a general observation from Table 7, none of the people interviewed perceived the current standards as either extremely rigid or extremely flexible, but rather a mixture of both. This finding has two implications. The first implication is that, by highlighting the importance and necessity of avoiding extremes, the consensus among interviewees on standards was that they did not support completely rigid and highly structured standards that would eliminate improvisation and innovation entirely. Moreover, nor did they support a major reduction or a complete absence of structure that would leave any disaster response without a general skeleton plan to be followed, and thereby remove any likelihood that health emergency planners could be left legally liable (Schultz and Annas 2012; Hodge et al. 2013). This was further explained by the respondent SW when she stated that:

> *"…if we have it semi-rigid then it means people know exactly what to follow, what are the rules that need to be followed and where can they break it when it is semi-rigid…". SW.*

The second implication is how the participants perceive flexibility and rigidity as coexisting with one another; that both belong to a single entity, which is the rigidity-flexibility continuum. Therefore, the present ratio of flexibility and rigidity within the standards determines the standards' position on the continuum, and as the ratio changes the position of the standards also changes. For example, the respondent AW stated that:

Participant code	Current standards	Future desire	Gender	Geographic location	Level	HERM Experience	HESS experience
AW	Balanced	balanced	M	Muscat	S/T	4+	2+
AA	Semi-rigid	Balanced	M	Muscat	T/O	4+	2+
FA	Semi-rigid	Semi-flexible	F	Muscat/ Dhahra	T/O	4+	2+
MA	Semi-rigid	Semi-flexible	M	Muscat	T/O	4+	2+
S	Semi-rigid	Semi-flexible	F	Muscat	T	4+	2+
KH	Semi-rigid	Balanced/ Semi-flexible	F	Muscat	S/T	4+	2+
MT	Semi-rigid	Semi-flexible	M	Muscat /Dakhlia	S/T	4+	2+
LA	Semi-rigid	Semi-flexible	F	Muscat	S/T	4+	2+

Table 7 Participants view of standards in view of rigidity-flexibility continuum[28]. Source: author.

The second implication is how the participants perceive flexibility and rigidity as coexisting with one another; that both belong to a single entity, which is the rigidity-flexibility continuum. Therefore, the present ratio of flexibility and rigidity within the standards determines the standards' position on the continuum, and as the ratio changes the position of the standards also changes. For example, the respondent AW stated that:

> *"…if you bring in a standard that is too rigid, or is too overburdening on the staff, or on the responders, the responders are likely to, you know... First of all, you'll have negativity from the responders…… so, you have to make sure that that standard is malleable, and is well-adaptable…"*

His/her statement demonstrates the standards' position in relation to the continuum. The usage of the term "too rigid" implies the beneficial impact of rigidity in moderation. Moreover, the word "malleable" suggests that

28 HESS: Health Emergency Services System.
HERM: Health Emergency Response Management.

standards should have an acceptable level of flexibility that does not lose the necessary integrity of standards (Kala and Thursby 1994; Liker 2004). This paints an overall picture that the respondent wants moderation in a given standard. This places his perception of standards midway between both ends (balanced). A close examination of the responses made by other interviewees such as FA, MA and SW reveals statements that indicate that the current standards are semi-rigid, placing them in the first quadrant (since it's on the rigid part of the continuum).

Findings on Future Standards

Furthermore, all eight of the respondents said that, in the future, they desired semi-flexible standards, which falls into another part of the continuum. This perception of standards can be situated just beyond the middle of the continuum where the explicit-implicit continuum intersects with the rigidity-flexibility continuum (see Figure 8). This was further illustrated in the comments made by KH:

"…I would think them going towards between semi flexible, because when you think about them listening to the people right now and trying to actually adjust with whatever people are saying, then you think that they want to go towards giving people some delegation and listening to them more and allowing them to be a bit more creative…" KH

This statement demonstrates that a process of change is in place. In other words, the concerned authorities are well aware of the current positioning of standards and the authorities are engaged proactively in an attempt of adding an element of flexibility. This further supports the current standards trajectory demonstrated in Figure 8.

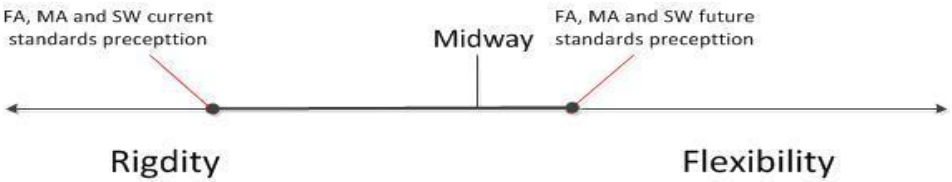


Figure 8. Rigidity-flexibility current and future perception. Source: author.

5.4.3) Standards in view of the explicit and implicit continuum through participants' perspective:

Reflecting back to the conceptual framework (section 4.2), this continuum is mainly concerned with the implementation of standards. Unlike the rigidity and flexibility continuum that focuses mainly on command and control in terms of the timeline, this continuum pays close attention to clarity and cohesion in terms of the procedural sequence at the level of a single organization or at the level of multiple stakeholders. Furthermore, it represents the element of the SOPs in the health response system in terms of implementation, which will clarify the Omani's perception at the executional level. Moreover, the importance of this continuum is that it shows the effect of standards at ground zero, as well as its effect on the end users. Furthermore, it illustrates the health response's complexity and the sheer number of factors that can easily affect the execution of standards.

Findings on Current Standards

Indeed, in this continuum, many actors and factors contribute in shaping how standards are formulated and how they are perceived by the involved organizations/individuals. Some of the factors range from legislative implications to the general cultural attitude of the area, country or community. To further elaborate, let us reflect on the previous sections of the flexibility and rigidity continuum (section 4.2, 4.2.1), as well as the Omani system (section 5.1, 5.1.1, 5.1.2).

Participant	Current standards	Future standards
AW	explicit	explicit
SW	explicit	implicit
MA	explicit	implicit
KH	explicit	implicit
MT	explicit	implicit
LA	explicit	implicit

Table 8 Participant's view of standards in relation to the explicit-implicit continuum Source: author.

The general observation was that the current Omani system is a centrally controlled system with a top-down pattern. Additionally, the perception of standards among emergency health personnel is function-oriented. These two factors managed to influence the respondents' perception at the flexibility and rigidity continuum level. This perception places standards in the rigid part of the continuum. Similarly, if the same factors are applied under the same circumstances (top-down aspect and functionally aspect) at the executional level (the second continuum), It could heavily influence the current and future perception of standards.

Referring back to the Omani disaster management system and the health response system in Oman which was mentioned earlier (section 5.1, 5.1.1, 5.1.2) most of the involved stakeholders, especially in health response, are governmental agencies. Moreover, many of these agencies are uniformed such as the armed forces, health services, EMS, PACDA and the ROP health services. Additionally, the general attitude of the MOH in Oman leans towards the attitude presented by the uniformed stakeholders. As a result, the findings suggest a very high level of explicitness is generated in the health emergency response phase, at least at a single organizational level. This implies elevated degrees of clarity and cohesions. This observation was also verified by the statements of both AW and LA when they said:

"… we here practice the 1st option (explicit standards which takes you in a sequential manner through who is responsible for a group of tasks and how it supposed to be done step by step (control that sequence tightly of both who and how). The reason being is that we deal with government agencies and agents…" AW

"… What I'm saying is if you know what you have to do, it's easier for you to bring the plan into action, but when the plan is not really clear, it might create a taste of chaos when it's brought to action because the responders won't know what to do. Basically, there won't be any cohesion between the responders…" LA

AW's statement illustrates that the respondent's perception of current standards is heavily influenced by the existing Omani system. This is common in a governmental hierarchical top-down system with a bottom up loop (Alexander 2016). The statement also implies that if the system changes the perception, it will shift as well in order to adapt (Boin and t'Hart 2010). Furthermore, the second quote by LA clearly demonstrates how the participants consider clarity and cohesion as being of great importance, which confirms the significance of high degrees of explicitness, which is exhibited in uniformed governmental environments. This illustrates that the current perception of standards in Oman favors explicit standards.

The interviewee also touched on a very important and sensitive matter in the world of disaster management: the integration of the private sector in health emergency response plans. A question that arises is what is the effect of this integration on the system in general, and standards perception in particular? Although this research does not answer that question, it could be a potential area for future study as an expansion on this topic. Nevertheless, the presence of these explicit standards can act as a legislative shield to the people involved (Hoffman 2007; Institution of Medicine 2009; Rothstein 2010; Khan 2010; Annas 2010). This is because the standards are backed by policies, and occasionally Royal decrees (MacConnell and Drennan 2006; Tang and Shen 2015), which further reinforces a pre-existing hierarchical system (see section 5.1). Therefore, it is normal for the stakeholders - whether at the organizational and/or individual level - to seek to have these types of standards because they can provide a sense of security. In other words, explicit standards are an effective tool to avoid blame, which is viewed as a performance enhancer in a blame dominated culture (Brändström and Kuipers 2003; Boin et al. 2010; Miles, Bang and Gordon 2017).

Serious drawbacks emerge in the pursuit of a greater sense of security. A common limitation experienced when applying these types of standards arises from the way they were conceived. Since these types of standards address the 'who' and the 'how' questions, it can substantially narrow any room for maneuverability and improvisation (Hamel 2006; Ho and O'Sullivan 2017). Findings from the interviewees highlighted that they were aware that such a narrowing of maneuverability might create overdependence on a unidirectional trajectory and an over-reliance on a single rhythm during all disasters, which can be dangerous, since no two disasters are similar. One respondent (SW), for example, stated that:

> *"…I would rather have an implicit standard which also addresses the who and how, but with loose sequential control of both who and how. Reason being not every scenario is a text book scenario…" SW*

The previous statement suggests that the respondent recognizes the current standards as explicit standards.

Findings on Future Standards

Nevertheless, the findings also suggest that there may be a preference for having less explicit standards in some instances in order to build in the corresponding need to safeguard adaptation in times of crisis and disasters. The same respondent (AW), for example, also acknowledged that disaster scenarios continue to change, and a set of standards that fit a single given response may not be suitable for others. Furthermore, the usage of the word 'rather' by the participant affirms that he/she perceives the current standards as suboptimal standards, which can be enhanced by adding a certain degree of implicitness that will allow some room for innovation and also help to build managers' intuition. In other words, the statement shows that even though there is a need for greater clarity, there is also a strong awareness of flexibility, and this requires standards not to be too explicit or constraining, implying some room for freedom or allowing some implicitness. This was further confirmed by respondent (AW) when he said:

"…With the above said I feel that this type of practice causes for a breed of "uncreative and reactive emergency managers…" AW (this is a continuation of his previous statement when he clearly stated that he prefers explicit standards).

The importance of AW's statement above is that it supports SW's perception of the current standards and desired future standards. More importantly, it points towards a very important matter, which is how the standards' typology can actively affect the proactivity of the stakeholders. In other words, within the Omani health response system, most stakeholders can execute the same action, though they may differ in their efficacy. Based on that, and if the current standards are explicit, then the question of "who will execute a task?" is firmly answered. Therefore, if we assume that the level of explicitness is very high/notable and an organization failed to fulfil the task during the disaster responses for some reason, the other stakeholders who could provide the same services will not have the initiative to take over the assigned task, but instead wait for clear orders and react accordingly. In a situation where the order is not received, the task will remain on hold (paralyzed). The general observation here is that the higher the explicitness in perception level, the higher the risk of execution paralysis. Thus, like the rigidity and flexibility continuum which showed that a mixture of both is important, the same applies to this continuum, and similarly can help in illustrating the movement along this continuum. This was evidenced by participant MT when he stated:

"…explicit, yes, it's good because it will identify the roles of all stakeholders. They know what to do. You know what to do, you know what to follow, and according to that. What I mean by rigid and flexible, that you have something to follow. Once you see this thing doesn't work, then you change it. This is the implicitness. It doesn't need to be a very implicit but is needed…" MT

5.4.4) Movement along the explicit-implicit continuum:

Similar to the rigidity-flexibility continuum, the interview data illustrates that there is movement along the explicit-implicit continuum. For example, the participant SW stated that:

"… would rather have an implicit standard…" SW.

As mentioned previously, the participant perception of the current standards is quite explicit. The findings suggest that respondents perceive the current standards as having a large degree of explicitness written into them. They are perceived as being quite explicit standards in terms of their presentation and writing. Moreover, SW's statement above illustrates that SW's *preference for future standards is perceived as implicit*. We can observe here that the position of the standards shifted toward the implicit part of the continuum. However, the usage of the word "rather" implies that, despite the desire to have very implicit standards, the interviewee acknowledged that the Omani system will not allow the standards to move far from the explicit side of the continuum. Therefore, the amount of possible movement could be confined to a narrow part of the continuum, and this can happen in the near future (see Figure 9).

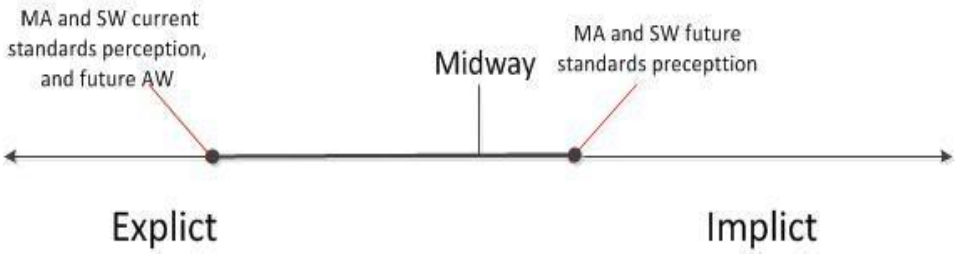


Figure 9 Implicit and explicit current and future, Source author.

5.4.5) Two-dimensional motion: The Findings at the Joint Interaction of the Two Continuums[29]

With reference to the framework (chapter 4), including Figure 4, the latter shows that both continuums belong to the same entity, react to each other, and vividly influence each other. It is worth mentioning that both continuums address two crucial aspects of standards perceptions (current and desired future)—perception of the timeline and the procedural perception. Therefore, it is important to underline that movements in both continuums can occur simultaneously.

For example, the participant SW, when asked about her view of the current standards in terms of rigidity and flexibility, stated that:*"…Yeah, for me I would go with something semi-rigid…" SW.* Similarly, the participant MA said:*"…The yellow one, the semi-rigid, which is number two…" MA.* This placed their perception of current standards in terms of the rigidity-flexibility continuum somewhere midway between the intersection point between both continuums and the extreme rigid part of this continuum. On the other hand, SW indirectly acknowledged that the current available standards have a quite elevated level of explicitness. As a result, this places the standards close to the extreme end of the explicit end of the continuum, thereby placing the current standards in the upper-outer part of the rigid-explicit quadrant (see Figure 10). Another respondent (AW) stated that: *"…I think our plan, at present, is balanced…" AW.* From this statement, one can place the current standards midway between both standards. But at the same time, he added that:

> *"…as an emergency manager, or an emergency director, or as an incident commander, have to be able to tap into certain revenues on your own, with your own mind. I mean, you just can't stand there like a statue, or a robot, and say: this is what the plan says…" AW.*

29 The responses of the participants suggest that all of them and the evolution of their preferences towards standards can be located and conform to the triangles (AW and SW) outlined in Figure 10. All the participant trajectory triangulation is similar to AW or SW triangles.

This statement can act as a drag force to the current midway position of his standards, as it addresses the need of flexibility, thereby pulling it towards the flexibility quadrants. In other words, the findings from these respondents shows that they are aware that having more implicit standards may improve adaptation and flexibility. This moves the respondent's perception of the Omani health emergency management plan and system towards the flexibility quadrant. They have demonstrated awareness of the link between implicitness and flexibility as a future objective or preference. Furthermore, respondent AW pointed out that:

> *"... we here practice the 1st option, explicit standards which takes you in a sequential manner through who is responsible for a group of tasks and how it supposed to be done step by step (control that sequence tightly of both who and how) ..." AW.*

This indicates a high level of explicitness in standards, which places the location of his perception of the current standards in the flexible-explicit quadrant, roughly around the upper-inner part of this quadrant (see figure 10). Furthermore, the participant added that: "*…The reason being is that we deal with government agencies and agents…" AW.*

This implies that in the future, if there is an active integration between the governmental and the private sector, this implicitness will change, since all of the stakeholders belong to the same sector (governmental/public sector). The respondents have provided hints towards a very possible change in the future. The change indicates a shift of their perception of effective standards to one that is more implicit rather than very explicit. Furthermore, when a respondent was asked about his future view of standards in terms of rigidity and flexibility, he provided a very firm answer by saying: *"...I would like it to remain balanced…" AW.* This response places his perception of future standards in two possible quadrants. The first is the lower inner part of the flexible-explicit quadrant, and the second is the upper inner part of the flexibility-implicit quadrant (see the blue triangle in figure 10). Similarly, another interviewee said:

"…I would rather have an implicit standard which also addresses the who and how (but with loose sequential control of both who and how) Reason being as follow: a certain amount of flexibility should be allowed…" SW.

Based on this statement it is clear that the respondent's perception of future standards is based on the flexible-implicit quadrant. However, the usage of the word "rather" (as discussed above) keeps it close to the rigidity-flexibility continuum. Moreover, usage of the word "certain" suggests a shift closer to the explicit-implicit continuum rather than the flexibility or rigidity ends. This suggests that it might be located either in the inner upper part of flexibility-implicit quadrant, or the inner upper part of the rigidity-implicit quadrant (see the red triangle in figure 10).

These two examples suggest that the Omani general perception of health emergency response follow relatively the same pattern, which encompasses both sides of the continuum. The tendency is to keep closer to the rigidity and flexibility continuum as well as the other continuum. However, referring to Figure 10, the general projection is heading towards the upper inner part of the flexible implicit continuum.

To summarize, the current Omani Emergency health response sector's plan is fairly rigid-explicit. This could be due to several reasons, such as the fact that all stakeholders are from the governmental sector. Additionally, most of these stakeholders are uniformed organizations (such as armed forces, ROP etc.) that are highly rigid and explicit. Moreover, the way that the health sector and the emergency response sectors developed in Oman enforced a central top-down attitude which further enforced the current rigid-explicit environment. However, as the country develops and the resources become available in the periphery, along with the evolvement of perceptions held by involved personnel and possible future private sector participation, the general direction of future standards is pushed towards more flexible and implicit standards. Then again, the general realization of the participants that the governmental

sector remains, and will remain in control, has kept future perceptions from drifting toward extreme flexibility and explicitness, and instead close to the balanced zone.

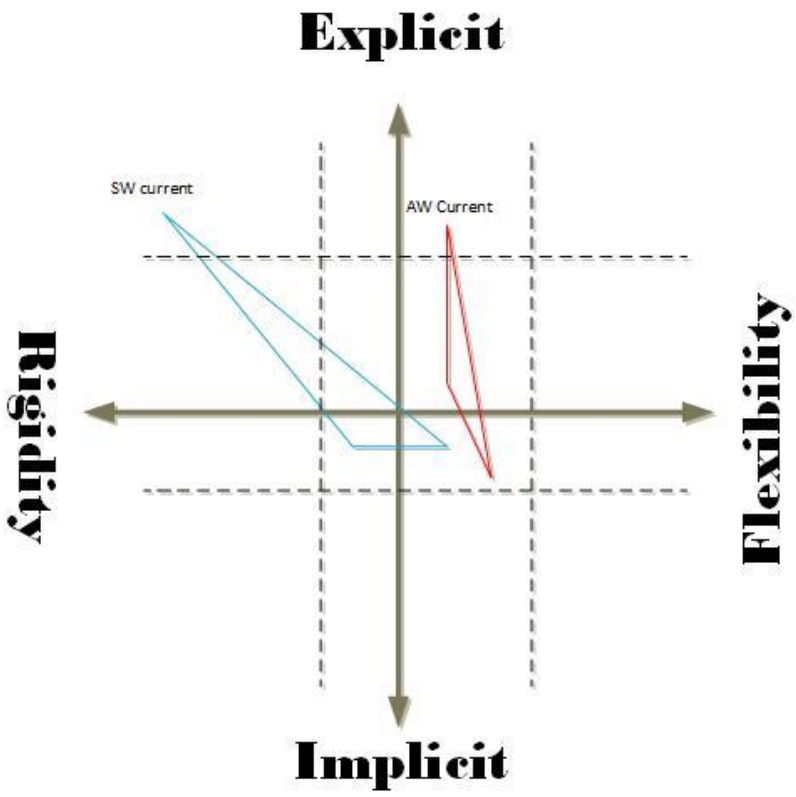


Figure 10 Two dimensional current and future perception. Source: author.

In this chapter, the thesis presented a relatively detailed explanation of the history of the disaster management system and health response system in Oman and how they evolved. Furthermore, it explained how this evolution established a system that includes a strong degree of centrality and consequently led to a largely top-down system with bottom-up resonating loops, which acts as a distinct feedback mechanism. The importance of these developments - in the context of this dissertation - is that it highlights

the key connection points between the current system and how standards are perceived by the interviewees.

In other words, this chapter offers key insights into where the current standards are now, and where they are supposed to be, and how they can be understood, via a key data collection in Oman that is interpreted by the conceptual framework outlined in this dissertation. Next, this chapter attempted to answer the second research question (see section 2.1) by analyzing and interpreting the data collected from the participants. This demonstrated that the interviewees' perception of standards and plans are the same and that plans acquire the same characteristics and attributes as standards. Finally, an attempt was made to answer the first research question (see section 2.1) by obtaining an in-depth understanding of the participants' current perception(s) of standards, their preferences on their future desired trajectory and relating them to both the current system as they see it and the conceptual framework (outlined in Chapter 4).

Chapter Six: Conclusion:

The world witnessed a noticeable rise in disaster frequency and complexity in the past few decades. As a result, the general population and organizations responsible for managing these incidents have become increasingly aware (Alexander 2005).

Moreover, future prediction indicates that the frequency and the level of complexity of these disasters will continue to increase (OECD 2003; Perrow 2007) because the current technological advancement in various aspects of life in most societies will play a major rule in increasing their vulnerability (Turner 1978; Perrow 1984). Therefore, in order to reduce these vulnerabilities, standards should be in place to help effectivity manage disasters (Atherton and Gil 2008; Broadribb 2015) and form the foundation of disaster response. This will subsequently help to achieve better results during the response by coordinating and managing any complex interdependency between different organizations and stakeholders within the same sector or different sectors (Tang and Shen 2015).

The health sector is considered a key player during most disaster responses; therefore, it should be accorded special attention since it deals with the important and sensitive matters of public health (publichealthmatters.blog.gov.uk nd; Hanfling et al. 2004; Hodge 2006; Hodge et al. 2013;). This sensitivity is driven by the fact that this sector addresses and manages any inadequacy in the health system, which is identified and magnified by the general public, especially during disasters. Therefore, standards play a key role during a response because a high level of order is required in this sector to avoid conflict and achieve the desired results. However, achieving desired results could be hindered by numerous factors such the lack of resources or the lack of legislation (Government

Accountability office 2008; Reilly and Markenson 2011; VanVactor 2012; Hodge et al. 2013). These factors can heavily influence the dynamics and attributes of standards. In other words, it can alter their degree of rigidity and flexibility and how they can integrate with each other in a given organization or a set of different organizations.

The mentioned alteration in the attributes of standards can have a profound impact on the response as a system on a functional level in terms of efficiency, communication, response time and so on. Put simply, attributes of standards act as a drive for the response phase and can heavily influence the outcome. That being said, standards are usually looked at and evaluated from the functional scope, which can cause a premature elimination of a different aspect of standards that can be used as an important tool for further revision and evaluation. This statement can be applied to disaster management in the Sultanate of Oman in general, and to the health sector presented by the emergency health response sector in this research. In Oman, the standards of the health sector's response are produced, applied and revised based on response outcomes and the dynamic created by these standards during the response phase. In other words, standards in Oman are considered less with regards to how those standards were perceived by the end user at the national, governorate and local/corporate levels. Therefore, this research attempts to address standards from the angle of perception by employing the current functional understanding of standards to explore how it is currently perceived by personnel involved in health emergency response in Oman, as well as how they want to perceive standards in the future. However, in order to achieve a good understanding of current perceptions of standards, this research went through several steps in order to reach a robust conclusion and practical recommendations.

The first step was of course secondary data collection and the completion of a targeted literature review. Initially, an extensive search was carried out on certain search engines such google scholar and the search engine

provided by Bournemouth University electronic library. During this search some key word were identified in order to facilitate and expedite article gathering. Additionally, a snowball technique was used in articles which were found to contain valuable data for this research in order to extract more essential information that can provide further stability to the literature review. Upon the completion of the secondary data collection, a gap was identified in the literature, which was supporting the initial idea was proposed by the research. Basically, up to the date of the completion of this research, there was minimal literature which addressed how standards are perceived in a health emergency response system in general, and specifically in the Omani health response system. Moreover, the few articles that were found in the literature were less relevant to the research. Furthermore, since most of the available literature discussed the functionality and impacts of standards and informs the work undertaken here, the main focus of this dissertation sought to contribute to an understanding of standards through analysis of the perceptions of end users. In other words, the research identifies key attributes of standards and investigates how the involved end users perceive it. Additionally, since plans and standards are closely related, and there is an abundance of literature on planning and plans, this dissertation also clarifies the established common ground between plans and standards in terms of their functionality, and more specifically how standards contribute to the functionality of plans.

The second step was the identification of the chosen research methodology. After reflecting on ontological and epistemological positions, a qualitative method was chosen since it helps to illustrate how participants perceive and deal with standards. Semi-structured interviews were also chosen as an appropriate way to collect data since it can capture in depth the current perceptions of participants. In addition, the dissertation also presents the key reflections and decisions taken in relation to

representative sampling of participants, ethical issues, limitations and more importantly the research hypothesis.

The third step was the design and presentation of a conceptual framework as a tool to provide further insight into perceptions on standards in health emergency planning. Key variables - those being flexibility, rigidity, explicitness and implicitness – were identified, backed by an elaboration of the main term of references – in order to set the scene in relation to conceptualizing and outlining the hierarchy of plans and respective integral standards. Here, the link between plans and standards was established from the perception point of view, and how they are perceived as the same for the end users. Finally, the designed framework was employed to establish four standard typologies: rigid explicit, flexible explicit, rigid implicit and flexible implicit. The designed framework in conjunction with the typology was used later to provide a structure and direct the empirical chapters.

Finally, an empirical investigation was undertaken with Omani participants in order to road test the validity of the proposed conceptual framework and use it as a conceptual tool to provide new insights into how standards are perceived by health emergency planners in Oman.

6.1) Answering the first research question:

In order to answer the question of whether we can further understand the use of standards through an extensive analysis of the perceptions of end users (the people who use standards) (see section 2.1). a clear understanding of the history of the Omani system was to be introduced. The importance of this introduction stipulates how the health response system developed and what the implication of this way of development is. This provides a better insight into why the current system was shaped to reach today's form. History, in conjunction with the data collected from

the participants, clearly explains the current system's centrality and how it is perceived. This centrality led to a current perception from the participants to be within the rigid-explicit and the flexible-explicit quadrant. Furthermore, the data analysis yielded that participants' future perception of standards, or to be more precise, how they want to perceive the future standards, landed within a very narrow zone in the rigid-implicit and flexible-implicit zone. Additionally, and as a general observation of the desired future trajectory, we can notice that the generated results lay within a close proximity to the rigid-flexible continuum.

Firstly, this suggests, and often confirms that: 1) the majority of Omani health emergency professionals perceive the existing health emergency system to be highly rigid with a strong emphasis on ensuring effective top-down command and control and; 2) that the main preference dominating Omani thinking on Health emergency management is to have explicit standards that will ensure clarity of decision making and identified hierarchies outlined in emergency plans. In addition, the generated results also confirm that Omani emergency managers see some merits to injecting a degree of flexibility into Omani Health emergency management standards to ensure that the Omani health emergency management system can still be adaptable to changing emerging hazards.

Secondly, the generated findings also confirm that Omani Health emergency managers recognize the importance of the explicit and implicit continuum. This suggests that they acknowledged that whether standards are explicit or implicit enough will affect the degree of rigidity or flexibility with the health emergency management system, suggesting that both continuums hold great importance in Omani perceptions. In addition, it is notable that most of the participants were constantly relating to the rigid-flexible continuum - even when asked about the second continuum - which reveals that they see a profound relationship between the two.

Thirdly, the findings also suggest that Omani emergency managers view the existing system as containing mainly explicit standards (see above); however, they also intimate that they see some role for having more implicit standards in some areas to support their preference for having slightly more flexibility within Omani Health emergency management system in the future.

Fourthly, the findings also highlight that more research and thinking need to be done on how the role and generation of new standards (including SOPs) and their future application within the Omani Health emergency management system will be undertaken in order to satisfy the preferences of Omani disaster managers to build slightly more flexibility into the system while still maintaining the benefits of a strongly top-down rigid command and control ethos that remains an important part of the way Oman conducts disaster management.

Overall this dissertation largely confirms that we can we further understand, for the most part, the use of standards through an extensive analysis of the perceptions of end users (the people who use standards). However, more work still needs to be done. In order to achieve this, we need to further develop the continuums as an analytical tool that could be used by emergency managers in Oman. In particular, it may open possibilities for establishing a stronger toolkit for practitioners when thinking about standards in HEM (see section 6.3).

6.2) Answering the second research question:

In order to answer clearly the second research question (Are health emergency response plans (HERP) and their related standards the same?) and taking particular account of the point of view of participants' perceptions, the research undertook a review of relevant literature available for both standards and plans. This showed that they often share

the same attributes (rigidity, flexibility, explicitness and implicitness). Moreover, both exhibited the same behavior when different attributes interact with each other. Next, the framework chapter showed how standards and plans belong to a same entity (see section 4.1). Moreover, the chapter showed how standards form a basic foundation of a plan; and how the attributes of standards are found across plans, making them mutually inclusive rather than exclusive (see section 4.1.2). Finally, this was augmented by data analysis of the findings from the interviewees, which showed that participants overwhelmingly viewed both standards and plans as functional tools serving the same purpose of driving and increasing efficiency (see section 5.4.1). Additionally, throughout the data collection and the analysis process most of the interviewees constantly and consciously used the terms ‘plans’ and ‘standards’ interchangeably, which further suggests that participants perceive both as the same entity (see section 5.4.1). There is therefore a lack of sophistication in understanding any differences between the terminologies and usage of plans and standards in Oman at present - providing an answer to the second research question (see section 2.1). Overall then, from the standpoint of perceptions, health emergency response plans (HERP) and their related standards are the same.

6.3) Moving towards a practical toolkit for HE managers*:*

The prior academic analysis can therefore act as the basis for the future development of a practical toolkit for health emergency managers, particularly in terms of providing practical guidance and insights on command and control and clarity and coherence aspects:

Command and control: when writing or evaluating standards there should be a very clear focus in Oman on command and control aspects. In other words, what is being commanded and when (in terms of time and duration) it is being commanded. At the moment, the findings of this research show that when thinking about what is being commanded and when, two practical tests could be applied. First, the rigidity test; where it is essential that the authority and hierarchy of the senior health emergency managers is strongly considered. The primary focus from perceptions of standards will be to ensure that Oman continues to make operational a largely top-down rigid health emergency system. However, the findings also suggest an awareness of the importance of flexibility. Therefore, a flexibility test also needs to be applied but in a secondary capacity. Here, when evaluating and writing standards, it is also important that some discretion is increasingly built into standards so that any lessons learned about flexibility from disaster training and experience can be accommodated and that the standards therefore allows for some adaptation.

Clarity and coherence: when writing or evaluating standards there should be a very clear focus in Oman on clarity and coherence aspects. First, there should be a clarity test; for the most part standards and SOPs should be as explicit as possible and in line with existing practice. This is important to ensure that the existing preference for a largely rigid top-down system is maintained. In particular, standards should be clear about who is supposed to carry on the task and how it should be done. However, greater attention will, over time, need also to be placed on determining whether having more implicit standards will also ensure the desire for some greater flexibility. Second, there should be a coherence test; in other words, whether the existing standards or new standards are coherent in setting out the relationship between the 'who' and the 'how'. And again, the focus on coherence should be placed in the context of having a largely top-down rigid system that delivers coherence, but also one that may have more

flexibility and implicitness built in over time. However, greater attention should be placed in allowing some discretion.

The desired overall outcome of using the continuums as a conceptual guide, and the further utilization of the four C's as a practical toolkit, should be to ensure that the detected desire of Omani health emergency managers found in this research leads to an effective semi-rigid health emergency disaster managed system in Oman.

6.4) Future research agenda:

During the course of this research, two potential areas of future research have been identified based upon participant responses. Firstly, to what extent does the Omani health manager understand the functional differences between standards, plans and SOPs? This inquiry was generated during the interview as some of the participants showed some degree of insufficiency in drawing a clear demarcation between all three entities. One potential future agenda could be to explore and reflect upon the nature and degree of training needed to optimize the performance of Omani health emergency managers.

Secondly, the research findings demonstrate that there is a robust understanding among participants of the rigidity and flexibility continuum. For example, they were constantly referring to this continuum in the context of responses to the specific interview questions, and some even went further in relation to the explicit-implicit continuum. On the one hand, this could suggest that the Omani Health Emergency system has a highly developed command and control system as well as a highly developed managerial sense of intuition in terms of command and control, with less attention paid to the clarity and cohesion between the commanded actions. On the other hand, the findings could be interpreted as showing the inability of Health emergency managers to comprehend the

importance of the explicit-implicit continuum or could indicate they that they are unwilling and have chosen to overlook the implications of the explicit-implicit continuum. This choice could be influenced by: a lack of training and experience, cultural resistance to integration, individual concerns over liabilities, and/or an organizational blame culture. Therefore, one further potential future research agenda is an exploration into the reason(s) behind the lack of focus on, or possible negligence of, the explicit-implicit continuum and its ramifications for effective HE management in countries like Oman.

Nevertheless, this research dissertation has clearly shown that further practical work and future research on standardization would be highly beneficial. Understanding standardization can help to shape more effective health emergency management in Oman and remains an important venture that could further improve health emergency planning now and in the future.

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APPENDICES

Appendix 1: Research questions

1. What in your opinion should the role of Standards in Emergency Health Response Planning be?
2. In what ways can the adoption of Standards assist in the development and implementation of Health Emergency Response Planning?

3. When conducting emergency response planning does your organization: (Yes/No):

- Use a known international standard for Health Emergency Response Planning?
- Use a known national standard for Health Emergency Response Planning?
- Use a corporate standard for Health Emergency Response Planning that your organization has devised?
- Use no recognized standard at all?

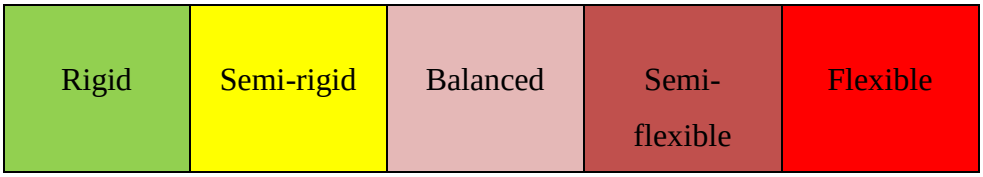
4. Can you elaborate on what those standards in question 3 include?
5. What in your opinion should be the relation between Standardization in health response planning and performance efficiency?

6. Would you rather have:

- A rigid plan with a clear instruction of what to do and when to do it?
- A flexible plan which gives a room for improvisation and innovation?
- No plans at all?

7. Can you elaborate on the reason for this choice?

8. In terms of quality of standards used in Health emergency planning (1 being rigid and 5 being flexible), where do you think standards should fall according to the spectrum?



9. What in your opinion should be the relation between Standardization in health response planning and organizational performance efficiency during a disaster in terms of :

- Knowledge sharing?
- Delegation of responsibilities?
- Response time (For example resources allocation)?
- External factors and hazard anticipation?

10. Would your preference be for explicit standards (that clarify tight sequencing of who is responsible for tasks and how they are done) or implicit standards that are less clear and have looser sequencing (regarding who and how)?

Appendix 2: Interview sample

AM Ali Muatasim

IE Interviewee

AM This is Doctor AW. Thankfully, he agreed to participate in my research. And I'll commence with the first question: Doctor A, what is your opinion and... What is your opinion regarding standardisation role in emergency health response plan?

IE My opinion, simply, is that I feel that we should be able to define, when we standardise emergency response... We should be able to define what is our acceptable minimum standard for the response. As far as if we're discussing about time, capabilities, resources, logistically, as well for continuation. But, the most important thing is that we have to define what that minimum standard is, for our setting.

AM Okay. So, what do you think the role of standardisation in certain areas, such as the hierarchical system area, the uniformity... How can it promote transparency and efficiency in health response emergency plan?

IE Okay, when you standardise a system, basically, everyone walks into that system understanding that they've attained a certain level. So, you already remove cultural, or social, or mental biases that people may have in an emergency response. Because, unfortunately, or fortunately, emergency response managers come from all different fields.

00:01:39

So, for example, in our settings, we have people from the army, from the police, from the government sector. This, in itself, culturally or mentally, causes the responder to feel that there is a hierarchical distance... difference. So, if you feel that you have attained a minimum standard that is acceptable, therefore you feel you're already on equal par at some level. This is my personal opinion.

AM All right. Okay.

IE And what was the other part?

AM Actually, I think it's... We'll just stop at this question, and we'll press to the next question, actually. And the next question is... Actually, this... The second and third question, it was the same question, but I split it in half. And it goes this way: in what ways do you think that adoption... and adoption offers a set of standards, can't help you...

IE Can't?

AM Can... Actually can help you in developing a plan and designing a plan?

00:02:34

IE Okay. If we were to take certain standards, one thing I would like from these standards, would be that they have already been rigorously looked at, and tailored. So, for example, today, let's say we were to take a health facility assessment, okay? What I would like from the standards that I choose, is that they have been reviewed, edited, run through the mill, tested, and then said: okay, we understand that these are our standards. But, that you allow for room for tailoring. If we were to take someone else's standard and adopt to our own, it might not actually work as a standard. The standard might totally demoralise what you're trying to do, or actually over-amplify what you have – you understand?

AM All right. I understand, yes.

IE So, I feel that it's always good to look at other people's standards. It's always good to look at what those criteria are, and why they chose those standards. But, at the same time, they have to... we have to be able to tailor those standards to fit what we are looking for when we standardise.

AM That's beautiful. That's beautiful. And this, exactly, will take me to the next question, which is: the same question, but instead of designing and developing, it's actually implementing the standards. I mean, what is the role of standards in implementing a plan, actually, which has been designed already by you?

00:03:58

IE So, if there is a plan that already exists, we have to make sure that the standards are within consistency to be able to actually allow that plan to work.

AM All right.

IE Because, if you bring in a standard that is too rigid, or is too overburdening on the staff, or on the responders, the responders are likely to, you know... First of all, you'll have negativity from the responders, because they believe now that there's a plan, and they've trained on it, and now, suddenly, they're bringing us standards that we can't achieve, therefore we'll always be failures. Which we're not, because you have to realise they have a certain set of capability for that plan.

And when we bring in these standards into the plan, we have to understand that the standard should not determine the plan. But, at the same time, the plan should no determine the standards.

AM The standards, okay.

IE So, it has to meet half way. So, let's say, for example, you expect a certain response time, from notification. If you put a very rigid standard, you might never achieve it. So, people will just look at the standard and

say, you know what: no matter what we do, the standard... we're never going to achieve the standard, so why bother. And that's not the role of standards. The whole point of standards is, getting people from one point to a point where you want them to be.

00:05:08

So, you have to make sure that that standard is malleable, and is well-adaptable for the plan, and the plan is adaptable for the standard.

AM All right. Okay.

IE Did I answer your question correctly, or…?

AM Oh, yes, you did actually. You actually did. Actually did. Now, for the next question I would like to ask you whether, here in our organisation... Oh, sorry, in the organisation that you're working in, do you use a known international standard for health emergency response planning? Are you using a known national standard for health emergency response planning? Are you using a corporate standard for health emergency response planning, that your organisation has devised? Or, there is no recognised standard at all?

IE Okay. At present...

AM And elaborate.

IE Okay. At present... Let me take the first one: do... Are we using an international standard for emergency response planning – yes. So, basically, before we are starting here in Oman, we started training on the ICS. And the ICS, as you know, is a very well-established system. It's very fluid, very adaptable, and it's been around for more than 40 years; developed by the United States Forrest Service. And used in, now, many countries. And, simply because it's scalable and adaptable.

00:06:20

And, at the same time, we chose that as the basis to start out training, because we felt people had to understand... You can have a plan, but if you cannot communicate that plan, for us it was zero, so we used the ICS before we started planning. So that was one standard that we used.

And then, that was... Some of the ICS was adapted to our features Oman. So, our governmental structure; our governmental hierarchy. Or, what would be, for example, the NIMS in the United... The NIMS in the United Kingdom, or in Europe, that some places use, as well. The goal... We used that, as well, as a standard. And it has been tailored to fit for our plan.

Okay, but, the core components of both the NIMS and the ICS have not been touched.

AM Okay.

IE Okay?

AM So, basically, you're saying... I'm just... I'm repeating what you are saying: you... we actually have adopted an international standard with plans?

00:07:15

IE Yes. Okay. And use a known national standard for health emergency response planning. As far as we are concerned for our emergency response, the national response, when I started initially, one of the national standards, was their risk assessment. So, there's was something done with the NCCD, which is the National Committee for Civil Defence, that is under the Royal Oman Police. Which was a VRAM, a Vulnerability and Risk Assessment Mapping study, that was one on the North-Eastern part of Oman.

And they came out with, I think, 10 or 12 national risks. And we used that as a standard, and we... I don't know if you could call it a

standard, but that's what... the standard risk that we took when we were doing our planning.

AM That was your baseline.

IE That was the baseline. That was the national level.

AM That was the national... Okay.

IE And, as well, they had a framework, the NCCD, for the sector of medical and public health response, they had a national framework, the first draft. And I don't know if that draft has been approved, or the plan has been approved. And then we used that to template our administrative health plans.

AM Okay. Ali, before proceeding to the fifth question, I would like to ask you... And, this is actually... it's, kind of, a... one of the core questions, but it's not written here. Do you consider yourself a gold, silver, or bronze?

00:08:41

IE When you ask me that, is that my function, my…?

AM Your function.

IE My function, at present, we are silver.

AM You are silver?

IE Yes, we're a tactical...

AM You consider yourself...

IE We're a...

AM You are a tactical...

IE Operational... Oh, no, tactical, not strategical, yes.

AM Okay. So, you think you're not strategic at the point?

IE At present, no, because the strategy is done here, in our country, up at higher levels: up at the Minister's office; the Under-Secretary's offices. Even though we are based under the Minister's office, as an emergency centre, we administer the response. And assist the response with the logistics, and so on, and so forth.

00:09:20

Yet, the centre can function at a strategic level.

AM So, you can actually...

IE Yes.

AM You can jump between gold and silver?

IE Yes.

AM You can go tactical, you can go strategic.

IE Yes.

AM Okay, since you are, and you can consider yourself on both level... sorry, levels, do you think that... Would you rather have... Sorry, would you rather have a rigid plan, with clear instructions of what to do, and when to do it? Or, would you rather have a flexible plan which gives room for improvisation, innovation? Or, you would like to have a mixture of both? And finally, would you rather have no plans at all, and why?

IE Okay, so, let me reverse. So, if I... I don't want to have no plan, because I think, even when you wake up in the morning, you have a plan for your day. So, for you to have no plan, basically, there's no use for our function, right?

00:10:15

AM Okay.

IE As people; as a unit; as what we're doing today as emergency planning. So, I feel if you don't have a plan, or you don't have a direction, or something you can look at, and then even build your own ideas, or try and ascertain how to become better, or move forward, then you'll always be static. You'll always be in the dark. And anything happens, you're just grabbing onto stuff.

That's my opinion.

As far as a rigid plan, I don't think rigid plans really work, simply because, when you have a rigid plan... I always remember a very, very... It was a movie, actually, with Denzel Washington. And if I remember correctly, Gene Hackman as a submarine commander. I don't know what it was called. It wasn't... It's not The Hunt for Red October. And, basically, you know, the navy had very, very rigid plans for what happens on a submerged vessel. And you could see... Because the plan was so rigid, the two people in charge just started fighting and whacking it out. And everything became segregated. So, it's: who's going to follow this person, who is going to... when things are that rigid, you know.

00:11:24

And I think if something is rigid, it breaks. It's... It can't move. That's in my opinion.

Second of all, if you are... If you are going to look at a plan that is rigid, I mean, no two fires are the same; no two hurricanes are the same; no... So, if you are that rigid, you will never have a good response. You have to have some room for improvisation of the person who is down on the ground, the operational person, at that minute, at that moment, to do the response. And you, as an emergency manager, or an emergency director, or as an incident commander, have to be able to tap into certain revenues on your own, with your own mind. I mean, you just can't stand there like a statue, or a robot, and say: this is what the plan says. I can't talk

to this person; yet, I know someone who has a logistical need that I really require, but I can't ask them, because I'm not allowed.

If you're... If you give room for improvisation, the human mind, under difficult times, works wonders. I mean, I don't know if you've ever had to produce a PowerPoint lecture under stress?

AM Oh, yes.

IE It's always very neat; very crisp; very clean.

AM Yes, of course.

00:12:32

IE I think these emergency managers work that way, at their best, when they're under pressure. But, they improvise as well. br.not

AM So, in this case, you would say that you are... you would rather to have a plan which are falling between, like, a rigid and a flexible plan, at the same time?

IE Yes. And actually, I prefer...

AM A mixture of both?

IE Yes. I actually prefer to have frameworks at national level. And then, plans at...

AM Operational...

IE ... operational levels.

AM Operational levels.

IE Yes.

AM Okay, saying what you said, if you have a scale of five, one being rigid, and five being flexible, what do you think our plan falls in now, and what would you like to have our plan, in the future, in which zone?

00:13:24

IE I think our plan, at present, is balanced – three – and I would like it to remain balanced.

AM You would like to... You'd like it to be balanced.

IE Yes, remain balanced.

AM And you are talking about both levels, silver and gold? Strategic and...

IE And gold, yes. Yes.

AM ... tactical?

IE Yes.

AM All right. Okay. And now, the final question, basically, it will, kind of, give me... you'll demonstrate your opinion regarding the standardisation, and the relation between standardisation, and health response planning, and performance efficiency, in these categories. And knowledge sharing, aka information flow. Aka communication. The relation and the responsibility delegation, response time, and external factor hazard anticipation.

IE So, this is under standardisation, right?

AM This is the relation...

00:14:16

IE With these functions?

AM Exactly. This is the relation between standardisation and health response planning, and organisation performance efficiency in these areas.

IE Okay, so if you look at knowledge sharing: so, you're a doctor, I'm a doctor, I mean, one of the... A very beautiful system for testing

capabilities for entrants, was the United States Medical Licensing Exam. Also known as the USMLE.

AM Yes.

IE So, basically, what that does for knowledge sharing, when you standardise, if everyone knows, who are at a minimal level, this is their minimal level... So, you can start sharing knowledge, knowing that the core base is already there. What we're finding here is, that a lot of people have no idea of what the emergency manager's role is, or what they do. And even if they are emergency managers, they don't have any formal training or, let us say, they have done something, and they say: oh, I responded to that, so therefore, I'm an emergency manager. That's just like telling me: oh, well, I rode a quad on the main highway, therefore I can drive a car – you understand?

00:15:15

AM All right.

IE In my opinion. So, when you standardise for knowledge sharing, that's very good, because you can... you know where to start your training, your dialogue, or your information outreach, if you want to give...

AM All right.

IE In terms of organisational efficiency, and responsibilities, and delegation, I think, then you have a standardisation, it is beneficial and non-beneficial – why?

AM Elaborate.

IE So, when you standardise you know what is the minimum capability of this person. But, when you are designating responsibilities, you have to now the capabilities of that individual.

AM Elaborate more.

IE Okay. So, like, let's say, we're all emergency managers, okay? And we all have passed this Omani emergency manager licensing exam.

AM Okay.

IE Okay. We're all at a minimum level, so I know that this is your minimal capability. But, you might be a better decisionmaker with that minimal... than X, who has the same basic knowledge, but is a not a good decisionmaker.

00:16:15

So, when I give responsibilities, I know that this is a... at some stage, this is going to be a decision-making role. So, I need someone who can make a decision.

AM So, basically, you want to delegate by person, not by position?

IE Yes, not by position.

AM Not by position.

IE So, I don't think, today, because you are the director, or you are the incident commander, that you would be the best person for that post. Yes, you are an incident commander, but you're good at commanding an incident, but you're not good at responding to the incident – you understand?

AM All right.

IE In the sense that, if I was to tell you: okay, there's a fire, and here's a... here's a chainsaw, go and cut the trees. I and you would take the... and just start cutting. But a fire...

00:16:54

AM Fireman, okay.

IE A fireman would know exactly how to cut the trees, and which trees to cut first.

AM And where to cut, okay.

IE So, that's how I would designate responsibility. So, it's standardisation, will allow you to put people in post, but when you're delegating responsibilities, the capability of that individual has to be known.

AM So, it's a bit more like...

IE Yes... Yes.

AM When it comes to standardisation...

IE Yes, you should not just take standardisation as the delegation of responsibility.

AM So, the delegation is... Standardisation, when it comes to delegation, it's the best for... it's a good point.

IE Yes, you shouldn't go on standardisation, you know.

AM All right, okay.

IE So, like, let's say, every doctor... let's go back to the USME, so they have a minimum standard. But, not every doctor is going to become a consultant, you understand?

00:17:30

AM Excellent.

IE Because it takes character, it takes guts, it takes knowledge, it takes effort, you understand? So, who are those people? The standardisation doesn't give you that. You have to do that, and then you delegate the responsibility – you understand?

AM Okay.

IE In terms of organisational efficiency and response time, I don't think standardisation helps at all. Your response is only as good as your communication. So, you can standardise everyone, and tell them that: okay, this is the minimal stuff you want. But for your organisation, efficiency, and response, this is what the organisation has to give to its responders, to work.

So, like, let's say... Let's take a hospital like Khoula [?]. I'll put all the emergency managers and standardise them on the Omani Emergency Management Board. The response would be efficient, because they're thinking emergency. But, if they had better communication tools, better alert tools, better on-scene eyes, they have a good command centre, the command centre is linked to something else – do you understand?

AM Yes.

00:18:23

IE So, you can standardise the plan for the facility, but your standardisation for that facility will not be the same standardisation, maybe, that is used in another place – you understand?

AM Okay.

IE And it's impossible to standardise everything. So, as an organisation I'm talking about. I'm not talking now about standardisation. I'm talking as the organisation. If you're just going to use standardisation, I think you're going to be a bit hurt.

Because, I'll tell you something: we know, ourselves, in the emergency management world, there are discrepancies in the terms we use for... to relate certain items. So, what I might call an emergency, you might call as an emerging situation. What someone else might call as a risk, I might just take, as well, you know, that's retrofitted and gone, it's no longer a risk.

And you know that even the ISD... ISDR had to standardise the medical terms [?], so people could actually start communicating on the same level. So, even though I say standardise the medical terms, they just standardise the definition. They didn't standardise the use – you understand?

AM All right.

00:19:25

IE In terms of external factors and hazard anticipation: I think it's good when you have a standard, because then, you start realising which hazards are going to affect those standards. You... I think, in life, you always want to progress forward. You don't want to regress. So, standardisation tells you that: look, you have to be here, as an organisation, so you can't... If an... For example, hazard anticipation, so these are maybe things that are emerging. So, let's say, for example, today, we go to the Royal Hospital. There's a lot of building; there's a big game going on in the stadium, the national stadium. So, there's a hazard that's been anticipated. And you, because we have a standard, you make sure that all those things now, are being ready. So, it helps you, in anticipating hazard. Because, now you know you cannot drop below a certain standard, because you will be accountable.

AM Okay.

IE This is how I view it.

AM So this is the accountability and legal liability?

IE Yes, and legal liability. Here, we are lucky, legal liabilities are maintained, but not as rigorously and as vigorously, as in the West, you know what I'm saying?

AM As other countries. Okay. Okay.

00:20:29

IE Here, accountability is held at, you know: okay, we understand; the tools were not there. There were stresses, there were this – okay. And we make the system better, because we're emerging. But then, what we have to realise is, even with emergence, we have to take into consideration, as you said, the legality. Standardisation allow for those legal laws to fall into place. Allows for our public health laws to be rigid, to be... to have an impact. And, sort of, just writing public health laws that have been, you know... The people who are sitting on the committee, these are... this is what they could think about, so they made laws about that.

AM Okay, excellent. Doctor Ali, thank you very much. You've been a great help, and I cannot thank you enough.

IE Thanks for asking. Happy I could help.

AM And... Thank you very much. And, I hope to see you soon.

IE Sure. Thank you.

AM Thank you.