Sensemaking in Dynamic Business Environments: Managerial Practices in the Oil and Gas Sector in Bahrain

SENSEMAKING IN DYNAMIC BUSINESS ENVIRONMENTS: MANAGERIAL PRACTICES IN THE OIL AND GAS SECTOR IN BAHRAIN

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DBA

2021

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Submitted for the Degree of
Doctor of Business Administration

Faculty of Management, Law and Social Sciences
University of Bradford

2021

Abstract

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Keywords: Sensemaking, sensegiving, sensebreaking, Oil and Gas sector, dynamic business environments

It has become the norm for organisations in many industrial sectors to constantly operate in dynamic, uncertain and challenging business environments. Technology, regulations, global economy, changing political actions and international conditions are all changing rapidly, creating dynamic business conditions for organisations to understand, react to and thus survive. The Oil and Gas (O&G) sector which is the backbone of the economic growth for many countries in the Middle East region is not an exception to the real world of business filled with uncertainties.

The construction of meaning or sensemaking is a prerequisite management skill for complex problem solving and decision-making for survival in today's increasingly dynamic business environments. Current literature on sensemaking tends to focus on senior management's role in the process, overlooking the critical role middle management teams play in the construction of meaning. Further, although sensemaking literature illustrates the influence of sensegiving and sensebreaking on sensemaking, there is limited empirical research in existing literature on how middle management teams apply sensegiving and sensebreaking to influence the process. Finally, this research fills a gap in sensemaking research in developing countries to decolonise Western-based research and ensure that local culture and ideologies are taken into account. In particular, it provides important data for the O&G sector in Bahrain, which is important for the Middle East region.

Therefore, this research investigates how middle management teams use sensemaking to understand complex problems and how they apply sensegiving and sensebreaking to influence the sensemaking process in Bahrain's O&G sector. The data was gathered using a qualitative approach using in-depth semi-structured interviews, middle management team meeting observations and operational documents review.

The findings include seven themes and 26 sub-themes are visualised in a four-step sensemaking process framework. This framework also illustrates the sensemaking triggers and properties, as well as the influences and sources of information middle management teams adopt to construct meaning in dynamic O&G environments. Further, the four-step sensemaking process framework incorporates the different sensegiving and sensebreaking techniques embraced.

This research extends the existing sensemaking literature by providing a descriptive empirical framework to better understand middle management team sensemaking, sensegiving and sensebreaking in dynamic O&G environments. This four-step sensemaking process framework gives middle management teams a way to organise information related to events in an objective manner, enabling them to develop effective reactions to a fast-changing environment. The framework also offers human resource practitioners a platform to assess and develop middle management sensemaking skills.

Dedication

This doctoral thesis is dedicated to my beloved mother, Khadija Hassan. Her unconditional love has always been a great motivator for me.

Acknowledgements

As the curtain closes on this dissertation study, a chapter of my life has just ended but a new one is yet to begin. It has been a long journey that could not have been possible without the care and support of many individuals who I would like to acknowledge.

Thanks, beyond description, goes to my supervisor, Prof. Vishanth Weerakkody, for his immense support and guidance throughout my DBA research journey. His guidance, prompt feedback and sincere advice was a steady source of inspiration, and his ability to sharpen and tone my skills made me a better researcher and writer and prepared me for the next phase in life as a scholar-practitioner.

I would like to acknowledge the wonderful honest and open dialogue of those individuals I had the privilege to interview. Their contributions helped in providing the basis of this work's main findings. I also would like to acknowledge and express my appreciation and gratitude to my supervisor at work, Mr. Ahmed Khalil, for his endless care and support throughout my journey.

Last but not certainly least, I want to thank my family who can now breathe a sigh of relief. Thank you my wife Wafa, and my children Noah, Khawla and Hood for giving me the love, space and time to achieve a lifelong goal.

Thank you all. I am extremely grateful to you for the support.

About the Author

Ismaeel is a Bahraini national who was born in Bahrain. He is a Marine Engineer by training who graduated from Southampton Solent University, UK. After working for two years as a Marine Engineer in merchant shipping, Ismaeel decided to change his career to vocational training trainer. Two years later, he earned a master's degree in environment, health and safety management from Sunderland University, UK before he moved to the oil and gas industry. Inspired by his love and passion to develop and transfer knowledge and skills to others especially younger generation, Ismaeel embarked on a DBA journey offered by Bradford University.

Since 2004, Ismaeel has worked in Bahrain in the oil and gas industry in the areas of environment, health and safety management. He is the father of two sons and one daughter, and he aims to make a positive impact on both knowledge and practice of management in organisations in Bahrain and beyond.

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List of Abbreviations

CEO	Chief Executive Officer
COVID-19	Coronavirus
EDB	Economic Development Board
FN	Finance
HSE	Health, Safety and Environment
IC	Intellectual Capital
MMbbl/d	Million barrels per day
MKTG	Marketing
MIC	Methyl Isocyanate
MO	Meeting Observation
MTC	Maintenance
NOGA	National Oil and Gas Authority
O&G	Oil and Gas
OPS	Operation
PhD	Doctor of Philosophy
PSSR	Pre-Startup Safety Review
RQ	Research Question
Sups.	Supervisors
Supts.	Superintendents
SWOT	Strengths, Weaknesses, Opportunities & Threats
T&I	Turnaround and Inspections
USA	United States of America

Chapter 1: Introduction

1.1 Introduction

In today’s dynamic business environments, organisations are referred to as “white-knuckled” navigating through “permanent white water” (Vaill, 1996). Technology, regulations, global economy, changing political actions and international conditions are all changing rapidly, giving no prior notice to organisations to apprehend what is going on and take appropriate actions. Coronavirus (i.e. COVID-19) is an example of a condition that created a dynamic business environment for many businesses worldwide to understand, react to and thus survive.

It has become the norm for many industrial sectors (e.g. manufacturing, supply chain, airlines, financial services and construction) to constantly operate in uncertain and challenging business environments (Gitman et al., 2018). The Oil and Gas (O&G) sector is nothing unlike the real world of business which is full of uncertainties and unexpected risks. While the before-mentioned industrial sectors play a significant role in the world economy (Zook and Allen, 2010; Attiah, 2019), the O&G sector is the backbone to the economic growth for many countries, particularly those producing and exporting O&G products such as Bahrain (EDB, 2015).

The O&G sector had already faced formidable challenges to their efficiency, sustainability and profitability (WEC, 2016). More recently, the COVID-19 pandemic has posed further challenges, and prices have collapsed so severely that the urgency to tackle these issues has increased dramatically. Thus, the sector has become even more dynamic raising the demand on management to make careful decisions. However, the key here is that as management in the O&G sector encounter new situations, they attempt to construct new meanings in time to initiate actions (Choo, 1998). This being said, Weick (1995) and Choo (1998) argue that it is not the decision-making per se that enables organisations to survive dynamic business environments, but the construction of meaning that precedes the decision-making process. In other words, the construction of meaning is a prerequisite management skill for complex problem solving and decision-making (Mellahi and Wilkinson, 2004; Borges and Gonçalo, 2010; Shufutinsky et al., 2017)

The construction of meaning or assigning meaning to experiences and creating order out of events or situations is coined by Weick (1995) as “sensemaking”. Sensemaking is a critical organisational activity (Weick, 1995). It is often associated with high-reliability organisations and catastrophic events; nonetheless, literature articulates the value of the sensemaking in terms of understanding organisational change and the translation process of those navigating a highly dynamic business environment (Maitlis and Sonenshein, 2010). It has been noted that sensemaking activities are the means when management are facing incomprehensive events or uncertainties (Weick, 1995; Ashmos and Nathan, 2002). Thus, sensemaking is a process in which an individual or team adapts itself to the uncertain or ambiguous environment to creating rational accounts of the world that enable action (Maitlis, 2005). Literature cites that sensemaking is considered incomplete without “sensegiving” and “sensebreaking” which complement one another (Maitlis and Christianson, 2014; Sandberg and Tsoukas, 2015; Will and Pies, 2018). The former is “concerned with the process of attempting to influence the sensemaking and meaning construction of others toward a preferred redefinition of organisational reality” (Gioia and Chittipeddi, 1991: 442) and the latter “involves the destruction or breaking down of meaning” (Pratt, 2000: 464).

It is evident in the literature that sensemaking is a pre-requisite for many other tasks such as decision-making and problem solving. For example, Weick (1993: 636) notes that sensemaking precedes decision-making and follows it which provides “clear questions and clear answers” that feed decision-making. Further, previous work provided insight into the critical role of middle managers in the process of sensemaking and decision-making in organisations leading to their survival in such dynamic business environments (Balogun, 2003; Balogun and Johnson, 2004; Ling et al., 2005; Rouleau and Balogun, 2011; Husain, 2015a).

A number of studies exist that explore middle managers' cognitive capabilities and activities in terms of how they search for information, interpret, negotiate, ascribe meaning and make decisions in their day-to-day activities on an individual level (Gioia et al., 1991; Thomas et al., 1993; Weick, 1995; Maitlis, 2005; Weick et al., 2005) or focus on senior management roles in meaning construction or sensemaking (Parry, 2003; Degn, 2015; Klein and Eckhaus, 2017). Nonetheless, "there are significant gaps in research at the team level, with fewer studies of team sensemaking in general, and especially research examining the relationship between sensemaking and key team processes" (Maitlis and Christianson, 2014: 108). Further, although the body of research on dynamic business environments and sensemaking is substantive, scholars Maitlis and Christianson (2014) and Sandberg and Tsoukas (2015) note much of the research in the areas of sensemaking related to dynamic business environments tends to consider only one stakeholder (usually senior managers). This limits our ability to draw conclusions about how teams of middle managers make sense in dynamic business environments such as the O&G sector. Moreover, the majority of sensemaking research is Western-based and there is a lack of research in general (Lages et al., 2015; Ryan and Daly, 2019) in the Middle East; and sensemaking research in particular the O&G sector in developing countries and particularly in Bahrain which is important for the Middle East region. Conducting this research decolonises Western-based research on sensemaking and ensure that local culture and ideologies are taken into account.

Such literature gaps fuel the need to advance the academic knowledge on how teams of middle managers make sense in a dynamic and critical industrial sector in Bahrain such as O&G. These gaps also elevate the need to explore how teams of middle managers operating in inherent dynamic business environments adopt sensegiving and sensebreaking to influence the teams' sensemaking process. Without addressing these gaps, middle management teams in organisations operating in the O&G sector may fail to assign meaning to their experience or collectively make sense of their experience which may lead to poor decisions resulting in poor organisational performance and failure to survive today's increasing dynamic business environments; thus, adversely impacting the country's economy. In other words, the consequences of not capturing the processes of sensemaking, sensegiving and sensebreaking among middle management teams as they unfold in dynamic O&G business environments (or the collapse of sensemaking process) will be the failure of the organisations (Weick, 1993; Mellahi and Wilkinson, 2004; Shufutinsky et al., 2017). These adverse consequences of not doing this research may extend to impact the economies of other counties in the Middle East region whose national economies are dependent on O&G.

Therefore, following Weick's (1995) sensemaking perspective, this qualitative study sets out to develop a framework that captures the processes of sensemaking, sensegiving and sensebreaking. This framework can be adopted by middle managers working in teams in the O&G sector in Bahrain to create frames of reference which act as filters to help them organise and interpret information and, accordingly, respond to the challenges caused by the dynamic business environments; thus, the survival of the Bahrain economy. The lessons learnt in this work will not be limited to the O&G sector but may be extended to other industrial sectors critical to the economy of Bahrain and Middle East region that operate in dynamic business environments such as aluminum smelting, fertilizers and ship repairs.

1.2 Oil and Gas Sector in Bahrain

In an industry beset with increasing volatility and uncertainty, oil remains the world's leading fuel, accounting for 32.9% of global energy consumption.

Natural gas is the second largest energy source in power generation, representing 22% of generated power globally and the only fossil fuel whose share of primary energy consumption is projected to grow (WEC, 2016).

Unlike its neighbours in the Arabian Gulf region, Bahrain is a minor oil producer, with only 124.6 million barrels of proven reserves. The country's O&G is developed by National Oil and Gas Authority and its investment arm, Nogaholding (Figure 1). With such relatively small reserves, Bahrain began diversifying and liberalising its economy in the 1970s and now boasts developed non-hydrocarbons sectors such as Islamic banking, tourism and construction, as well as refined infrastructure. Despite its attempts to diversify, Bahrain government still relies on O&G for more than 80% of its revenues (EDB, 2015).

The O&G sector remain the only natural resource in Bahrain and has been playing a dominant role in changing the social, economic life and entire infrastructure of Bahrain (NOGA, 2017). The sector has provided Bahrain with substantial amounts of capital to establish several other industrial sectors and undertake mega investment projects. It also has helped in providing employment opportunities for nationals, thereby reflecting positively on their standards of living. With much of its revenues generated from the O&G sector, the Bahrain economy is dependent on the survival of the O&G sector to sustain its very existence and meet the basic requirements of the populations (Husain, 2015b).

Despite its economic diversification attempts, Bahrain's O&G sector is working to maintain and even increase the current levels of O&G production. Efforts in this direction have helped significantly by the recent discovery of a large-scale, unconventional O&G reserve, which could substantially boost output over the coming decade (Oxford Business Group, 2019).

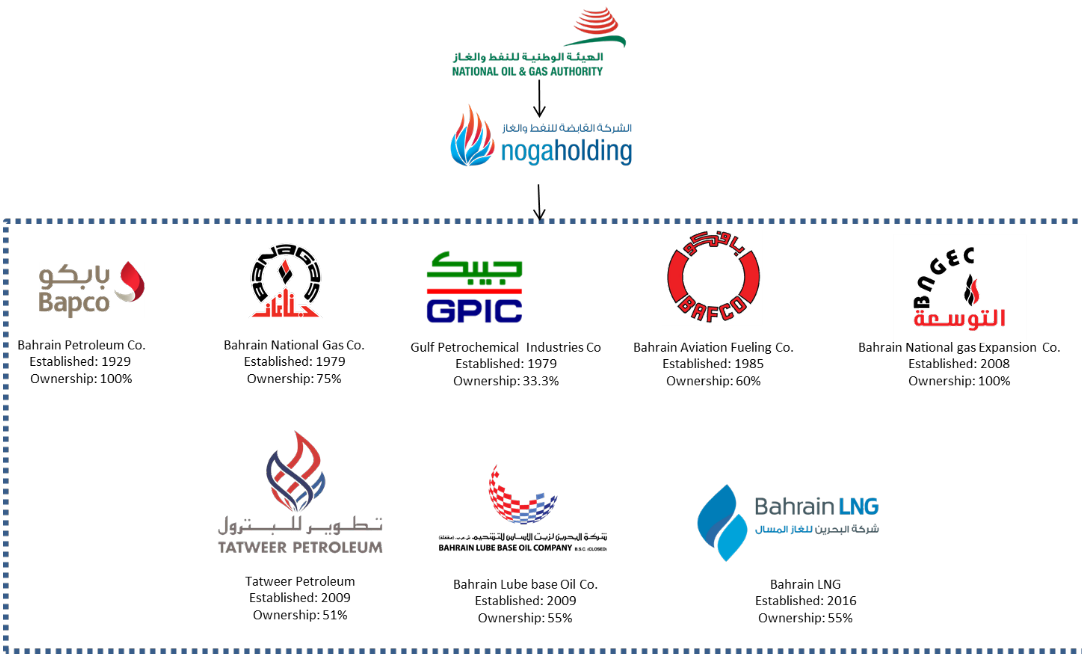

Figure 1: The structure of the Oil and Gas sector in Bahrain (NOGA, 2019)

The O&G sector is one of the largest employers in the country with more than 230 management staff managing the sector (Husain, 2015b). This number of managers (which includes middle management) is expected to increase, along with the expansion plans in the O&G sector in Bahrain. Specifically, middle managers (their significance in managing the O&G sector is outlined in Chapter 3) will have to face relentless pressure to improve returns even as they encounter strong, ever-increasing dynamic business environments inherent to the industrial sector.

Considering sensemaking's superior value as the prerequisite skill for complex problem solving and decision-making (Wieck, 1995), and given the fact the Bahrain economic survival hinges on the survival of the O&G sector; middle managers lacking such a skill will struggle to function in the O&G uncertain and ambiguous business environments which may ultimately lead to the collapse of Bahrain economy.

1.3 Research Motivation

The impetus for this exploration came from the gaps in the sensemaking literature coupled with the practical organisational challenges observed by the researcher during his professional and personal experiences within the O&G sector in Bahrain.

Addressing the literature gap outlined in the introduction and further delineated in Chapter 2, would substantiate future studies which will contribute to the existing body of knowledge on middle management teams' sensemaking, sensegiving and sensebreaking. Thus, providing a rich empirical knowledge for practitioners to address the practical organisational challenges motivates the researcher to explore and provide a sensemaking, sensegiving and sensebreaking framework for middle management teams to enable them to assign meaning to their experiences.

On the personal level, the researcher's motivation emerged from his experience as a middle manager in the O&G sector, working in teams with his peers to collectively make sense of different forms or types of information generated from various sources and ultimately to make decisions. The researcher observed that ineffective decisions taken by middle management teams were mainly attributed to the teams' inability to collectively make sense of the available information. Further, ineffective decisions also were attributed to teams' inability to challenge the assumptions (i.e. sensebreaking) and influence each other's sensemaking (i.e. sensegiving) of the available information to arrive at a common or objective understanding to adopt in their decision-making process. Such ineffective decisions may lead to financial losses to the organisation, the O&G sector and, hence, to the collapse of the Bahrain economy.

1.4 Research Aim, Objectives and Questions

The aim of this research is to explore the processes of sensemaking, sensegiving and sensebreaking in dynamic business environments as they unfold by middle management teams.

The following objectives were set in order to achieve the research aim:

1. Investigate the contextual background of sensemaking, sensegiving and sensebreaking with particular focus on dynamic business environments and middle management teams by critically reviewing the existing literature.
2. Identify the potential theoretical lens for exploring the emerging themes in this research and formulate a conceptual framework based on this lens.
3. Establish the research needs and review appropriate research methodologies for formulating the methodological approach to be used in the research.
4. Conduct a qualitative empirical enquiry to explore how middle managers make sense in dynamic O&G environments in Bahrain and how they use sensegiving and sensebreaking to influence the team sensemaking efforts.
5. Analyse the empirical data and propose a framework for the sensemaking process in the O&G sector.
6. Offer practical and theoretical implications concerning the key findings and provide recommendations for future research.

Expanding on Husain's (2015a) work on the role of intuition and sensemaking in the management of the O&G sector in Bahrain, this doctoral qualitative research sets out to answer specifically the following questions:

RQ1: How do teams (comprised of middle managers) make sense of situations/events and influence others to ultimately make decisions in the O&G sector in Bahrain?

RQ1a. What is the process of sensemaking used by teams (middle managers)?

RQ1b. What are the differences in the sensemaking process between technical and non-technical business units?

RQ1c. What are the approaches adopted to influence team members' sensemaking process (sensegiving)?

RQ2: How is sensebreaking used to influence the sensegiving process by teams in technical and non-technical business units?

1.5 Theoretical and Practical Contributions

Sensemaking has been subject to considerable research which has intensified over the last decade, incorporating different social and organisational situations and focusing on different forms of sensemaking, sensegiving and sensebreaking accounts, including frames, narratives, institutionalised codes and conventions (Weick et al., 2005; Sandberg and Tsoukas, 2020; Weick, 2020). However, there are significant gaps in research at the team level, which this research aims to address—with less research into teams' sensemaking in general and especially research exploring middle management teams' sensemaking, sensegiving and sensebreaking (Maitlis and Christianson, 2014; Sandberg and Tsoukas, 2015).

In addition to other significant contributions outlined in Chapter 6, this work offers to the existing knowledge a comprehensive review of the literature pertaining to teams' sensemaking process as well as introducing the four-step sensemaking process framework. This framework expands on the properties of sensemaking (Weick 1995), how sensemaking process is triggered and how sensegiving and sensebreaking work together and influence the sensemaking process to create an objective picture of reality in middle management teams. This work fills in a gap in the literature (Stigliani and Ravasi, 2012; Maitlis and Christianson, 2014; Martin, 2015; Sandberg and Tsoukas, 2015; Kudesia, 2017; Merkus et al., 2017) by capturing sensemaking, sensegiving and sensebreaking processes as they manifest among middle management teams in the dynamic O&G business environment.

The practical significance of this research is to create knowledge for middle management teams in the O&G sector in Bahrain by introducing the four-step sensemaking framework as a tool in the organisation to organise information related to situations or events in an objective manner. This framework can be utilised by management development practitioners as a base for middle managers' competency matrix and integrate as a taught module in middle managers' development program in the O&G sector in Bahrain. This taught module also can be extended to include other layers of management (e.g. senior and executive management) to instill consistency across all management hierarchy.

1.6 Overview of Research Approach

This work adopted a case study approach (Yin, 1984) designed to illuminate the processes of sensemaking, sensegiving and sensebreaking of middle managers' teams in the O&G sector in Bahrain. Given the dual need to both generate and confirm perspectives of sensemaking, sensegiving and sensebreaking, an inductive approach is adopted to facilitate the management of data arising from the field work.

The methodology consists of undertaking a case study of an O&G organisation in Bahrain, selected purposely, and dissecting it into two business units (technical and non-technical) to compare sensemaking, sensegiving and sensebreaking practices.

The methodological approach employed in this research is in the form of face-to-face in-depth semi-structured interviews (Saunders et al., 2017) with middle managers, overt non-participant observations (Creswell, 2013) of middle managers' meetings and review of documents (Bowen, 2009) used by middle managers to execute their work.

1.7 Thesis Structure

This work is organised around six chapters (Figure 2) and follows a logical structure to ensure that the reader obtains the best possible understanding of the research process and the subject under investigation.

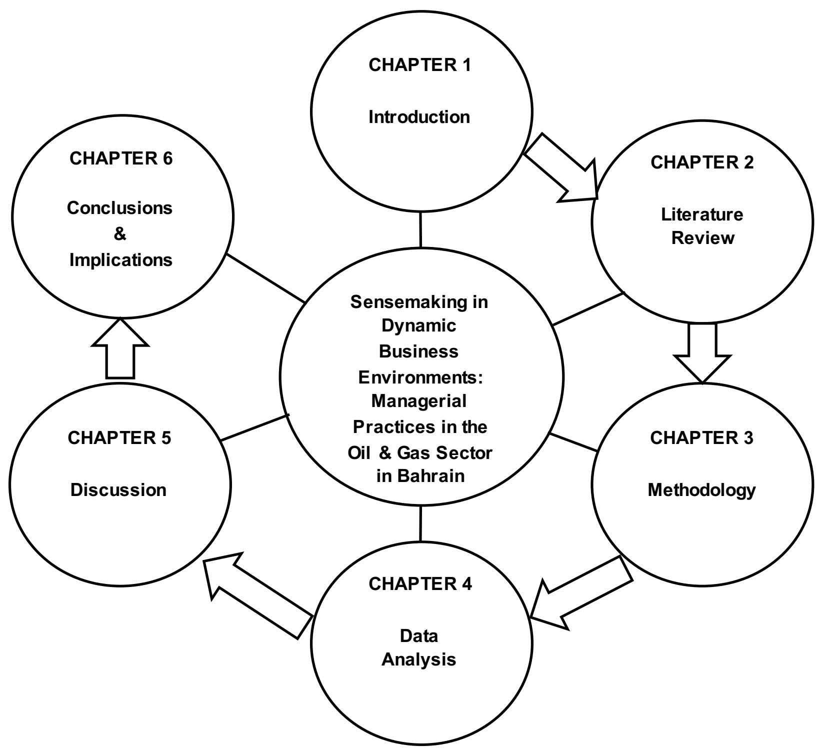

Figure 2: Thesis structure

Chapter 1 is an introduction to dynamic business environments, sensemaking, sensegiving and sensebreaking which outlines the gap in the literature and, hence, research aim, objectives and questions. The O&G sector in Bahrain together with its impact to the Bahrain economy is explained. This chapter also provides an outline of this work's structure.

Chapter 2 provides a critical review of sensemaking and its related constructs with a particular emphasis on sensegiving and sensebreaking. Making sense in dynamic business environments is also reviewed in this chapter to apprehend how sensemaking processes unfold in various contexts. This chapter also focuses on the work on teams of middle managers related to sensemaking, sensegiving and sensebreaking. The literature review concludes by highlighting the gaps in current academic research.

Chapter 3 outlines the research strategy adopted and how it provides a way of addressing the aims of this work. Furthermore, it introduces this work's research methodology and its rationale. Chapter 3 also includes a discussion of collection and data analysis procedures, ethical considerations and research limitations, all of which are provided to promote research transparency and to allow this work to guide others should they wish to embark upon similar endeavours.

Chapter 4 presents data analysis using NVivo (Version 12). The themes developed which answer the research questions are explained in detail in this chapter.

Chapter 5 presents a synthesis of the debates explored in the literature review in Chapter 2 with the findings from Chapter 4.

Chapter 6 concludes this work by summarising the main findings and articulating their contributions to both the literature and practice of sensemaking, sensegiving and sensebreaking. A personal research reflection section and recommendations for future work are also included in this chapter.

1.8 Summary

The O&G sector is by default operating in dynamic business environments whereby management are struggling to ride through “permanent white water”. To sustain and survive the “white knuckled” organisations, sensemaking perspective along with its supporting components (i.e. sensegiving and sensebreaking) has been found to be effective in guiding middle managers to make sense of situations or events that help them make effective decisions.

Little attention has been paid to research on sensemaking, sensegiving and sensebreaking in the context of teams comprised of middle managers and none in the O&G sector in Bahrain. Therefore, this research aims to generate new knowledge in the form of empirical data that supports existing literature on sensemaking, sensegiving and sensebreaking, as well as practical operational tools for middle managers and those who have a stake in the development of middle managers in the O&G sector in Bahrain.

The next chapter synthesises a critical assessment of the existing literature in this field, prior to starting the research. It is the theoretical context that guided this work.

Chapter 2: Literature Review

2.1 Introduction

This chapter reviews the most significant literature related to the research problem outlined in the previous chapter. It starts with a review of dynamic business environments in general and then focuses down on the Oil & Gas (O&G) sector. The definitional challenges of sensemaking are discussed to better understand the background of sensemaking. Literature on sensemaking and its related constructs is critically reviewed in this chapter with a particular emphasis on sensegiving and sensebreaking. Making sense in dynamic business environments is reviewed to apprehend how sensemaking processes unfold in various contexts. Also, factors influencing sensemaking processes are debated together with literature on middle managers' roles in sensemaking processes to establish a baseline background for this research.

The primary interest of this research is to explore middle management teams' sensemaking, sensegiving and sensebreaking processes in the O&G sector operating in dynamic business environments in Bahrain, which is set out to answer the following questions:

RQ1: How do teams (comprised of middle managers) make sense of situations/events and influence others to ultimately make decisions in the O&G sector in Bahrain?

- RQ1a. What is the process of sensemaking used by teams (middle managers)?
- RQ1b. What are the differences in the sensemaking process between technical and non-technical business units?
- RQ1c. What are the approaches adopted to influence team members' sensemaking process (sensegiving)?

RQ2: How is sensebreaking used to influence the sensegiving process by teams in technical and non-technical business units?

2.2 Dynamic Business Environment

A business environment is defined as the combination of internal and external factors that influence an organisation’s operating situation (Wetherly and Otter, 2014). These factors may include clients and suppliers; competitors and owners; improvements in technology; laws and government activities; and market, social and economic trends. Internal and external factors can influence each other and work together to affect the performance of the organisation as a whole (Wetherly and Otter, 2014; Hans, 2018). These factors may or may not be under the control of the organisation, but can affect its performance, profitability, growth or even its survival.

All organisations operate in distinctive business environments where every organisation has its own unique internal and external influencing factors. Wetherly and Otter (2014) argue that no two organisations operate in exactly the same business environment. A dynamic business environment is where the business environment changes frequently (Posen and Levinthal, 2012), more dramatically (Dess and Beard, 1984) and more abruptly (McCarthy et al., 2010), causing it to change its shape and character. Nordmeyer (2019) notes that organisations in all industrial sectors are subject to dynamic business environments. Some of these organisations operate in a more dynamic business environment than others, and there are some periods of relative environmental stability and others of greater dynamism (Wetherly and Otter, 2014).

The O&G sector worldwide is encountering an ever-increasing dynamic business environment especially with high volatility of oil prices, increasingly uncertain energy policies, geopolitical complexities, cost management and climate change (EY, 2016; KPMG, 2019). The continuous decay in crude oil prices has severely impacted profit margins of oil companies across the world, and particularly the Middle East region as it is the world's largest O&G trading and refining hub. Currently, the low oil prices due to coronavirus (COVID-19) are having a destructive impact on expansion, growth and profit margins (Camp et al., 2020; Wright, 2020), which implies a downward pressure on O&G revenue and the need to reduce costs. In such circumstances, many organisations have opted to cut their manpower to avoid high operational costs (Maceda, 2015), while many others have been forced to merge with other organisations, downsize or abort certain operations (e.g. drilling), leading to bankruptcy in certain cases. World supply of crude has also experienced many changes which add further to the dynamism of the O&G industry. This includes new discovery sources and sizes, changing reserve/production ratios and changing elasticities of supply and demand (Jentsch, 2004).

Other variables that make the O&G sector operate in a more dynamic business environment include the world-increasing O&G demand which increases almost 40% from 87 million barrels per day (MMbbl/d) in 2010 to 119 MMbbl/d in 2040 (IEO, 2019). Another variable includes the increased world population which increases from 6.96 billion in 2010 to 9.21 billion in 2040, an increase by more than 30% (Roser, 2020). Furthermore, since the O&G sector is a principal consumer of water and energy resources; it is subject to increasingly stringent environmental regulations (Olsson, 2015). This constrains the sector to rethink extraction, production and distribution methods to obtain or maintain their license to operate.

Against the above backdrop, prior research suggests that most managers in the O&G sector agree that their business environment is dynamic and there is no evidence that this dynamism will diminish in at least the medium-term future (Jentsch, 2004; Akhtar, 2018; KPMG, 2019). But while the existence of dynamism is acknowledged, what is much less evident is action to anticipate and prepare for such expected dynamic business environments (Lynch, 2009).

2.3 Sensemaking Background

In spite of the fact that there is a long history of organisational literature on aspects of sensemaking, a review of current research reveals Karl E. Weick as a preeminent author in the field. Parry (2003) argues that Weick's book *Sensemaking in Organisations* (Weick, 1995) has become the standard reference which marked the genesis of most sensemaking research.

It is interesting to note that there is no single agreed definition of "sensemaking". However, Brown et al. (2015) argue that there is an emergent consensus that sensemaking refers generally to those processes by which people seek plausibly to understand ambiguous, equivocal or confusing issues or events. More discussion on sensemaking definitional challenges is outlined in the following section of this work.

While some scholars make reference to "sensemaking theory" (Jensen et al. 2009; Holt and Cornelissen, 2013), Maitlis and Christianson (2014) note that there is no single theory of sensemaking. Other scholars refer to a "sensemaking lens" (Stensaker and Falkenberg, 2007; Sonenshein, 2009; Vough, 2012), while some others (Helms Mills et al., 2006; Mikkelsen, 2013) write of Weick's "sensemaking framework". Nonetheless, several writers in the field including Weick make reference to "sensemaking perspective" (Weick, 1995; Drazin et al., 1999; Vaara, 2010; Schultz and Hernes, 2013; Sandberg and Tsoukas, 2015; Goretzki and Messner, 2016; Sandberg and Tsoukas, 2020). This work follows Weick (1995) and uses his term "sensemaking perspective" since by seeing sensemaking as a perspective allows considerable latitude in its application.

Sensemaking has closely been linked to organising throughout Weick's work (Weick, 1979, 1993, 1995, 2001). In his earlier work, Weick (1979: 102) contends that sensemaking is co-extensive with cognising where "…organisations exist largely in the mind, and their existence takes the form of cognitive maps”. Hence, what ties an organisation together is what ties thoughts together (Weick and Bougon 1986). In subsequent publications, Weick (1995) has further developed the notion of sensemaking by gradually removing it from strong cognitivist origins and embedding it into a more explicitly social constructionist perspective (Sandberg and Tsoukas, 2015). This shift has been seen in recent sensemaking research that has taken language rather than cognition to be the locus of sensemaking (Maitlis and Christianson, 2014) (i.e. sensemaking is not purely cognitive).

Sensemaking perspective has had an enormous influence on management and organisation studies (Gioia and Chittipeddi, 1991; Bogner and Barr, 2000; Maitlis and Sonenshein, 2010; Maitlis and Christianson, 2014; Will and Pies, 2018; Klarin and Sharmelly, 2019; Sandberg and Tsoukas, 2020; Weick, 2020). Further, sensemaking has inspired the advancement of the social-constructionist, interpretative and phenomenological perspectives in the field of organisation studies (Holt and Sandberg, 2011; Brown et al., 2015). Thus, sensemaking is now seen as mainly a constructive process that has seven interrelated characteristics or properties which enable individuals to make sense of their environment. These characteristics are identity construction, retrospection, focused on extracted cues, driven by plausibility, enactive of the environment, social and ongoing activity. In addition to the discussion that touches on some of these characteristics in other sections of this work, below is a brief expansion on these characteristics.

1. Identity construction and identification is fundamental; who people think they are in their context shapes what they enact and how they interpret events (Pratt, 2000; Weick et al., 2005; Thurlow and Mills, 2009).
2. Retrospection provides the opportunity for sensemaking; the point of retrospection in time affects what people notice (Dunford and Jones, 2000), thus attention and interruptions to that attention are highly relevant to the process of sensemaking (Gephart, 1993).

3. People extract cues from the context to help them decide on what information is relevant and what explanations are acceptable (Brown et al., 2008). Extracted cues provide points of reference for linking ideas to broader networks of meaning and are as noted by Weick (1995: 50) "…simple, familiar structures that are seeds from which people develop a larger sense of what may be occurring."
4. People favour plausibility over accuracy in accounts of events and contexts (Currie and Brown, 2003; Abolafia, 2010). Weick (1995: 61) asserts that "…in an equivocal, postmodern world, infused with the interpretation and conflicting interests and inhabited by people with multiple shifting identities, an obsession with accuracy seems fruitless, and not of much practical help, either".
5. People enact the environments they face in dialogues and narratives (Currie and Brown, 2003). As people speak and build narrative accounts, it helps them understand what they think, organise their experiences and control and predict events (Weick, 1995; Abolafia, 2010) and reduce complexity in the context of change management (Kumar and Singhal, 2012).
6. Sensemaking is a social activity in that plausible stories are preserved, retained or shared (Maitlis, 2005). However, the audience for sensemaking includes the speakers themselves and the narratives are "…both individual and shared...an evolving product of conversations with ourselves and with others" (Currie and Brown, 2003: 565).
7. Sensemaking is ongoing, so individuals simultaneously shape and react to the environments they face. As they project themselves onto this environment and observe the consequences, they learn about their identities and the accuracy of their accounts of the world (Thurlow and Mills, 2009). This is a feedback process so even as individuals presume their identity from the behaviour of others towards them, they also try to influence this behaviour. As Weick (1993: 635) argues, "The basic idea of sensemaking is that reality is an ongoing accomplishment that emerges

from efforts to create order and make retrospective sense of what occurs".

Some scholars (Parry, 2003; Maitlis and Christianson, 2014; Sandberg and Tsukas, 2015) criticise Weick's influential work for being based on secondary research (e.g. the conclusion on sensemaking in the Scottish woolen industry is based on a reanalysis of the research of Porac et al. (1989) and the theory of sensemaking during crisis is based on Norman Maclean's book *Young Men & Fire* (Maclean, 1992, cited in Parry, 2003). This lack of primary research has not prevented Weick (1993) from postulating the seven characteristics of sensemaking outlined above (Parry, 2003), which have been almost reified by subsequent authors. Furthermore, despite the fact that the literature proliferates and the theorising has matured over the years, these seven properties remain influential in guiding how scholars understand the sensemaking process (Kudesia, 2017).

2.4 Defining Sensemaking

The depth and breadth of the sensemaking literature poses definitional challenges. In their comprehensive literature review of sensemaking, Maitlis and Christianson (2014) identify 15 different definitions for sensemaking. These definitions are listed in Table 1 but further revised by the researcher of this work to include more definitions by other authors.

Table 1: Selected definitions of “sensemaking”

AUTHOR	DEFINITION
Louis (1980)	Louis (1980) “Sense making can be viewed as a recurring cycle comprised of a sequence of events occurring over time. The cycle begins as individuals form unconscious and conscious anticipations and assumptions, which serve as predictions about future events. Subsequently, individuals experience events that may be discrepant from predictions. Discrepant events, or surprises, trigger a need for explanation, or post-diction, and, correspondingly, for a process through which interpretations of discrepancies are developed. Interpretation, or meaning, is attributed to surprises. Based on the attributed meanings, any necessary behavioral responses to the immediate situation are selected. Also based on attributed meanings, understandings of actors, actions, and settings are updated and predictions about future experiences in the setting are revised. The updated anticipations and revised assumptions are analogous to alterations in cognitive scripts.”
Starbuck and Milliken (1988)	“Sensemaking has many distinct aspects—comprehending, understanding, explaining, attributing, extrapolating, and predicting, at least. For example, understanding seems to precede explaining and to require less input; predicting may occur without either understanding or explaining; attributing is a form of explanation that assigns causes.[...] What is common to these processes is that they involve placing stimuli into frames (or schemata) that make sense of the stimuli (Goleman, 1985).”
Gephart (1993)	“Sensemaking has been defined as the discursive process of constructing and interpreting the social world.”
Hill and Levenhagen (1995)	“To cope with these uncertainties, the entrepreneur must develop a ‘vision’ or mental model of how the environment works (sensemaking) and then be able to communicate to others and gain their support (sensegiving).”
Weick (1995)	“Sensemaking is understood as a process that is (1) grounded in identity construction, (2) retrospective, (3) enactive of sensible environments, (4) social, (5) ongoing, (6) focused on and by extracted cues, (7) driven by plausibility rather than accuracy.”
Taylor and Van Every (2000)	“Sensemaking is a way station on the road to a consensually constructed, coordinated system of action.”
Balogun and Johnson (2004)	“Sensemaking is a conversational and narrative process through which people create and maintain an intersubjective world (Gephart, 1993, 1997; Watson and Bargiela-Chiappini, 1998; Brown, 2000).”
Balogun and Johnson (2005)	“Sensemaking is primarily a conversational and narrative process (Gephart ,1993, 1997; Brown, 2000) involving a variety of communication genre (Watson and Bargiela-Chiappini, 1998), both spoken and written, and formal and informal. However, more specifically, sensemaking involves ‘conversational and social practices’ (Gephart, 1993: 1469). It occurs through both verbal and non-verbal means (Gioia and Chittipeddi, 1991; Gioia et al., 1994). Individuals engage in gossip and negotiations, exchange stories, rumours and past experiences, seek information, and take note of physical representations, or non-verbal signs and signals, like behaviours and actions, to infer and give meaning (Poole et al., 1989; Isabella, 1990; Gioia and Chittipeddi, 1991; Gioia et al., 1994; Gioia and Thomas, 1996; Labianca et al., 2000). Change comes about through shifts in conversations and language (Barrett et al., 1995; Ford and Ford, 1995; Heracleous and Barrett, 2001; Brown and Humphreys, 2003).”
Maitlis (2005)	“Sensemaking occurs in organisations when members confront events, issues, and actions that are somehow surprising or confusing (Weick,

	1993, 1995; Gioia and Thomas, 1996). As Weick argued, 'The basic idea of sensemaking is that reality is an ongoing accomplishment that emerges from efforts to create order and make retrospective sense of what occurs' (1993: 635). Thus, sensemaking is a process of social construction (Berger and Luckmann, 1967) in which individuals attempt to interpret and explain sets of cues from their environments. This happens through the production of 'accounts'—discursive constructions of reality that interpret or explain (Antaki, 1994)—or through the 'activation' of existing accounts (Gioia and Thomas, 1996; Volkema et al., 1997). In either case, sensemaking allows people to deal with uncertainty and ambiguity by creating rational accounts of the world that enable action. Sensemaking thus both precedes decision-making and follows it: sensemaking provides the 'clear questions and clear answers' (Weick, 1993: 636) that feed decision-making, and decision-making often stimulates the surprises and confusion that create occasions for sensemaking. Organisational sensemaking is a fundamentally social process: organisation members interpret their environment in and through interactions with others, constructing accounts that allow them to comprehend the world and act collectively (Stablein, 1987; Starbuck and Milliken, 1988; Isabella, 1990; Sackmann, 1991; Sandelands et al., 1993)."
Gephart et al. (2010)	"an ongoing process that creates an intersubjective sense of shared meanings through conversation and non-verbal behavior in face to face settings where people seek to/produce, negotiate, and maintain a shared sense of meaning" (2010: 284-285)
Chen et al. (2013)	"Behaviors associated with sense making include making connections to the real world or lived experience, coordinating multiple representations, considering the reasonableness of solutions, and treating the problem as a sensible one to solve." (2013: 2)
Iveroth and Hallencreutz (2016)	"to make sense out of something" (2016: s.47)
Cannady et al. (2019)	"involves seeking coherence and meaning through construction and reconstruction of explanations (Kapon, 2017) across multiple representations and knowledge (Danielak et al., 2014)" (2019: 2)

By looking across the sensemaking definitions in the literature, one can observe several definitional differences which may have consequences for studying sensemaking. The first is whether sensemaking is regarded as sets of individual-cognitive (e.g. schemata, mental maps), collective-social (i.e. interactions between individuals) or specifically discursive (i.e. linguistic/communicative) processes (Weick, 1995; Maitlis and Christianson, 2014). Hill and Levenhagen (1995: 1057) describe sensemaking in terms of how individuals "develop a 'vision' or mental model of how the environment works". Elsbach et al. (2005) link sensemaking with situated cognition and describe how the cognitive process of sensemaking connects existing schemas and organisational contexts. To put it another way, Starbuck and Milliken (1988: 51) note that "sensemaking has many distinct aspects—comprehending, understanding, explaining, attributing, extrapolating, and predicting, at least [...] What is common to these processes is that they involve placing stimuli into frames (or schemata) that make sense of the stimuli".

In contrast, other definitions place sensemaking as a social process that occurs between individuals, as meaning is negotiated, contested and mutually co-constructed (Gioia and Chittipeddi, 1991; Parry, 2003; Ran and Golden, 2011; Merkus et al., 2017). This is in line with Weick (1995) argument who labels "social" as one of the seven characteristics of sensemaking and further elaborates that "sensemaking unfolds in a social context of other actors" (Weick et al., 2005: 409). Furthermore, Maitlis (2005: 21) notes that "…sensemaking is a process of social construction in which individuals attempt to interpret and explain sets of cues from their environments".

Generally, scholars agree that individual and group-level sensemaking processes are interrelated, in that collective interpretive efforts are fed by individual ones (Weick, 1995; Weick et al., 2005). Various actors endeavour to make sense of a situation or an event individually and then seek to construct a shared understanding through discourse and negotiation (Coopey et al., 1997; Thiry, 2001, cited in Fellows and Liu, 2017).

From social constructionist perspective which has its roots in the symbolic interactionist literature and increasingly in discursive analyses of organisations (Maitlis and Christianson, 2014), "sensemaking occurs and can be studied in the discourses of social members—the intersubjective social world—rather than simply occurring in their minds" (Gephart, 1993: 1470) and is concerned with the "conversational and social practices (methods) through which the members of a society socially construct a sense of shared meanings" (p. 1469). In their study of middle managers' sensemaking in the midst of strategic change, Rouleau and

Balogun (2011: 953) find that “performing the conversation” and “setting the scene” to be critical to the accomplishment of middle manager sensemaking.

The second critical definitional discrepancy in the literature concerns the temporal orientation of sensemaking. Generally speaking, sensemaking literature has been criticised for its over-emphasis on the retrospective orientation and a neglect of the role of action and prospective sensemaking (Corley and Gioia, 2011; MacKay and Parks, 2013; Sandberg and Tsoukas, 2015; Sandberg and Tsoukas, 2020). One of the noticeable threads that runs through all of Weick’s analyses of sensemaking is the retrospective nature of sensemaking. According to Weick (1995), organisational sensemaking is retrospective in the sense that individuals make sense of their actions and experience after they have occurred. In other words, sensemaking occurs only as individuals look back over an action that has already taken place.

In contrast, those scholars promoting a more holistic temporal perspective on sensemaking argue that a focus only on its retrospective aspects neglects the historical arc or temporal embeddedness of sensemaking (Kaplan and Orlikowski, 2013). For instance, Gephart and colleagues (2010) propose that future-oriented sensemaking (i.e. constructing meanings that create images of the future) is embedded in past and present temporal states and uses past and present temporal orientations to provide contexts for proposed future entities. Similarly, Dougherty and Drumheller (2006) argue that although the notion of prospective sensemaking is not denied, its significance tends to be diminished, in so far as prospective sensemaking is seen as being derivative from retrospective sensemaking. Introna (2019) puts the argument differently by noting that it does not make sense to talk about retrospective and prospective sensemaking. All sensemaking, in the indivisible flow of life, as argued by (Introna, 2019) is always and already retrospective (i.e. the past inserting itself into the present) and prospective (i.e. bringing the future into the present) at the same time, in every attempt at making sense. Other research regards sensemaking as occurring on a daily or even moment-to-moment basis, and relevant to every mundane interaction and event (Brown et al., 2015); for others, it is triggered by much rarer cues that occur most notably in times of crisis or puzzlement (Weick et al., 2005).

In spite of these important differences, Maitlis and Christianson (2014) suggest that there are several recurring themes across definitions of sensemaking. The first is that sensemaking is widely understood as dynamic, concerned with transience rather than constancy, such that meaning is made "…in an ongoing present in which past experience is projected upon possible futures" (Hernes and Maitlis, 2010b cited in Maitlis and Christianson, 2014). Generally, sensemaking is described in the literature as a "process" (Weick, 1995; Brown et al., 2015; Sandberg and Tsukas, 2015), "on-going events" (Weick, 2001), "on-going flow" (Kudesia, 2017) and "recursive process" (Maitlis and Lawrence, 2007).

The second repeated theme is that "cues" play a central role in sensemaking. Weick (1995) argues that cues shape sensemaking as it unfolds, since sensemaking is focused on and by extracted cues in a process in which individuals interpret and explain a set of cues from their environments. There is a general consensus among scholars that the process of sensemaking starts with individuals noticing and extracting "cues" from their environment, which they interpret to develop an organised sense of the situation or event upon which they act (Sandberg and Tsoukas, 2015).

A third common theme is that sensemaking is generally seen as social, as Weick (1995) delineates that even individuals making sense on their own are embedded in a sociomaterial context where their thoughts, feelings and behaviours are impacted by the actual, imagined or implied presence of others. Also, other scholars argue that sensemaking is a social process that "seeks to construct intersubjective meanings" Gephart et al. (2010: 285).

The fourth recurring theme concerns how individuals interactively undertake action (enactment); some scholars see it at the centre rather than a stage of sensemaking (Thompson, 2007, cited in Sandberg and Tsukas, 2015), the results of which they subsequently confront as their “environment” (Weick 1979). Specifically, enactment refers to how individuals “construct, rearrange, single out, and demolish many of the ‘objective’ features of their surroundings” (Weick, 1979: 164), leading to reality construction. Thus, it has been argued that sensemaking creates rational accounts of the world that enable action, is a continuous effort to understand connections between people, places and events to anticipate their trajectories and acts effectively and is enactive of the sensible environment (Maitlis and Christianson, 2014).

The fifth repeated theme is concerning what triggers the process of sensemaking. Research indicates uncertainty, ambiguity and the violation of expectations regarding a specific phenomenon trigger the sensemaking process. More specifically, sensemaking triggers include major technological advances, government regulatory changes, crisis and other changes that create an environment so dynamic and unpredictable that existing frameworks for achieving competitive advantage repeatedly lose their meaning. In other words, sensemaking is triggered by any interruption to ongoing activity (Maitlis and Sonenshein, 2010). Similarly, Angélique (2007) notes that interruption is a signal that announces change and the herald of new experiences which have to be made sense of and to reduce complexity to a level of understanding. Adding another layer to the argument, Mandler (1984, cited in Weick, 1995) claims that there are two types of interruption that trigger sensemaking and cognitive change: the new event that is not “expected” that does not fit into the ongoing interpretation of the environment and the “expected” event that does not happen. Kudesia (2017) further elaborates by noting that triggering events for sensemaking can vary in how equivocal and thus disruptive they are (i.e. mild to extreme), where they originate (i.e. inside or outside the organisation) and the degree to which they are planned or unexpected.

Taking into account the definitional differences and similarities, Maitlis and Christianson (2014: 67) therefore define sensemaking as

> "a process, prompted by violated expectations, that involves attending to and bracketing cues in the environment, creating intersubjective meaning through cycles of interpretation and action, and thereby enacting a more ordered environment from which further cues can be drawn".

This work adopts this definition as it is taking into account all definitional differences and similarities, particularly those related to ontological aspects.

2.5 Factors Influencing Sensemaking in Organisations

Literature on sensemaking suggests that sensemaking efforts never take place in isolation but are always shaped by a number of factors implicated in the sensemaking situation. From the large body of sensemaking studies that focus on what situational factors are critical and how they influence sensemaking in organisations, Sandberg and Tsoukas (2015) identify seven factors that have the potential to influence both the processes and the outcomes of sensemaking efforts. These factors are context, language, identity, cognitive frames, emotion, politics and technology.

The context or where sensemaking takes place has been found to be a prominent influencing factor on sensemaking process (Gioia and Chittipeddi, 1991; Sandberg and Tsoukas, 2015). Weick (1995: 53) argues that immediate social context (i.e. cultural, gender, changes, industrial, etc.) is crucial for sensemaking efforts as it "…binds people to actions that they must justify, it affects the saliency of information, and it provides the norms and expectations that constrain explanations". Weick (1995) further explains that context in which an activity has been interrupted heavily, influences the processes of sensemaking; specifically, how actors bracket, notice and extract cues from their lived experience and how extracted cues are interpreted.

Further elaboration on context is outlined in the subsequent section in this chapter with a particular emphasis on dynamic business environments.

Another influencing factor on sensemaking is the "language" which is referred to by some scholars as the building block of sensemaking (Rouleau and Balogun, 2011). Weick et al. (2005: 409) view sensemaking as "an issue of language, talk, and communication" and in this vein, scholars generally agree that language has an important effect on sensemaking (Gioia and Chittipeddi, 1991; Weick, 1995; Allard-Poesi, 2005; Angélique, 2007; Gephart et al., 2010; Stigliani and Ravasi, 2012; Holt and Cornelissen, 2013; Kudesia, 2017).

Linguistic factors including discourse, narratives, rhetoric, tropes and stories affect sensemaking efforts in various ways (Sandberg and Tsoukas, 2015) because sensemaking is performed by individuals generating discursive accounts that organise their thoughts and actions. In other words, how we make sense of our reality depend upon the frame within which words obtain meaning, and these frames are vocabulary specific (Weick, 1995).

Several studies on collective sensemaking have placed emphasis on conversational practices such as argumentation (Weick, 1995), metaphorical communication (Patriotta and Brown, 2011; Cornelissen et. al., 2012), stories (Taylor, 1999), exchange of narratives (Sonenshein, 2010) and accounts (Maitlis, 2005) that support convergence around a common interpretation of unexpected or ambiguous events.

In his book, *Sensemaking in Organisation*, Weick (1995) provides an example of the power of language and verbal labels in making sense (i.e. battered child syndrome). Pediatricians had long puzzled over children whose observed injuries were discrepant from their reported medical histories. Only after creating the label “battered child syndrome” could they interpret this odd phenomenon. The observed injuries differed from reported medical histories precisely because the parents of the children were both inflicting the injuries and misreporting their medical histories. In this way, verbal labels provide an important means of sensemaking (Weick et al., 2005).

Angélique (2007) notes that successful sensemaking is not only reliant on the flow and continuity of the process, but besides dynamics, imagination, possibilities and narratives, linguistic ability is of utmost importance. The impotence of language as an enabler of sensemaking process has also been evident in recent studies (e.g. Lunkka et al., 2019).

An additional factor influencing sensemaking effort is “identity” which is centrally placed in sensemaking (i.e. the first of Weick’s 1995 seven characteristics of sensemaking). Whether considered at individual(s) (micro) or organisation (macro) levels, identity is a core concept invoked to help make sense and explain action (Gioia et al., 2013). Schildt et al. (2020) note that identity is a particularly strong driver for sensemaking, because there is hardly anything that feels as plausible and certain to individuals or organisations as their own established identities.

It is generally accepted that sensemaking is grounded in identity construction and that individuals make sense of their work activities under the influence of their individual-specific needs for self-enhancement (self-esteem), self-efficacy and self-consistency (Brown et al., 2008). In other words, who individuals think they are in their context influences how they act and interpret events (Weick et al., 2005).

Gioia et al. (2000) argue that individuals have different identities for different roles and situations. In this vein, Weick (1995: 20) notes that “identities are constituted out of the process of interaction. To shift among interactions is to shift among definitions of the self". Therefore, a sense of continuous formulation and preservation of the self through interaction is essential to notions of individual identity which continually redesigns individuals' image of themselves (Parry, 2003). Identity is easily understood as critical at the individual(s) level; but recently, its importance has become increasingly apparent at more macro-levels of analysis as well (Gioia et al., 2013). Stigliani and Elsbach (2018) argue that the identity of an organisation comprises central principles and practices signifying respectively "who we are" and "what we do" as an organisation, which helps distinguish one organisation from another within a given industry. On the contrary, recent research suggests that organisational identity formation begins with a sensemaking process that rejects irrelevant—and potentially misapplied—identity claims (i.e. formal and informal statements about who they were and what they did) (Gioia et al., 2013). For instance, Gioia et al. (2010) examine the formation of organisational identity for a new college at a large U.S. university. They find that the process began with the articulation by college founders of "who they were not" (i.e. not a school of computer science). Later, founders made claims about "who they were", focusing on desired self-categorisations (e.g. "interdisciplinary school"). This initial articulation of identity, however, is a multistage had to be negotiated, compared and contrasted and experimented with by various organisational actors until they converged on a consensual identity definition (Gioia et al., 2010).

Weick (1995) argues that sensemaking collapses when identity is unclear where the social context and cues become ambiguous, retrospect becomes more difficult, ongoing events become resistant to bounding, plausibility is strained and probing action becomes more constrained. Research along this line has shown that when identity is threatened, or even when it simply becomes ambiguous, or when members become uncertain about what the organisational identity is (Maitlis and Christianson, 2014), actors need to revise and adjust their individual or organisational identity (Ravasi and Schultz, 2006) or, commonly, reinterpret their observations (Kunda,1990).

Another influencing factor on sensemaking process and outcomes is cognitive frame(work). A cognitive frame is a “mental template that individuals impose on an information environment to give it form and meaning” (Walsh, 1995: 281). These frames are produced and reproduced by individuals through labeling objects and situations according to observed attributes (Hahn et al., 2014). Cognitive frames influence what cues actors notice and extract, how they connect them and create a more coherent interpretation of an interrupted activity and what actions they take to restore the interrupted activity. Or as Angélique (2007) states, simplifies it as the frames chosen inform the vocabulary used and so colour the sense that is made.

Sandberg and Tsoukas (2015) further contend that cognitive frames can be either general or specific. The former includes various cultural templates (e.g. corporate, industrial, regional or national) and ideologies (e.g. political, gender, industrial and professional). The more specific cognitive frame includes “this-is-how-we-do-it-around-here” which is formulated as a result of the action of actors internalising their socialization into particular practices (Sandberg and Tsoukas, 2015).

Research along this line shows how cognitive frames affect sensemaking in organisations. For example, Bogner and Barr’s (2000) study examines how managers’ cognitive frameworks affect their way of making sense of emerging conditions in hyper-competitive environments. A more recent study by Hahn and colleagues (2014) focuses on managers’ strategic decision-making—under corporate social responsibility—with the managers concluding that cognitive framing perspective offers a better understanding of managerial decision-making on sustainability issues by recognising the importance of a greater cognitive diversity of managers with regard to the content and structure of their frames.

Research reveals that emotions also play a crucial role in sensemaking efforts (Maitlis and Sonenshein, 2010; Maitlis and Christianson, 2014; Sandberg and Tsoukas, 2015; Kataria et al., 2018; Will and Pies, 2018; Sandberg and Tsoukas, 2020). It is generally agreed that emotions are part of the sensemaking process, influencing whether sensemaking occurs, the form it takes, when it concludes and what it accomplishes (Maitlis and Christianson, 2014). Wieck (1995) argues that individuals remember events that have the same emotional tone as what they currently feel where past events are reconstructed in the present as explanations, not because they look the same but they feel the same.

Literature makes reference to positive and negative emotions to affect the process of sensemaking (Dougherty and Drumheller, 2006; Maitlis and Sonenshein, 2010; Kataria et al., 2018). The former can provide valuable energy but may be blinding and depleting when experienced or expressed intensely over time (Maitlis and Sonenshein, 2010). Kataria et al. (2018) found in the blogging industry how the bloggers and their followers used positive emotions as catalysts in the sensemaking and emotions were employed to accelerate or decelerate sensemaking during virtual communication through blogs. On the contrary, negative emotions (e.g. fear, desperation, anxiety and panic) typically occur when routine activities are interrupted (Sandberg and Tsoukas (2015) referencing Giddens 1999). Maitlis and Sonenshein (2010) note that such negative emotions can significantly hamper sensemaking efforts in that they reduce individuals' cognitive information processing capacity and their ability to notice and extract important cues. In their research that focused on change management project, Will and Pies (2018) argue that such projects fail because they meet employees' resistance created by negative emotional sensemaking processes. Other researchers studying crises settings exploring two cases of near-disaster (i.e. Apollo 13 and Three Mile Island) have argued that negative emotions (e.g. anxiety) hinder actors' ability to make sense successfully (Stein, 2004).

The influence of organisational politics on sensemaking also has attracted many scholars to explore further. Buchanan and Badham (1999) assert that organisational politics is the practical domain of power, and politics is about creating legitimacy for certain ideas to influence meaning construction. Specifically, organisational politics is power in action, where individuals use tactics and other techniques of influence to foster their will or objectives upon others (Buchanan and Badham, 1999). Balogun and Johnson (2004) note that organisational politics are particularly evident in instances of major change initiatives, ambivalence and uncertainty, when several units within an organisation try to direct the sensemaking efforts to their advantage. On a similar note, Filstad (2014) suggests that most of the literature that focuses on the politics of sensemaking processes singles out the role of power struggles, whether between executives and employees or between rival employee subgroups (Weick et al., 2005; Maitlis and Christianson, 2014).

Research argues that understanding how political struggle for control and the active, resistive or reactive forces among colleagues and leaders might be crucial to expanding current understanding of organisational sensemaking (Fox, 2000; Schneider, 2007). At the organisational level, Klarin and Sharmelly (2021) empirically demonstrate that sensemaking requires political connections for optimal firm performance in emerging economies. On the individual(s) level, Hope (2010) reports how middle managers in an insurance company influence the sensemaking of others, including their superiors through political actions. Organisational politics are much related to sensegiving (Hope, 2010; Maitlis and Sonenshein, 2010; Sandberg and Tsoukas, 2015) which is explored in the subsequent section of this chapter.

Another factor that influence sensemaking is technology – information technology or information system – (Sandberg and Tsoukas, 2015) in a way that can support sensemaking process (Weick, 1995). Technology are referred to as formal socio-technical systems using information technology to store, process and disseminate information (Piccoli, 2012; Klos and Spieth, 2021). There are several studies that report evidence of significant influence of technology on sensemaking process. For example, Seidel et al. (2017) find that technology can support essential sensemaking practices in environmental sustainability transformations, including experiencing disruptive ambiguity through the provision of environmental data, noticing and bracketing, engaging in an open and inclusive communication and presuming potential alternative environmentally responsible actions. The influence of technology on sensemaking process is reiterated in a recent work by Klos and Spieth (2021) which adds that technology positively influence sensemaking efforts and offer detailed descriptions on how managers adopt technology in their sensemaking processes.

2.6 Sensemaking: Exploring the Links

In recent years, research on sensemaking has significantly expanded proliferating different sensemaking-related constructs. Table 2 outlines these constructs which were amalgamated by Maitlis and Christianson (2014) but further revised by the researcher of this work to include more definitions by other authors.

Table 2: Sensemaking-related constructs

CONSTRUCT	**DEFINITION**
SENSEBREAKING	"The destruction or breaking down of meaning [and] involves a fundamental questioning of who one is when one's sense of self is challenged" (Pratt, 2000: 464). "Breaking down previously established sense" (Monin et al., 2013: 262). "Intentional efforts to create a meaning void for others in order to destroy existing meaning" (Röth et al., 2019: 539).
SENSEDEMANDING	"Strenuous efforts to acquire and process information so as to establish 'a workable level of uncertainty' and equivocality" (Weick, 1969, cited in Vlaar et al., 2008: 240). "Process of proactively seeking relevant knowledge from others so as to reduce uncertainty" (Yang et al., 2013: 5).
SENSE-EXCHANGING	"Different conceptions of organisation are negotiated to socially construct the identity of an organisation" (Ran and Golden, 2011: 421).

SENSEGIVING	“Attempting to influence the sensemaking and meaning construction of others toward a preferred redefinition of organisational reality” (Gioia and Chittipeddi, 1991: 442). “A sensemaking variant undertaken to create meanings for a target audience” (Weick et al., 2005: 416). “As the strategic or intentional side of sense-making, where an individual (or group) try to sway or influence the sensemaking of others to obtain certain goals” (Degn, 2015: 903). “Process of one uses to influence how others construct meaning” (Smith et al., 2010: 221). “Attempts to influence others’ understandings of an issue” (Maitlis, 2005: 21).
SENSEHIDING	“Discourse can be mobilizing in terms of promoting a specific kind of thinking and action or manipulative in terms of hiding particular ideas” (Vaara and Monin, 2010: 6). “Silencing alternative senses of integration or marginalization of particular voices” (Monin et al., 2013: 262). “Process of consciously avoiding certain discourses while managing change” (Mahapatra and Pattnaik, 2013: 10).
SENSE SPECIFICATION	“Specification of explicit or implicit norms . . . . coining of principles, exemplary decisions and actions, symbolization, and quantification.” (Monin et al., 2013: 262). “Guiding sense-making by drawing boundaries or over-arching tendencies that could involve morality, religion, or other significant themes” (Shukla, 2020).

Maitlis and Christianson (2014) argue that two of these constructs have gained traction and made a significant contribution to the understanding of how sensemaking is accomplished.

The first construct is sensegiving which “is concerned with the process of attempting to influence the sensemaking and meaning construction of others toward a preferred redefinition of organisational reality” (Gioia and Chittipeddi, 1991: 442). Green (2004) argues that if sensemaking is related to the idea of identifying justifications, then sensegiving refers to that of diffusing justifications within an organisation.

Sensemaking without sensegiving is incomplete (Will and Pies, 2018). Sandberg and Tsoukas (2015) argue that a “sensegiver” is also a “sensemaker”, and vice versa where the two processes complement one another (Rouleau, 2005) and cannot be separated. Gioia and Chittipeddi (1991) further note that sensegiving is a sequential and reciprocal process where the sensegiver and the sensemaker respectively are primarily dealing with influence and understanding. Therefore, sensegiving is seen as a way to influence sensemaking (Weick, 1995; Weick et al., 2005; Christianson et al., 2009; Will and Pies, 2018; Schildt et al., 2020).

Overall, the successful outcome of sensegiving mainly depends on whether the message is perceived by the intended audience to be rational and acceptable, the presence and efficacy of rewards and punishments and the congruence of the message with the receiver's values (Bartunek et al.,1999).

Nonetheless, there are a number of factors found to influence the effort of sensegiving. One of these factors is power and politics which plays a critical role in the process of sensegiving. Hope (2010: 198) argues that sensegiving is made possible by the exercise of power "where individuals use tactics and other techniques of influence to foster their will or objectives upon others". According to Hope (2010: 213), sensegiving processes "contain a wide range of political means to gain control over the processes, ranging from a political ploy involving taking control over process and meaning construction in an open process, to the more closed processes where secrecy and manipulation are important means for influence". A number of studies have set out to investigate how political activities and processes influence sensemaking and sensegiving among top management, middle management and employees, and to examine the consequences for implementing new knowledge. For example, Filstad (2014), in his research in the banking sector, concludes that as sensegiving activities are initiated by top managers with a formal power position, using their power as a force to not only influence middle managers and employees' sensemaking but also force one meaning of the truth and reality in the organisation, alternative interpretations are turned down.

Some literature cites that language also influences sensegiving efforts. Logemann et al. (2019) argue that to be effective in sensegiving, leaders must be able to communicate and use language to convince organisational members of the necessity of change. Thus, managerial sensegiving can be viewed as a managerial effort towards changing employee meanings through acts of persuasion and communication. In their research on strategic change processes, Logemann el al. (2019) find that managers have to be skilled language users to convince others of the necessity of change and to shape the interpretations of their followers in a preferred direction.

Sensegiving may include offering descriptions and explanations, providing signals (Lin et al., 2005); constructing credible, consistent narratives; and projecting images through stories, slogans, metaphors, and artifacts (Ravasi and Schultz, 2006; Brown et al., 2009). Thus, sensegiving can be through words as well as through symbols and symbolic actions (Pfeffer, 1981; Frost and Morgan, 1983; Gioia and Chittipeddi, 1991; Gioia and Thomas, 1996). Furthermore, Kataria et al. (2018) notes that emotions play a major role in sensegiving by utilising emotion-laden language as a tool to influence sensemaking in another. In their empirical research of worldwide network of organisations during time of change, Kataria and colleagues (2018) find that positive emotions such as gratitude and happiness towards certain sensegivers catalysed repeated tuning into such individuals for sensemaking. Conversely, negative emotions lead to the recipient themselves attempting to sensegive to others.

Whether sensegiving is a top-down, horizontal or bottom-up process has attracted some scholars to further explore. Some scholars argue that although sensegiving occurs at various hierarchical levels, leaders are institutionally empowered for sensegiving as they act as official representatives of the organisation and have privileged access to internal information (Brown and Humphreys, 2003; Ravasi and Schultz, 2006). Other scholars explicitly note that sensegiving is a top-down and a horizontal process (Balogun, 2003), whereby top managers impose salient observations, beliefs and goals that their subordinates need to accommodate in their sensemaking (Gioia and Chittipeddi, 1991; Gioia et al., 1994; Sonenshein, 2010). Others note it also is a bottom-up process where multiple agents interact with and mutually influence each other in terms of their mental models, agendas and communicative behaviours (Maitlis, 2005). For example, Hope's (2010) research shows that middle managers responded to the sensegiving efforts from their superiors by making sense of the changes and manipulating the process and resource power, thus becoming sensegivers themselves.

Another conceptually related construct to sensemaking is sensebreaking (Kataria et al., 2018) or sense unmaking (Giuliani, 2016). While there is less research on sensebreaking (Austin et al., 2020), it captures an important part of processes involving sensemaking and sensegiving (Maitlis and Christianson, 2014; Schildt et al., 2020).

Pratt (2000: 464) defines sensebreaking as "the destruction or breaking down of meaning [and] involves a fundamental questioning of who one is when one's sense of self is challenged". Individuals use sensebreaking to question others' existing understandings of themselves (Maitlis and Lawrence, 2007; Vlaar et al., 2008). The main purpose of sensebreaking is to disrupt another individual's sense of self or to cause the other individual to devalue self (Maitlis and Lawrence, 2007). Pratt (2000) argues that this disruption or devaluation creates a meaning void that is then followed by introducing the individual to new ideal selves. Therefore, sensebreaking is a prelude to sensegiving because not only is the current self-disrupted, but also a potential self is introduced to supply new meaning (Pratt, 2000).

The forms in which sensebreaking take place are questioning, reframing and redirecting (Pratt, 2000; Schildt et al., 2020; Kaffka et al., 2021). Doing this can lead to positive evolutionary or learning scenarios, or rather, to failures (Dervin, 1998; Vlaar et al., 2008; Almqvist et al., 2011; Maitlis and Christianson, 2014;

Kaffka et al., 2021). As with sensegiving, sensebreaking has primarily been explored as activities carried out by senior leaders or managers (Pratt, 2000; Mantere et al., 2012; Maitlis and Christianson, 2014).

Scholars generally agree that sensebreaking is a communication process (Pratt, 2000), which can be accomplished intentionally and through a variety of devices (e.g. through narratives) (Bisel et al., 2017), revealing mismatches between enacted and expected values (Hoelscher et al., 2016) and displays of negative and positive emotions (Scarduzio and Tracy, 2015; Kataria et al., 2018).

In summary, while sensemaking relates to the idea of understanding and sensegiving to that of influencing, sensebreaking can be referred to as the concepts of change and destabilization. In other words, sensemaking regards the identification of justifications of a specific phenomenon; sensegiving regards the diffusion of a justification among the members of an organisation while sensebreaking is related to the adoption of a new justification (Giuliani, 2016). Further, sensemaking, sensegiving and sensebreaking are interrelated processes where they influence one another.

2.7 Dynamic Business Environment and Sensemaking

Sensemaking's studies in organisations explore a range of different contexts in which there is surprise or confusion or when an organisation encounters an environment which is hard to get any sense (Wieck, 1995). These studies fall into two broad streams. The first involves research on sensemaking as it precipitates or unfolds during a dynamic environment and spans a range of contexts. These contexts include crises and disasters (Weick, 1993; 2002; Weick and Sutcliffe, 2003; Kayes, 2004; Boudes and Laroche, 2009; Vendelo and Rerup, 2009; Weick, 2010; Colville et al., 2013), organisational change, strategic planning and marketing (Gioia and Chittipeddi, 1991; Glazer and Weiss, 1993; Grant, 2003; Balogun and Johnson, 2004; Neill et al., 2007; Vecchiato, 2012; Aula and Mantere, 2013; Seidl and Werle, 2017; Gover and

Duxbury, 2018; Logemann et al., 2019), innovation (Dougherty et al., 2000; Wen and Chen, 2015; Roth et al., 2019) and decision-making (Bourgeois and Eisenhardt, 1988; Orton, 2000; Choo, 2002; Daellenbach et al., 2016).

The second strand of research focuses on specific industrial sectors such as healthcare (Albolino et al., 2007; Nigam and Ocasio, 2010; Lockett et al., 2014; Hultin and Mähring, 2016; Rosness et al., 2016; Lunkka et al., 2019), education (Milliken, 1990; Coburn, 2001; Degn, 2015; Rom and Eyal, 2019; Tan, 2019), finance and banking (Brown, 2005; Michel, 2007; Abolafia, 2010; Filstad, 2014; Van Der Steen, 2017), information technology (Orlikowski and Gash, 1994; Griffith, 1999; Heracleous & Barrett, 2001; Song et al., 2005; Wen & Chen, 2015; Kitzmiller et al., 2010; Ahmadi et al., 2018) and a few in the petrochemical industry (Weick, 1988, 2010).

Looking across these two streams of research, a central debate exists as to "whether organisations perform better in dynamic business environments when they engage in comprehensive but time-consuming information processing [i.e. sensemaking], or when they rely more heavily on less comprehensive processes such as intuition, heuristics and imitation" (Glick et al., 1992: 189-190, cited in Weick, 1995: 88).

Maitlis (2005) claims that sensemaking activities are particularly critical in dynamic and turbulent contexts, where the need to create and maintain coherent understandings that sustain relationships and enable collective action is especially important and challenging (Weick 1993). Furthermore, Klarin & Sharmelly (2021) argue that sensemaking for firms experiencing turbulent business environments is continuous and dependent on cyclical adjustments connecting performance via a feedback loop to scanning and interpretation.

Several imperial studies have shown linkages between organised sensemaking and organisational performance in the midst of a dynamic business environment. Milliken’s (1990) study of college and university administrators argues that examining the interpretation of specific environmental changes may be a useful approach to gaining insight into the factors that influence the environmental interpretation process. In other words, organisations that do not have an organised sensemaking of meaning make less changes in their own way of thinking, leading to less attention to threats and opportunities ahead (Ahmadi et al., 2018). Nouri & Kafeshani (2014), in their study linking entrepreneurial (i.e. operating in a volatile and uncertain environment) and sensemaking, further argue that lack of sensemaking among the entrepreneurial team in a given enterprise could not only deprive it of identifying or exploiting lucrative and profitable opportunities but also under severe circumstances lead to its final failure and collapse. Furthermore, if organisations make sense of dynamic environments, they may see their positions in the business environment better and therefore strengthen critical processes to prepare alternatives for dynamic business environment.

Henneberg and colleagues (2010) have found that organisational sensemaking enhances firms' ability to visualise the evolution of new business ideas before a competitor does. Klein et al. (2010) also have indicated that failures have largely been associated with a classification in organisational sensemaking where crucial cues are overlooked and organisations have neglected to analyse and use existing information in their internal processes. Recent research cites that sensemaking not only enhances the performance of organisations during a dynamic business environment but also helps shape the course of action. For instance, Nezami (2018), in his study of sensemaking during crises, notes that sensemaking can be crucial to figure out the cause of the problem, its likely outcomes and the possibilities for influencing the developing situation.

In contrast, few scholars argue that sensemaking may eventually create bureaucracy in the organisation and slow down the process of making meanings. For example, Bogner & Barr (2000) argue in their study of “hyperturbulent” organisations that adopting sensemaking frameworks does not work in enhancing the organisation’s performance in the midst of a dynamic business environment as these processes can become institutionalised as standard operating procedures within firms, and as shared recipes within industries, which in turn perpetuates hyperturbulent conditions. Sheng (2017), in his study of products innovation, expands the argument by noting that organisational sensemaking alone does not guarantee successful exploratory and exploitative product innovation but instead depends on how firms' capabilities synergistically combine and transform knowledge resources.

Overall, there is a general consensus in the literature that organisational sensemaking and its related constructs (i.e. sensegiving and sensebreaking) help organisations develop cognitive maps of dynamic business environments through the construction of shared interpretations of environmental changes.

The second strand of research is where scholars explore how sensemaking and its constructs are influenced by each other and other external influencing factors (e.g. politics, emotions, etc.) in specific industrial settings operating a dynamic business environment. For example, Gioia & Chittipeddi (1991) look at how sensemaking and sensegiving influence each other during a strategic change initiative in a public university. They find that sensemaking and sensegiving processes occur essentially in a sequential and reciprocal fashion that encompasses progressively expanding audiences (i.e. a chief executive is more impactful on sensegiving than middle managers, and middle managers’ impact is more than shop floor employees) and is in the strategic change effort (Gioia and Chittipeddi, 1991).

In her longitudinal study on symphony orchestras, Maitlis (2005) suggests that there are four forms of sensemaking (i.e. guided, fragmented, restricted and minimal) and these forms are associated with a distinct set of process characteristics that capture the dominant pattern of interaction between leaders and stakeholders. In the banking sector, Filstad (2014) investigates how political activities and processes influence sensemaking and sensegiving among top management, middle management and employees and examines its consequences for implementing new knowledge. In a similar vein in the finance sector, Giuliani (2016) investigates how organisations make sense of, give sense to and break sense of intellectual capital (IC) measurements (i.e. accounting measurements such as numbers, metrics, and indicators). He argues that the outcomes of the project depend on the specific type of sensemaking/ sensegiving/sensebreaking adopted in each phase.

In a more recent study, Kataria et al. (2018) explores the roles emotions play in sensemaking and its constructs in social media in today's dynamic business environment. They find that bloggers and their followers use emotions as catalysts in the sensemaking, sensebreaking and sensegiving processes. They further argue that deliberately or otherwise, emotions are employed to accelerate or decelerate sense processes during virtual communication through blogs. Other scholars in change management (Will and Pies, 2018) find that emotions in sensemaking processes play a major role in projects' failure. In this vein, Maitlis et al. (2013) develop a model of the role of individual emotion in the sensemaking process, showing how negative and moderately intense felt emotions are most likely to signal the need for and provide the energy that fuels sensemaking in organisations.

Several imperial studies found in the healthcare sector investigate sensemaking and its constructs in specific contexts. For example, Sylvain and Lamothe (2012) examine the sensemaking process of clinical professionals who are involved in the integration of different services for patients with comorbidities. Their empirical findings argue that the development of the integrated practices generated from an evolutional and collective process of constructing meanings rooted in those clinical professionals' work activities.

Another more recent work by Rosness and colleagues (2016) places similar importance on sensemaking in healthcare practices. They explore the role of sensemaking processes in the safe and efficient performance of surgical procedures. They find that members of the operating team pay great attention to what might happen during the next seconds, minutes and hours; building a capacity for anticipation which enables them to better collaborate and prepares them to handle undesired and foreseeable occurrences. They conclude that prospective sensemaking is a precondition for safe and successful completion of surgical procedures.

Given its critical nature and role the sector plays in the world economy, it is surprising to note that limited research exists that looks into sensemaking processes as they unfold or how they are influenced and influence each other in the context of O&G. An industry close to O&G may be the petrochemical industry where Weick (1988) investigates the root causes (based on his seven properties of sensemaking) leading to the explosion in the Bhopal methyl isocyanate (MIC) plant in India, which occurred in December 1982. Weick (2010) revisits his analysis to the Bhopal disaster and traces the root causes to the breaking down of many systems associated with enacted sensemaking. The breakdowns include a low standard of plausibility, minimal doubt, infrequent updating of both mental models and current hunches and mindless action.

As more and more industries become increasingly turbulent or are operating in dynamic business environments, managers need a new way of thinking about their firms and operating environments (e.g. via sensemaking processes). This is particularly true for an industry such as O&G in a small country such as Bahrain whose economy is heavily dependent on such commodity.

2.8 Middle Managers' Teams

The main focus in much of sensemaking, sensegiving and sensebreaking studies is generally on top, senior or executive management. Past research has suggested that CEOs (Chief Executive Officers) as well as other senior managers can, by virtue of their hierarchical position, in most instances shape and direct the interpretations of organisational members towards these new realities (Gioia and Chittipeddi, 1991; Gioia et al., 1994; Gioia and Thomas, 1996; Fiss and Hirsch, 2005; Maitlis, 2005; Richter and Arndt, 2018). For example, Parry (2003) investigates how senior executives make sense of their professional life. Degn (2015) examines how top-level management in higher education settings make sense and give sense of the changing environment. In another recent study, Klein and Eckhaus (2017) explore how senior and non-senior employees engage in sensemaking and sensegiving activities prior to and during a crisis. Overall, these inquires generate themes that explain senior managers sensemaking process and compare these themes with Weick's seven properties of sensemaking. This kind of top-down sensemaking process is common in the literature, perhaps unsurprisingly, since leadership has been described as co-creators or co-authors of meaning (Gerardo, 2017) and share it (i.e. sensegiving) with their subordinates in the organisation to accommodate in their sensemaking (Gioia and Chittipeddi, 1991; Gioia et al., 1994; Sonenshein, 2010; Logemann et al., 2019).

While senior managers' sensemaking, sensegiving and sensebreaking are highly influential in organisations, other groups might be going through their own sensemaking processes and arriving perhaps simultaneously to differing meanings and interpretations (Gerardo, 2017). This said, more recently there has been a focus on examining middle managers' roles in creating organisational meanings (Maitlis and Lawrence, 2007). For example, in Balogun and Johnson's (2004) study of strategic change in a utility company, middle managers are very active in interpreting the meanings of events for themselves and their teams through a range of verbal, textual and non-verbal behaviors. Also, Rouleau (2005) studies how middle managers sell changes to external clients showing how they adopt slightly different strategies (i.e. micro practices of rhetoric for persuasion, such as impression management, etc.) given their position in the hierarchy and role. Moreover, Hope (2010) examines the role of power and politics in sensegiving and sensemaking by exploring how middle managers seek to influence the change outcome through the power of resources, the power of process and the power of meaning.

Whether the focus is on senior or middle management, much of the sensemaking literature focuses on the individual as the unit of analysis where the conversation on collective, group or team sensemaking is in its early conceptual stages (Martin, 2015). The small amount of evidence available in team sensemaking comes primarily from case studies from the military and emergency response (e.g. firefighters and hospitals) industries. For example, Weick's (1993) case study focuses on how sensemaking unfolds at a team level during the Mann Gulch forest fire (in 1949 in Montana, USA). In a similar context, Klein et al. (2010), in their case study during crises, describe emergent strategies for accomplishing different aspects of team sensemaking where they describe emergent requirements for sensemaking at the team level. Further, Merkus et al. (2017) investigates, in the context of change management, the ways in which members of inter-organisational teams collectively make sense of unexpected events and decide upon engaging in action.

Martin (2015) argues that the better the team sensemaking process is, the better the reaction to navigate into a dynamic environment becomes. This suggests that there are gradations in the quality of sensemaking processes between teams (and therefore organisations). In this vein, Akgün et al. (2012) contend that team sensemaking capability is one of the core competencies of an organisation. This premise has been reiterated by a recent work which shows that a team context is particularly suitable for sensemaking, as the interdependence and team identity create a setting in which team members interpret their collective experiences and construe attributions of those experiences (Robertson, 2006).

Recent literature reviews show that the dynamics of creating common understanding among team members in an inter-organisational context remain unclear (Holt and Cornelissen, 2013; Maitlis and Christianson, 2014; Sandberg and Tsoukas, 2015). Earlier studies on team sensemaking in organisations demonstrate that a shared sense can be accomplished among team members with diverging orientations (Brown et al., 2008; Vlaar et al., 2008; Morgeson et al., 2009; Bergeron and Cooren, 2012; Silva et al., 2014). It is not yet clear how exactly team members collectively categorise unexpected events in order to engage in collective action (Morgeson, 2005; Weick et al., 2005; Maitlis and Sonenshein, 2010; Van Marrewijk et al., 2014; Martin, 2015; Merkus et al., 2017).

Therefore, this research sets out to respond to the increasing calls to explore sensemaking, sensegiving and sensebreaking processes as they manifest among team members (Stigliani and Ravasi, 2012; Maitlis and Christianson, 2014; Martin, 2015; Sandberg and Tsoukas, 2015; Kudesia, 2017; Merkus et al., 2017) in the context of a dynamic business environment. Having outlined the importance of the O&G sector to Bahrain's economy and the catalyst role middle managers play in the sector (further expanded in Chapter 3), this research is specifically addressing the following research questions:

RQ1: How do teams (comprised of middle managers) make sense of situations/events and influence others to ultimately make decisions in the O&G sector in Bahrain?

- RQ1a. What is the process of sensemaking used by teams (i.e. middle managers)?
- RQ1b. What are the differences in the sensemaking process between technical and non-technical business units?
- RQ1c. What are the approaches adopted to influence team members' sensemaking process (sensegiving)?

RQ2: How is sensebreaking used to influence the sensegiving process by teams in technical and non-technical business units?

2.9 Summary

This chapter attempts to critically review the literature on sensemaking, sensegiving and sensebreaking in the context of a dynamic business environment to identify the gap(s) in which this work is based.

The chapter started by defining and relating a dynamic business environment to the O&G sector and the role the sector plays in the Bahrain economy. The chapter further outlined how sensemaking in organisational studies evolved and main literature around sensemaking. In addition, the definitional challenges of sensemaking have been critically discussed to further understand the construct and arrive at a definition that is used in this work. Moreover, the main factors that influence sensemaking efforts have been identified in the literature and examined. In this chapter, the links to sensemaking have been explored and specifically sensegiving and sensebreaking have been zoomed into, as they are of relevance to this work. Leading to identifying the gap in the literature, work on sensemaking, sensegiving and sensebreaking in the context of a dynamic business environment has been discussed. Also, as part of identifying the literature gap, previous work on teams has been investigated.

Chapter 3: Methodology

3.1 Introduction

This chapter presents the research design, methodology and approach applied in the research. The chapter begins with the outline of the research philosophy, including the ontological and epistemological orientation of the presented research. This is followed by underlying the qualitative research approach and then presenting the coherent methodological research choice. The research sample and selection are discussed together with data collection methods. The discussion of the data analysis finalises the research design approach and is followed by ethical considerations in the context of the presented research. The chapter ends by outlining the research limitations and the chapter summary.

3.2 Research Philosophy

Crotty (1998) asserts that the philosophical beliefs underpinning the research provide the foundation for a research project. Such beliefs inform the choice of epistemology, paradigm and strategy that researchers employ.

This section justifies the adoption of a social constructionism ontological stance with knowledge generated from an interpretivist theoretical perspective, operating through an inductive research strategy.

Ontology concerns the issue of what exists, or the fundamental nature of reality (Crotty, 1998). Distinctions are made between describing knowledge as something or a “reality” that already exists “out there” or something that is socially constructed. Whilst the viewpoint on social reality believes that reality exists out there, the social constructionism view argues that the reality of a phenomenon is socially constructed through relationships and interactions between individuals. Maitlis and Christianson (2014) indicate that scholars locate sensemaking processes in different places where some regard them as a primarily cognitive process (as explained in Chapter 2) that takes place mostly in individuals' heads, and others (including the author of this work) see them as processes of social construction that are carried out through interaction between individuals. Therefore, through a social constructionism lens, this work sets out to explore the processes of sensemaking, sensegiving and sensebreaking of middle managers' teams in dynamic business environments of the Oil and Gas (O&G) sector in Bahrain. This is because "sensemaking occurs and can be studied in the discourses of social members—the intersubjective social world—rather than simply occurring in their minds" (Gephart, 1993: 1470). It is asserted that sensemaking processes are inherently socially constructed in which social actors (i.e. middle managers) attempt to interpret and explain sets of cues (i.e. reality) from their environments (Gioia and Chittipeddi, 1991; Weick, 1995; Maitlis, 2005; Holt and Sandberg, 2011).

Further, an interpretivist approach to knowledge generation "recognises the importance of the subjective human creation of meaning" (Crabtree and Miller, 1999: 10).

Interpretivism is an epistemology that advocates that knowledge is produced by exploring and understanding the social world of the people being studied, focusing on their meanings and interpretations (Lincoln and Guba, 1985). Interpretivists view the organisational realities as being socially constructed by the interactions of the organisational elements.

A social researcher has to explore and understand the social world through the participants' and their own perspectives, and explanations can only be offered at the level of meaning rather than cause (Ormston et al., 2014). Interpretivism is a more subjective and qualitatively inclined approach whose view can help to acquire a better understanding of organisations from the standpoint of the practical experiences of organisational actors (Uduma and Sylva, 2015).

Interpretivist stance allows a researcher to gain an understanding of how and why middle managers in their roles as social actors make, give and break sense in the way they do in dynamic business environments, instead of determining that they act differently and that their responses are impacted due to certain variables. Thus, an interpretivist stance is found most appropriate to adopt in this work.

Having positioned the work in its appropriate philosophical stance, the next section focuses on discussing the research strategy adopted.

3.3 Case Study Approach

Yin (1984) argues that case study is used in organisational and management studies and case study is conducted and considered as a justifiable rationale if the research questions focus mainly on “what” or “how” types of questions. It allows researchers to explore the contextual factors impacting the nature of the phenomenon, organisational sensemaking, which highlights the role of environmental cues (Creswell, 2013). Case studies can be used with combined data sources such as interviews, observations and documents.

The case study approach is generally a common method in qualitative research and is considered to be a very descriptive and eye-opening method of research (Miles et al., 2014). More specifically, case studies feature prominently in the sensemaking literature (Parry 2003; Mattos et al., 2009; Filstad, 2014; O’Connor, 2015; Giuliani, 2016; Sandberg and Tsoukas, 2020), as this research design is well suited for studying both every-day and extreme examples of sensemaking and its supporting processes (Maitlis and Christianson, 2014).

As research questions determine the methodology that is used to collect the required data for the study (Yin, 2014), a case study approach is selected for this research work with multiple instances (i.e. technical and non-technical business units in the same organisation) to enable the use of multiple sources of data in order to grasp, compare and contrast how middle managers use sensemaking, sensegiving and sensebreaking in dynamic business environments of O&G. It was found possible to articulate a clear research focus (Mintzberg, 1979) to test through an appropriate sample within one organisation. Multiple case studies were considered and found that they would add additional variances that would obfuscate rather than clarify the research which demands additional time resources that add pressure to the research timeline (Eckstein, 1975). Furthermore, the single case with multiple instances offered contrasting perspectives through the maps and additional data of both knowledgeable agents and key informants (Hartley, 2004).

While this work acknowledges that generalisability of any case study cannot reach beyond the cases selected (Yin, 2014), it was sacrificed to gain a closer and a richer understanding of the middle managers' teams making, giving and breaking sense in dynamic business environments of the O&G sector in Bahrain.

3.4 Sample Selection

Sampling decisions are required not only about which people to observe and/or interview but also about the settings, events and social processes (Creswell, 1998; Punch, 2005). In this section, the rationale for selecting the organisation for this case study and the participants is discussed.

3.4.1 Case Selection

This research sets out to investigate managerial practices in dynamic business environments, focusing specifically on sensemaking, sensegiving and sensebreaking of teams comprised of middle managers in the context of O&G in Bahrain.

The O&G sector in Bahrain falls under the umbrella of National O&G Authority (NOGA, 2017) chaired by the Minister of Oil and is comprised of nine organisations (Figure 3).

There are more than 230 management staff managing the O&G sector (Husain, 2015b), making sense of, giving sense to and breaking sense of situations/events on individual and/or team levels to better understand and ultimately make decisions. Such comprehension of the various situations/events is a critical part of managerial practices which eventually impact the O&G sector and therefore the survival of the Bahrain economy.

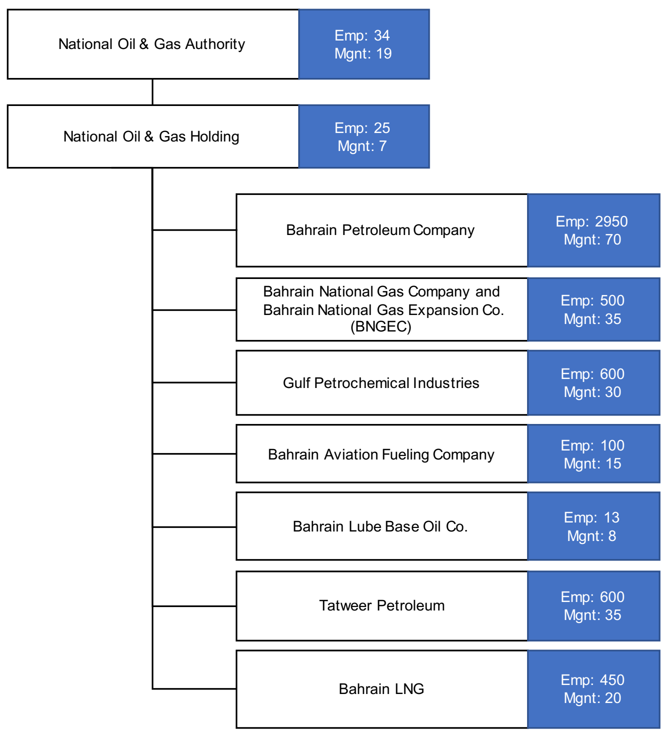

Figure 3: Number of employees in the Oil and Gas sector in Bahrain

In selecting the particular case of the nine organisations that fall under the NOGA umbrella, a number of criteria were considered:

- Convenience of accessing data (i.e. interviews, attending meetings, reviewing documents): A considerable support was provided by the senior management of the case selected.
- The quality of data: The organisation is known locally, nationally and internationally for employing high-caliber individuals and maintaining world best practices. This is evident by the many national and international awards and recognitions the case received over the years.
- The age and size of the organisation: The case selected for this research is one of the oldest and largest organisations in Bahrain and the O&G sector in the region.
- The dynamics within the organisation: The organisation studied is currently going through a significant modernisation phase (the largest in its history) to meet future global energy demand.
- Dynamic business environments: Despite the fact that the selected organisation (i.e. the case) is based in Bahrain, it is competing in the global O&G market. What is more, the organisation is located in the largest O&G region where fierce competition exists. Therefore, the case selected is directly impacted by conditions created by the dynamic business environments the case is operating in.

The four business units selected in this research are Operation and Maintenance to represent the Technical Business Unit, while Marketing and Finance represent the Non-Technical Business Unit. The Human Resources and Administration Division is excluded because all of its middle managers, including its head, are newly appointed; therefore, they do not meet the inclusion criteria outlined in section 3.4.5.

A discussion with the head of the core business unit (i.e. Operation) took place to explain the intent and process of this research to obtain his approval and support. An email was sent on 26 December 2017 to all concerned middle managers and heads of other three divisions requesting their support and cooperation (Appendix A).

3.4.2 Participant Selection

Miles et al. (2013) note that all research (including qualitative) involve sampling (or selecting participants) and this is because no research can "…study everyone, everywhere doing everything" (Punch, 2005: 187).

Generally speaking, sampling decisions always fluctuate between the aims of covering as wide a field as possible and performing analysis which is as deep as possible (Flick, 2011). In quantitative research, the primary goal for the sampling procedure is to get a representative sample, a small number of participants but representative of the bigger population, and produce accurate generalisation about the population. However, in qualitative research, the purpose of sampling is to collect specific cases, events, or actions that can clarify or deepen the understanding of the phenomenon under study.

Kuzel (1999) asserts that regardless of the specific sampling strategy, the primary concern with any qualitative sampling method is that information richness replaces representativeness. In other words, the "sample" chosen (though thoroughly done) cannot and will not be representative of the larger population. Whatever the sample may be, it only represents itself and the studied phenomenon (Ishak and Bakar, 2014).

A purposive sampling strategy (or some authors refer to it as "purposeful" sampling) (Creswell, 2013) is adopted for this research work. That is selecting individuals who may have information that could be used to answer the research questions. The justification for selection usually involves claims that the individual selected has certain characteristics that make them an "interesting participant".

Such sampling strategy is one of the most common sampling strategies in qualitative research, which groups participants according to preselected criteria relevant to a particular research question (Punch, 2005). Further, purposive sampling strategy is found to be popular in sensemaking research (O'Connor, 2015; Berberich, 2016).

Another consideration that goes into the sampling approach of any qualitative research is the size of the sample. This is a challenge since scant literature exists for estimating sample size pre-qualitative research. However, literature notes that the sample size can be said to be enough when "data saturation" (or "informational redundancy") is reached (Punch, 2005). Data saturation (developed originally for grounded theory studies but in one form or another it now commands acceptance across a range of approaches to qualitative research (Saunders et al., 2017)) is reached when the researcher gathers data to the point of diminishing returns, when nothing new is being added (Punch, 2005).

This said, data saturation is an elusive concept and standard in qualitative research since few concrete guidelines exist (Marshall et al., 2013). Saunders and colleagues (2017) identify four different models of saturation. The first of these—rooted in traditional grounded theory—uses the development of categories and the emerging theory in the analysis process as the criterion for additional data collection, driven by the notion of theoretical sampling, thus labelled as "theoretical saturation". The second model takes a similar approach, but saturation centres on the identification of new codes or themes and is based on the number of such codes or themes rather than the completeness of existing theoretical categories. This is labelled "inductive thematic saturation". In the third model, data is collected so as to exemplify theory, at the level of lower-order codes or themes, rather than to develop or refine theory therefore termed a "priori thematic saturation". The fourth model, the approach adopted in this work; is referred to as "data saturation" whereby saturation is concerned with identifying redundancy in the data, with no necessary reference to the theory linked to these data; saturation is principally located at the data collection level and appears to be distinct from formal data analysis.

Despite its importance particularly at the conceptual level, data saturation alone might not be the best marker of an adequate sample in qualitative research. Marshall et al. (2013) identify three methods used to justify the sample size of interviews in qualitative research. The first method is to cite recommendations by qualitative methodologists. For ethnography, Morse (1994) suggests approximately 30-50 participants and 30-50 interviews for grounded theory, while Creswell (2013) suggests only 20-30. For phenomenological studies, Creswell (2013) recommends 5-25 and Morse (1994) suggests 6. Marshall and colleagues suggest 15-30 interviews for case studies. Pan and Tan (2011) only suggest a minimum number of 15 for case studies after which data saturation often occurs. In this work, data saturation occurred after 16 interviews which proved to be consistent with these guidelines.

The second method of justifying the sample size; as noted by Marshall and colleagues (2013); is to act on precedent by citing sample sizes used in studies with similar research problems and designs. Very few studies were found with a similar research problem and design; those found only justify the sampling method (e.g. convenience, purposive, snowball, etc.) (O'Connor, 2015). This is consistent with Mason's (2010) findings where he examines 560 Doctor of Philosophy (PhD) qualitative research theses. He found, on one hand, that many researchers shy away from suggesting what constitutes a sufficient sample size (in contrast to quantitative studies, for example). On the other hand, Mason found that sample sizes tend to exceed (or superfluous) what may be needed in the PhD theses he reviewed.

"Superfluous" sampling brings a number of concerns of which the author of this work needs to be mindful of as he progresses through the data collection and analysis phases (Guetterman, 2015). The first, as data tend to become repetitive, qualitative analysis may lose depth. The second concern is that the study may consume more resources (e.g. time to collect data, analyse data, etc.) than required. Finally, one should question the ethical implications of burdening more participants than are actually needed.

The third method of rationalising the sample size is through statistical demonstration of saturation within a dataset (Marshall et al., 2013). In other words, developing your own evidence-based guidelines from your own dataset of interviews. Marshall and colleagues (2013) find very few research efforts to identify appropriate sample size ranges. Research by Guest et al. (2006) was based on their review of recommendations of qualitative methodologists; they found that nearly all recommend achieving theoretical saturation.

To summarise this section, the appropriate number of interviews depends overall on the size of the unit of analysis (e.g. organisation or department), the phenomenon under investigation, the scope of the study and the timeframe available (Pan and Tan, 2011).

3.4.3 Middle Managers

Since the main information in this research is obtained from middle managers, it is essential to establish a definition for middle managers. In her literature review to define who “middle managers” are, Rezvani (2017: 7) broadly defines middle managers as the “intermediate management group are between top level/central management and lower level/outer edges management”. Middle managers also have been described as a group of stakeholders (Maitlis, 2005), who contributes to organisational development (Rouleau and Balogun, 2012) and members of core and small divisions (Balogun and Johnson, 2004). As a group, middle managers are said to draw on new cues from the environment to frame new or reframe already existing information and knowledge structure to implement and facilitate change processes (Balogun and Johnson, 2004;

Maitlis, 2005). Middle managers' sensemaking studies have therefore looked into their sensemaking process as one belonging to a specific group of managers who is engaged in the same or similar sensemaking process in relation to a particular organisational event or process (Gioia and Chittipeddi, 1991; Balogun and Johnson, 2004; Rouleau and Balogun, 2011).

Therefore, middle managers are the focus of this work because they are:

1. Critical for creating alignment in organisations and influencing organisational performance (Balogun and Johnson, 2004).
2. Uniquely positioned to facilitate, blend and synthesise the emerging constructions from a range of different managerial groups (Beck and Plowman, 2009).
3. Working at the boundaries between senior management and the rest of the workforce; their role may involve continuously responding to the demands of sensemaking, sensegiving and sensebreaking.
4. Very active in interpreting the meanings of events or situations for themselves and their teams through a range of verbal, textual and non-verbal behaviors (Balogun and Johnson, 2004, 2005).
5. Critical in translating high-level aspirations into local actions or behaviours that underpin the vision and keep business going (Balogun and Johnson, 2004, 2005).
6. "Understudied" as opposed to top-managers or senior leaders in most sensemaking (and its supporting processes) research studies (Maitlis and Christianson, 2014).

3.4.4 Data Collection

Studying sensemaking/sensegiving/sensebreaking processes involves recording accounts and analysing the language with them, which entails the use of a qualitative method of data collection (Isabella, 1990).

To avoid systematic bias, the researcher used several data-collection methods: semi-structured interviews, observations and document analysis (Creswell, 2013; Yin, 2014). The combination of these data collection methods provided a complete picture of how teams of middle managers used sensemaking, sensegiving and sensebreaking of events in dynamic O&G business environments in Bahrain.

In other words, the principal actions of the researcher relative to data collection were “enquiring” (asking middle managers about their experiences), “experiencing” (observing teams of middle managers engaging in sensemaking, sensegiving and sensebreaking) and “examining” (documents) in order to gain a holistic understanding and ideas each middle manager has constructed. Data collection relied on all three sources as no single source could provide all of the data needed to understand the research questions.

This research consists of two waves of semi-structured interviews which are used together with overt observations of departmental and divisional meetings and document reviews to answer the research questions (Figure 4).

3.4.5 Semi-Structured Interviews

As noted earlier, a purposive sampling approach is adopted for this work where individuals who satisfy the following criteria are said to be in a “primary selection” category and hence “good informants” (Flick, 2011) and should be capable of offering insights into my research topic.

The purposive sampling strategy adopted in this research sought to identify key individuals who:

- Have knowledge of the areas covered by the interview protocol;
- Possess enough experience (i.e. at least 5 years as a middle manager in the same company selected as the case of this research);
- Can reflect upon and articulate their perceptions; and
- Are ready to participate.

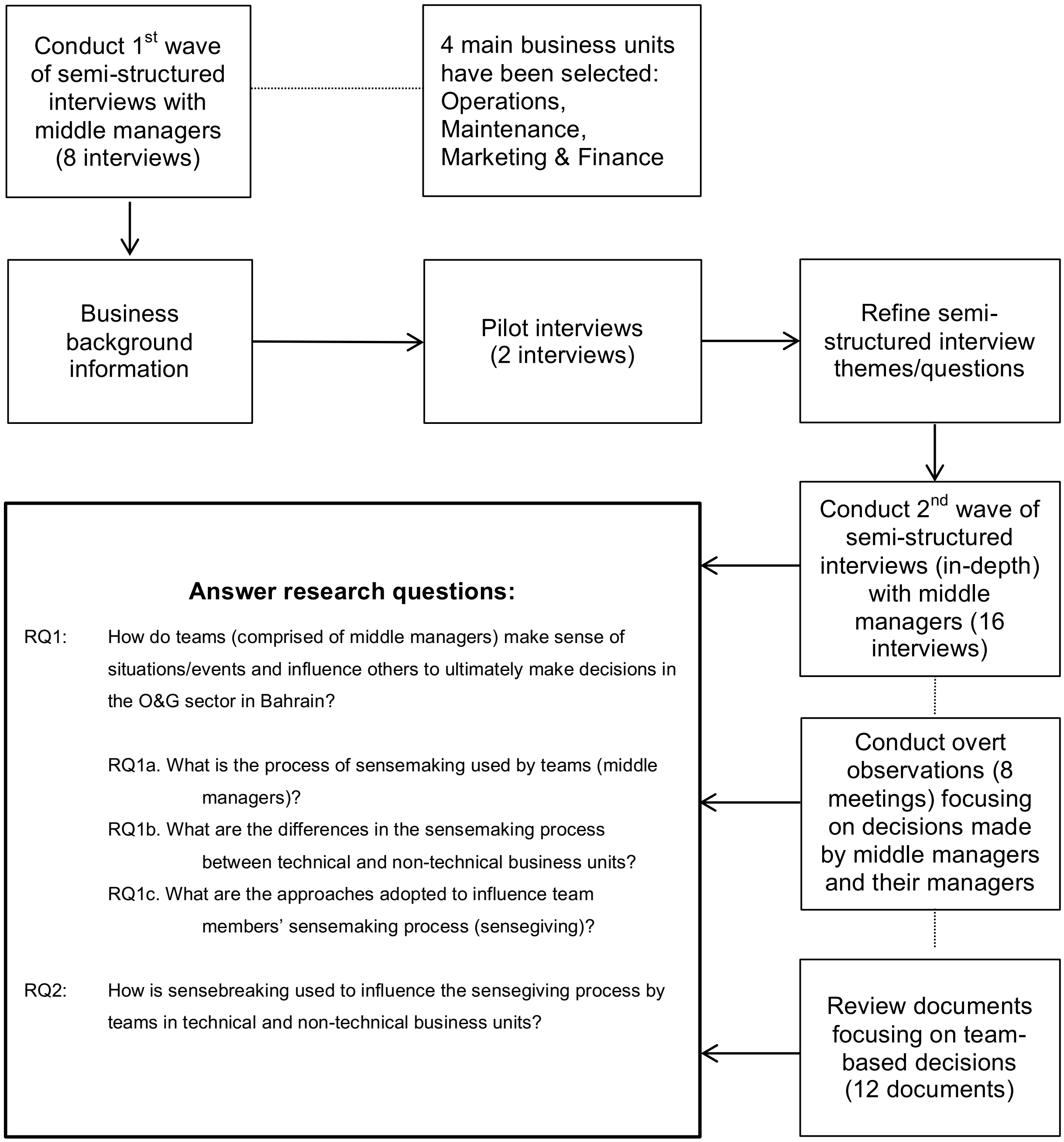

Figure 4: Data collection flowchart

Unlike questionnaires, which are commonly used to gather simple or straightforward information, interviews in general are a powerful method to explore more complex and challenging phenomena associated with human experience (Rowley, 2012). In line with the qualitative research approach and the philosophical orientation of this research, interviews are found to be the most suitable method to gain in-depth information about middle managers making sense, giving sense and breaking sense in the O&G sector in Bahrain. The decision to adopt interviews as the main data collection to answer this research's questions is supported by the literature which notes that much of sensemaking, sensegiving and sensebreaking understanding are developed from rich qualitative data drawn from interviews (Weick, 1988; Gioia and Chittipeddi, 1991; Gephart, 1993; Maitlis, 2005; Maitlis and Christianson, 2014).

Although all qualitative interviews pursue the same objective, namely to gather in-depth information through talk and conversation, different types of interviews can be distinguished based upon the amount of structure which is imposed on them (Remenyi et al., 1998).

Out of other forms of interviews (e.g. structured and unstructured interviews), semi-structured interviews are the most widely used form of interviews in qualitative research as they have the capacity to answer complex questions (Rowley, 2012; Saunders et al., 2017). Therefore, face-to-face semi-structured interviews are considered as a primary data collection strategy.

The use of semi-structured interviews to investigate middle managers' experience concerning sensemaking, sensegiving and sensebreaking offers a number of advantages when compared to other forms of interviews.

Unlike a structured interview where the sequence of the questions to be asked is predefined right from the beginning, semi-structured interviews (a more flexible version) are organised around an interview protocol (Appendix B), which is comprised of the repertoire of a pre-set list of open-ended questions for the researcher to ask the interviewees. The researcher has also the opportunity to ask follow-up questions which allows for a depth of feeling to be discovered by providing opportunities to probe and expand the interviewee's responses, allowing for deviation from a pre-arranged text and changing the wording of questions or the order in which they are asked (Rowley, 2012). In other words, the how and in what way the questions are asked may vary from interview to interview and are dependent on the flow of the interview. This also includes the opportunity for omitting some questions in some interviews and adding in others (Saunders et al., 2009). In so doing, semi-structured interviews ensure sufficient focus on the key topics of interest (Cousin, 2009).

The use of further questions allows interviewees to build on or explain their responses in more detail (Saunders et al., 2009), which suggests that middle managers may use phrases or expressions in a particular way to describe their experience making sense, giving sense or breaking sense. Thus, semi-structured interviews may offer a prospect for middle managers to hear themselves "thinking aloud" about particular events or situations, which they had initially not thought about or pushed to the back of their mind (Saunders et al., 2009). This proposition is supported by Cousin (2009: 73), who argued that "semi-structured interviews are best conceptualised as a third space, where interviewer [researcher] and interviewees work together to develop understandings".

Another advantage of semi-structured interviews is that the researcher can explain the purpose of the research and answer or clarify any questions interviewees may have before, during and after the interview. In so doing, they give the researcher the opportunity to clear any misunderstandings and increase the chance of obtaining valid information from the respondents (Cohen and Manion, 1994).

Furthermore, Cohen and Manion (1994) assert that despite the fact that provision for negotiation, discussion and expansion of the interviewee's responses is made, the semi-structured interview imposes an overall shape to the interview and helps prevent aimless rambling to allow the researcher to make a truer assessment of what the interviewee really believes.

These advantages not only justify the choice for semi-structured interviews; they also serve as guidelines assisting the researcher in making sense of interviewees' explanations, interpreting their actions, understanding the feelings they reveal from their own perspective, and most importantly, helping gain all of the rich information that they provide.

While it is considered the most appropriate primary data collection method for this work, semi-structured interviews have a number of limitations a researcher should be aware of. The first is that semi-structured interviews raise questions of reliability and validity due to subjectivity concerning the interpretation of data. Other issues also derive from human bias, where there is the possibility of the researcher's bias creeping in (Opie, 2004). Opie (2004) further argues that the relationship between the questions asked and the conclusions drawn are no longer straightforward. Reflecting on such issues helped the researcher work around a way to overcome them, where the researcher attempted to remain neutral throughout the research period with the intention of avoiding the influence of personal judgement and biases during the interviews, during transcribing and data interpretation.

Another issue with semi-structured interviews is that a novice researcher is often unable to identify where to ask probe questions or probe responses to gather some relevant data. This can be overcome by experience; however, "observed interviews" played a major role not only in coaching the researcher on when to ask probe questions but also helped ensure that the researcher followed the interview protocol. In this work, two interviews (i.e. MTC1-1 and FN1-2) were observed by an experienced interviewer who gave a detailed verbal feedback to the researcher of this work. Examples of such feedback included changing the sequence of some questions and adding more probe questions in the second version of the interview protocol.

Another disadvantage of adopting interviews in general is that they are time consuming, not only in terms of conducting the interviews but also concerning arranging them, travelling to the venue, conducting a post-interview transcription and analysing data.

3.4.6 First Wave of Interviews

Eight middle managers were interviewed in the first wave of semi-structured interviews (Appendix C). Two from each business unit were selected for this research to obtain information related to this research case's overall business conditions, the context and schedules of middle managers' meetings, the context and types of issues discussed by middle managers and identifying documents utilised by middle managers that may assist them in their sensemaking process. The outcomes of these interviews were utilised to prepare for the second wave of interviews. For example, they guided the author of this work to further refine the research questions and the questions of the second wave of interviews. Also, these interviews helped in identifying documents utilised by middle managers to make sense of various events or situations and obtain information about meetings where middle managers collectively make sense. These interviews were carried out from 08-25 January 2018; they were all conducted in English and each lasted for approximately 40-45 minutes. They were recorded on a recording software and written notes were made during and post the interviews. Each voice recording was kept in a separate file for future reference and backed up for security. An interview protocol was utilised (Appendix B) to guide the researcher and maintain focus on the research questions.

3.4.7 Pilot Interviews

Pilot interviews has been carried out and the developed research questions have been tested. The pilot interviews have been performed with two middle managers; each spent more than 10 years as a middle manager in the O&G sector in Bahrain. The qualities of these interviewees are similar to those selected for the second wave of the interviews. The interview questions for this research have been discussed and readjusted based on the outcomes of these pilot interviews. The emphasis of this pilot was to verify that the questions were understood by the interviewees and that they generated the anticipated information to support the research questions. The pilot interviews are vital at an early stage of this research to address any ambiguity or misunderstanding in the research questions so as to generate research evidence and the framework for the semi-structured case study interviews (Yin, 2014). These pilot interviews helped in addressing the point raised by Opie (2004) in section 3.5.5. concerning the clarity of the interview questions. One unclear aspect picked up in this pilot was the definition of “middle managers”, which has been made clear in subsequent interviews. The pilot interviews were conducted with no time limit so that there was room for discussion of all questions and for further discussion with the interviewees. The two interviews were conducted in English and each pilot interview lasted for approximately 100 minutes. They were recorded using a recording software and also written notes were made before, during and post the interviews. A professional interviewer shadowed this work’s researcher during these interviews to observe and provide comments to the researcher which improved his focus on the interview protocol.

3.4.8 Second Wave of Interviews

In the second wave of semi-structured interviews, 16 middle managers satisfied the purposive sampling criteria (Appendix D). These interviews focused more on understanding the processes of sensemaking, sensegiving and sensebreaking of events among middle managers’ teams in dynamic O&G business environments in Bahrain. Even though all interviewees were Bahraini nationals, all interviews were conducted in English as the organisation’s official language is English. The interviews were conducted from 12 August 2018 to 18 September 2018; each interview lasted for an average of 60 minutes. The interviews were recorded on a recording software and written notes were made during and post the interviews. Each voice recording was kept in a separate file for future reference and backed up for security. An interview protocol was utilised (Appendix E) to guide the researcher and maintain focus on the research questions.

3.4.9 Interview Protocols

Interview protocols serve as a guide for the researcher (Yin, 2014) and are utilised to collect similar types of data from all participants and create a sense or order. Creswell's (2007) recommendations for development of interview protocols were followed (Appendixes B and E) for the first and second waves of interviews' protocols. Creswell (2013) suggests that the interview protocol form should have open ended queries and probes to asking questions to obtain further clarification if required. The questions should be created from the central research questions and sub-questions of the research. Further, Creswell (2013) recommends that researchers begin with a simple question that puts the interviewee at ease so as to provide a comprehensive response.

3.4.10 Non-Participant Observations

Observation is a systematic process of collecting information in which researchers observe a given phenomenon in its natural environment (i.e. sensemaking, sensegiving and sensebreaking) by teams of middle managers. Observation is a powerful tool used in the data collection process in qualitative studies in general (Creswell, 2013) and it is used extensively to draw rich qualitative data to research sensemaking, sensegiving and sensebreaking (Maitlis and Christianson, 2014).

This technique is used to supplement semi-structured interviews and gain access to the context of the participants, understand their everyday subjectivity and grasp meanings attached to those observations using the five senses of the researcher of this work.

According to Creswell (2013), there are four types of observations: (a) complete participant (i.e. the researcher is completely engaged with the people he/she is observing), (b) participant as observer (i.e. the researcher is participating in the activity at the site; the participant role is more salient than the researcher role), (c) non-participant/observer as participant or non-participant observation (i.e. the researcher is an outsider of the group under study, watching and taking field notes from a distance) and (d) complete observer (i.e. the researcher is neither seen nor noticed by the people under study). A non-participant observation is found to be the most appropriate type of observation for this work because it has the advantage of capturing the processes of sensemaking, sensegiving and sensebreaking of middle managers' teams in their natural settings (i.e. weekly meetings, etc.) without interrupting and thus influencing the flow of the meetings.

In most cases, at the start of the meeting, the researcher was appropriately introduced as a non-participatory observer. Data was collected through the use of observational field notes which include both descriptive and reflective notes (i.e. researcher's experiences, hunches and learnings) and casual interactions before and after the meetings with participants.

Non-participant observations are used as a complementary data source in this research with the purpose of strengthening or validating the constructs generated from semi-structured interviews (Yin, 2014) by witnessing the middle management teams' sensemaking, sensegiving and sensebreaking.

Table 3 was developed from the first wave of interviews to better understand the different meetings taking place across the organisation under study and middle management teams' venues of meetings.

Table 3: Middle managers meeting frequency schedule

Layer of Management	Organisational Hierarchy				Level of Meetings	Frequency
	Board of Directors				Board Meetings, CE present the Organisation	Quarterly
Executive Management	Chief Executive (CE)				Executive Committee meetings, CE meets with DCE and Heads of BUs	Weekly
	Deputy Chief Executive (DCE)					
	Head of Operations (Ops.) Business Unit (BU)	Head of Maintenance (Maint.) Business Unit	Head of Marketing (Mktg.) Business Unit	Head of Finance (Fin.) Business Unit	BU Meetings, Heads of BU meet with Managers	Weekly
Middle Managers	Managers Ops.	Managers Maint.	Managers Mktg.	Managers Fin.	Departmental Meetings, Managers meet with Supts.	Monthly
Frontline Supervisors	Superintendents (Supt.) Ops.	Superintendents Maint.	Superintend-ents Mktg.	Superintend-ents Fin.	Sectional meetings, Supts. meet with Suprs.	Weekly
	Supervisors (Supr.) Ops.	Supervisors Maint.	Supervisors Mktg.	Supervisors Fin.	Area meetings, Suprs. meet with employees	Daily
	Employees Ops.	Employees Ops.	Employees Ops.	Employees Ops.		

This said, a total of eight meetings attended, two in each business unit (see Table 4). These meetings; which took place between 24 September 2018 and 23 October 2018 and lasted between 60-150 minutes (averaged 78 minutes); were attended by all middle managers interviewed to observe them in their settings making sense, giving sense and breaking sense of data discussed.

Table 4: Middle managers meeting attended

Business Unit	Meeting Attended	Date	Duration (min.)	Comments
Technical	Lost Time Incident (LTI) Investigation – Operations Business Unit	24 Sept. 2018	150	This was a unique opportunity to witness technical managers making, giving and breaking sense.
	Weekly meeting – Maintenance Business Unit	02 Oct. 2018	60	
	Weekly meeting – Operations Business Unit	07 Oct. 2018	60	
	Weekly meeting – Maintenance Business Unit	09 Oct. 2018	90	
Non-Technical	Weekly meeting – Finance Business Unit	24 Oct. 2018	75	
	Weekly meeting – Finance Business Unit	31 Oct. 2018	75	
	Weekly meeting – Marketing Business Unit	16 Oct. 2018	60	
	Weekly meeting – Marketing Business Unit	23 Oct. 2018	60	

3.4.11 Documents

Consistent with the case study approach, key documents impacting sensemaking, sensegiving and sensebreaking of middle managers were utilised in addition to semi-structured interviews data and field notes of meeting observations in this research. Doing so provided background and context whereby information and insights developed from these documents could be a valuable addition to a knowledge base particularly with limited or no information on the subject of research.

A total of twelve documents were identified in the first wave of interviews targeting middle managers as the main audience. The total size of these documents is 191 pages with the number of pages range from 2-47 and issue year 2016-2020. All of these documents are operational and issued by the organisation studied. These documents guide middle managers to carry out their routine activities (Appendix F).

A number of considerations were taken into account when selecting such documents as part of this research's data collection method. Bowen (2008) argues that the researcher needs to determine not only the existence and accessibility but also the authenticity and usefulness of particular documents, taking into account the original purpose of each document, the context in which it was developed and the intended audience.

3.5 Data Analysis

Data analysis in qualitative research is defined as the process of bringing order, structure and meaning to a vast collection of information (e.g. the interview transcripts, observation notes or other non-textual materials, etc.) to increase the understanding of the phenomenon (Dale Bloomberg and Volpe, 2008).

Such data analysis reveals patterns within the information called themes (Creswell, 1998) that could be utilised to illustrate how teams of middle managers sense-make, sense-give and sense-break in the dynamic O&G business environments to enable actions.

A number of qualitative data analyses are available such as the constant comparative method of Lincoln and Guba (1985), the approach of Miles and Huberman (1994) and the method of Marshall and Rossan (1999). Nonetheless, Creswell (2013) notes that all of these approaches comment on central steps of coding the data (i.e. reducing the data into meaningful segments and assigning names for these segments), combining the codes into broader categories or themes displaying and making comparisons in the data graphs, tables and charts. Therefore, this work followed a simplified version of these general steps of qualitative data analysis described by Creswell (2014: 196-200), which is outlined in Figure 5 below.

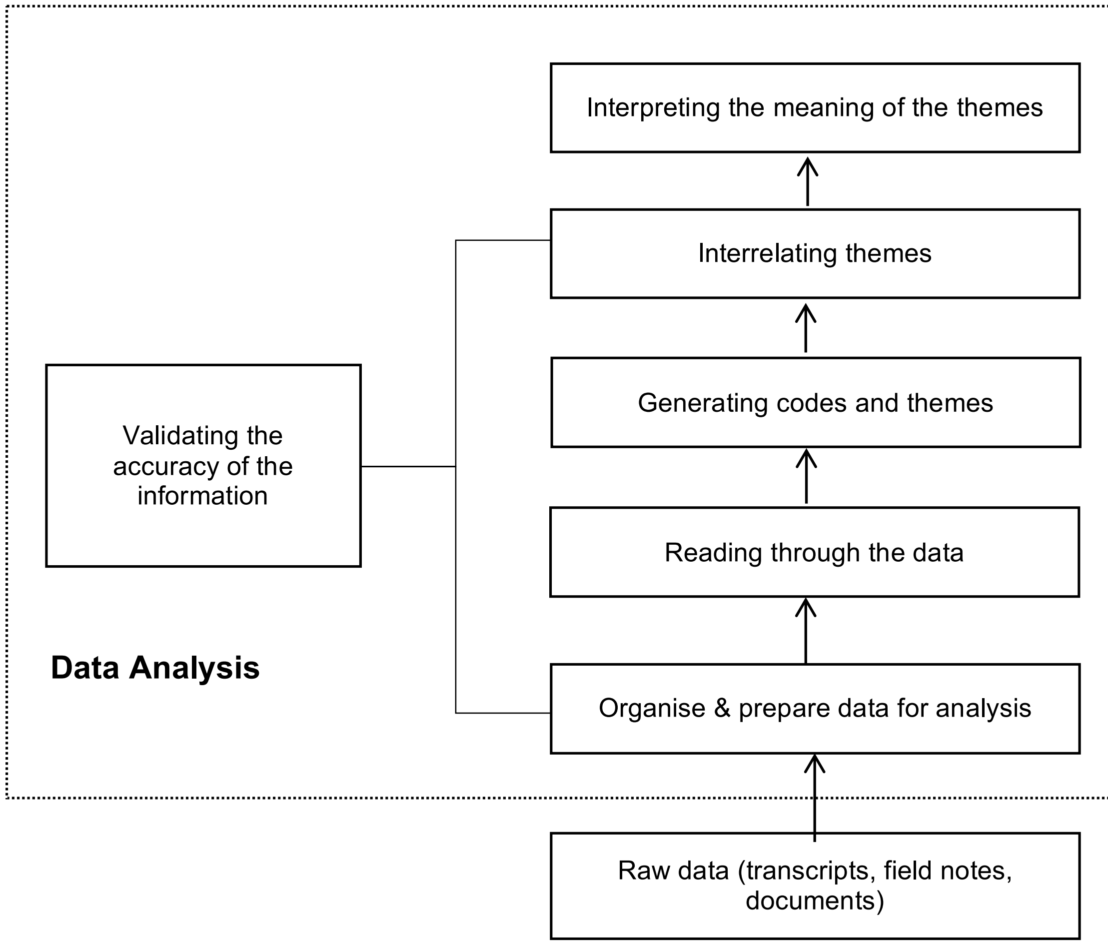

Figure 5: Data analysis approach (Creswell, 2014)

1. ***Organise and prepare the data for analysis:*** This refers to the transcribing of the interviews and the sorting and arranging of the data if different sources of information are used (i.e. field notes and documents), explained further below in section 3.6.1.
2. ***Read through all the data:*** By doing this, the researcher gets a general sense of the information and possibly its overall meaning. Perhaps the researcher wants to write down general ideas about the data.
3. ***Coding of the data:*** It is the process of organising the data into chunks of information and writing a word that represents a category in the margin (explained further below in section 3.6.2).
4. ***Description of the setting or people and categories or themes for analysis:*** During the coding process, the researcher gives detailed

descriptions of the setting or the people involved as well as descriptions of the categories or themes for analysis.

5. ***Present the results of the analysis:*** This is often done in a narrative passage to convey the findings of the analysis. It may include a chronology of events, a detailed discussion of several themes or a discussion of interconnecting themes.
6. ***Interpretation of the results of the analysis:*** The aim is to answer the following question: “What were the lessons learned?” Creswell (2014) notes that these lessons may be from the researcher’s personal interpretation, or be a certain meaning developed from a comparison of the findings with information collected from the literature or theories. This may lead researchers to suggest the findings confirming to past information or deviating from it (Creswell, 2014). Creswell further notes that this stage may suggest new questions that need to be asked, which the researcher had not foreseen earlier in the research.

3.5.1 Transcription

The transcription of the interview by the researcher was the first step in data analysis; this process helped the researcher gain an initial understanding of the data (Creswell, 2013).

All interviews were transcribed by the researcher and given to the interviewee at-interest for review and comments within a few days following the interview. The researcher conducted word-for-word transcriptions while noting voice tone, intonations, pauses, laughter and significant body language (Rubin and Rubin, 2012). The researcher and interviewees reviewed the text for errors and made corrections when required. The researcher also examined the document for any mention that could identify the interviewees to maintain confidentiality.

“Google Docs” was utilised to help in the transcription of the interviews. This is one of Google’s tools where the researcher played the voice clip to listen to short pieces and repeat the pieces of spoken conversation through a microphone where “Google Docs” types in a Word document. Listening to the same interviews and repeating them before the text was typed proved to be an effective immersion into the content (Creswell, 2013).

3.5.2 Coding Interviews, Field Notes and Documents

Coding is often used in qualitative data analysis, which is defined as “the process of organising the material into chunks or segments of text before bringing meaning to information” (Rossman and Rallis, 1998, cited in Creswell, 2009: 186). Coding is a mechanism for drawing together thoughts on a particular theme to aid conceptualisation of key theoretical ideas. Saldaña (2013) describes coding as the central link between data collection and explaining the meaning of the data.

All second wave interviews, field notes and documents were subjected to the coding process. Coding was carried out by highlighting and labeling segments of data with a word or brief phrase to create descriptions of data (Saldaña, 2009; Creswell, 2013). Code labels emerged from several sources including *in vivo* (i.e. names that are the exact words/phrase used by participants) (Corbin and Strauss, 2008), theories or perspective (e.g. cue extraction) or names the researchers composed (e.g. alignment) (Miles and Huberman, 1994) that seemed to best describe the information.

The coding process began by a thorough reading of the interviews’ transcripts, field notes and documents that allowed the researcher to become immersed in their content (Creswell, 2013). Throughout the coding, which emerged from the data, this work’s researcher asked data questions such as: What does this text segment mean? And how does this segment contribute or not contribute to teams of middle managers sensemaking, sensegiving and sensebreaking? In other words, the researcher asked of the data: what do you have to tell me that answers my research questions? (Creswell, 2013).

Each concept of interviews' transcripts, field note data and documents were examined and noteworthy elements were assigned a word or brief phrase that summarised the meaning of that portion of data (Merriam, 2009; Creswell, 2013). As the coding is a "cyclic act" Saldaña (2009: 8), coding was performed on some transcripts multiple times to finally generate the themes. Rarely is the first cycle of coding data perfectly attempted; the second cycle (and possibly the third and fourth, and so on) of recoding further manages, filters, highlights and focuses the salient features of the qualitative data record for generating categories, themes and concepts, grasping meaning and/or building theory (Saldaña, 2009).

The researcher wrote memos during the process of coding to maintain connection to the data. Memo writing is a data analysis strategy whereby the researcher documents personal thoughts related to the assignment of meaning to segments of text and the development of themes and their relationships (Creswell, 2013). Memos with the date they were written were used to record feelings and thoughts on what is going on with the data relative to the research questions and the relationships between bits of data and themes (Creswell, 2013).

3.5.3 NVivo

NVivo (Version 12) was employed to sort and code the second wave interview data, observation notes and documents. NVivo is a computer software package developed to support the analysis process of qualitative data (Bryman, 2008). In addition to the 12 documents, all 16 interviews from the second wave of interview and 8 observation notes were transcribed, imported and organised into NVivo in a format that facilitates systematic thematic analysis. The steps that are taken to organise the data set in NVivo are visually represented in Figure 6.

The first step is to import the files containing the data to analyse into NVivo. This procedure is done by steering to the location where the files are stored and then picking the appropriate file extension. NVivo automatically imports the selected documents into the application. Also using the Document Browser allows the researcher to recognise all of the text in the imported document.

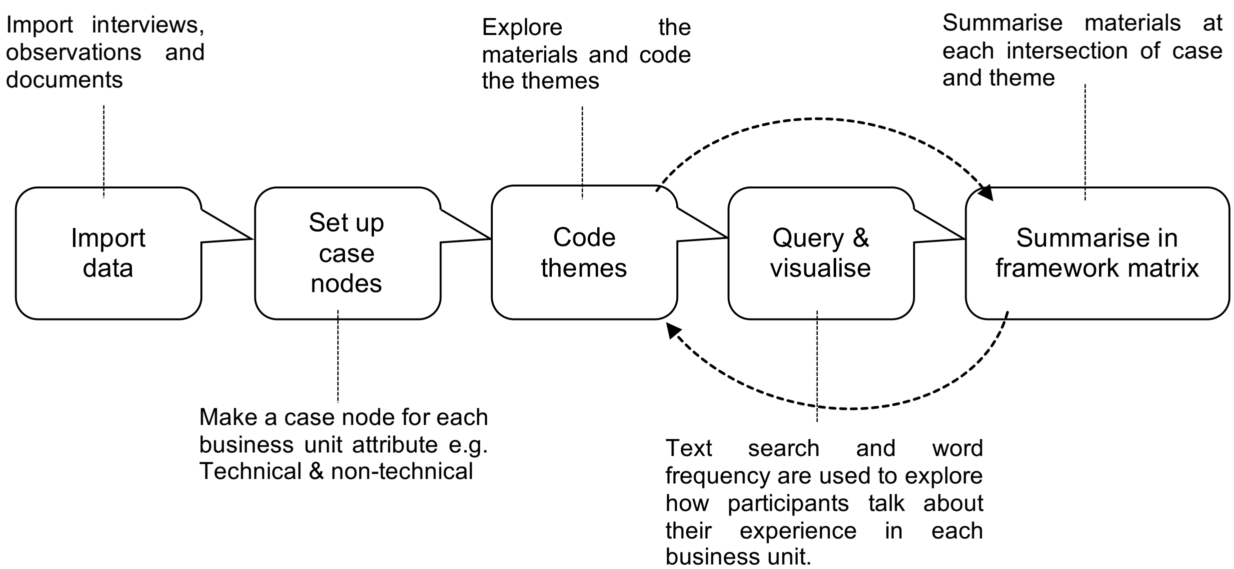

Figure 6: Data organising (NVivo 12 online manual, 2019)

The second step is to set up case nodes which are central to understanding and working with NVivo (NVivo, 2019). Case nodes let the researcher gather related materials in one place so that they can look for emerging patterns and ideas. Two case nodes were created, namely “technical business unit” and “non-technical business unit”. The coded contents from interviews, field observation notes and documents are transferred to their respective case node.

The third step is going through the data (i.e. interviews, observation notes and documents) to code and draw themes for each case node. This is leading to the final stage of managing the data whereby themes are compared to identify any similarities and differences in technical and non-technical business units. The “query and visualise” is a stage which supports the iterative nature of thematic data analysis and leads to a richer understanding of all data sets. Word frequency query is used during the data analysis stage to help organise data into broad categories.

3.6 Reliability and Validity

Lincoln and Guba (1985) provide four sets of criteria to measure the rigor of qualitative research or qualitative research trustworthiness: credibility, transferability, dependability and confirmability. These are equivalent to quantitative criteria for judging validity (internal and external) and reliability. The following outlines the strategies adopted to address each of these criteria.

Credibility is equivalent to internal validity in quantitative research. A qualitative research is considered credible if research results is believable from the perspective of the research participants. One of the strategies adopted to improve credibility of this work is providing high degree of transparency in this chapter related data collection and analysis. The researcher described the process of data collection and how the data analysis was completed can serve an audit trail to build on the readers' trust in this research (Merriam, 2009). Also, the findings are triangulated across multiple sources of data (i.e. semi-structured interviews, observations and documents) to provide support to each aspects of this work's findings. Triangulation methods attempt to eliminate biases that might result from relying exclusively on one data collection method or source (Denzin,1978).

Transferability in qualitative research refers to the degree to which the findings can be generalised to other settings or contexts. The concept is similar to that of external validity in quantitative research. To achieve transferability, the researcher provided rich and think description of research context and assumptions so that readers can assess the reported findings transferable to other settings (Creswell, 2009).

Dependability in qualitative research indicates that the research process is "consistent, reasonably stable over time and across researchers and methods" (Miles and Huberman, 1994: 278). One of the strategies employed in this work to obtain dependability is to ensure that the interview questions are clear and are relevant to the research questions (Miles and Huberman, 1994) during the pilot interviews described in section 3.4.7. Further, a peer review or peer debriefing is adopted where an individual (other than the researcher of this work) who is familiar with this work scope reviewed the collected data and research process. Similar to the notion of inter-rater reliability in quantitative research, peer reviewers add credibility or dependability to this work by acting as devil's advocate to challenge the researcher's assumptions and interpretations (Lincoln and Guba, 1985). Member checking (Lincoln and Guba, 1985) or member validation was also employed where all transcribed interviews were reviewed by the concerned participants to confirm the accuracy of the captured data as outlined in section 3.5.1. Neuman (2011) notes that a study is "member valid" if participants recognise and understand the researcher's description as reflecting their social world.

Confirmability is framed as "relative neutrality and reasonable freedom from unacknowledged researcher biases – at the minimum, explicitness about the inevitable biases that exist" (Miles and Huberman, 1994: 278). In other words, the degree in which the findings can be confirmed by someone other than the researcher which is akin to objectivity in quantitative research. Confirmability is achieved in this work by distinctly outlining the theoretical and methodological decisions to the readers (Lincoln and Guba, 1985). Furthermore, the researcher has effectively managed his research data and materials in electronic format which are available for reanalysis by other (Miles and Huberman, 1994).

3.7 Ethical Considerations

Denzin and Lincoln (2000) observe that qualitative research involves disciplined inquiry that examines people's lives, experiences and behaviours, and the stories and meanings individuals ascribe to them. Qualitative research can also investigate organisational functioning, relationships between individuals or teams and their working environments.

Ethical exploration intends to ensure that the research work has no detrimental effects for anyone involved in the research, and that the principles of privacy and participation through informed consent are upheld. Ethical issues are common to most types of business research and this research is not an exception. Discussion about ethical issues in business research revolves around certain issues that recur in different guises and have been broken into four main areas (Diener and Crandall, cited in Bryman and Bell, 2011).

- Whether there is harm to participants.
- Whether there is a lack of informed consent.
- Whether there is an invasion of privacy.
- Whether deception is involved.

Denzin and Lincoln (2000) note that ethical issues arise at different stages in business research. These issues cannot be ignored as they relate directly to the integrity of the research and all disciplines involved (Bryman and Bell 2011).

To address the main four areas of ethical issues, the following are the key ethical features of this research:

a. **Ethics Panel Approval**

   Clearance was given by the Chair of Humanities, Social and Health Sciences Research Ethics Panel at the University of Bradford on 2 October 2015 (Appendix G). This clearance confirms that the approach of this research is in line with University of Bradford Ethics Policy for Research Involving Human Participants, Data and Tissue which mainly address all ethical issues listed above. Some researchers tend to assume, once ethical approval is obtained, that ethical considerations can be set aside as having been dealt with (Bryman and Bell, 2011). In this work, however, ethical issues are continuously revisited and are seen as an integral part of the research process.

b. Participant Informed Consent

A cover letter and informed consent form (Appendix H) are sent (via email) to all participants in the semi-structured interviews and those involved in overt observations of the sessions, giving some background information to the research in addition to the guarantee of anonymity. To ensure comprehension and approval, participants are asked to sign and return the consent form before the start of interviews/observations. The principles of informed consent do not only entail seeking individuals' permission to participate in the research but also briefly outlining the research process (Bryman and Bell, 2011).

c. Invasion of Privacy

So that it is not confused with other terms, privacy is “control over other's access to oneself and associated information or preservation of boundaries against giving protected information or receiving unwanted information” (Sieber, 1992).

Bryman and Bell (2011) note that invasion of privacy is a tenet dear to many and violations of that right in the name of research are not acceptable. However, it is important to understand that privacy is subjective and depends on the individual and can vary according to gender, ethnicity, age, socio-economic class, education, ability level, social or verbal skill, health status, nationality, intelligence, personality and the individual's relationship to the researcher.

The informed consent addresses this issue which is given on the basis of a detailed understanding of what the participants' involvement may entail and he/she acknowledges that the right to privacy has been for that limited domain (Bryman and Bell, 2011). Part of the agreement is that participants can choose to not answer any question on any ground they see; they can also choose to cease the interview or the observation session.

d. Deception

This involves an intentional misrepresentation of facts related to the purpose, nature or consequences of the research. Some authors believe that deception in various degrees is quite widespread in much research (Bryman and Bell, 2011), as researchers want to confine participants' understanding and have them respond more naturally to the research's experimental settings. With this said, nonetheless, deception is not applicable in this research.

e. Confidentiality and Anonymity

Sieber (1992: 52) defines confidentiality as "agreements with a person or organisation about what will or will not be done with their data which may entail legal constraints", while Sieber (1992: 25) noting that anonymity is "lack of identifiers, information that would indicate which individuals or organisations provided which data".

The issue of confidentiality and anonymity may become problematic when research is carried out in a specific setting (Flick, 2011). Disclosing financial information of the organisation used as the case of this research is a confidentiality issue which is tackled by steering away the interviews from financial information. Both participants' identity and details about their organisation used in this research may create confidentiality and anonymity issue. This is particularly valid as the targeted managers in a known sector in a small country where everyone knows one another. The identity can easily be known from contextual information produced from the organisation bio data, interviews and observations. For this purpose, details of participants are protected by pseudonyms and the organisation details are encrypted throughout this research. Furthermore, the recordings and transcripts are stored in a safe and secured location where no one is able to access them.

3.8 Research Limitations

Despite the fact that this research uncovers interesting findings and thus contributes to existing knowledge, some possible limitations are hereby acknowledged and outlined.

One of the perceived limitations with a qualitative research approach that the case selected to research may not be representative for the O&G industry in Bahrain. It has nevertheless the potential to be transferable, subject to an evaluation of the context surrounding the case to which the results of this research would be transferred.

A further criticism is that there is a lack of transparency in qualitative research; that is, it is difficult to see why and how a researcher might reach his/her conclusions (Bryman and Bell, 2007). This chapter has sought to address this issue by noting the reasons for choosing certain methods such as semi-structured interviews and non-participant observations and documents reviews, and how these methods were analysed. With the latter, in particular, the use of NVivo (Version 12) has meant that the research process is well documented.

3.9 Summary

This case study qualitative research sets up to investigate middle management teams' sensemaking, sensegiving and sensebreaking processes in dynamic O&G business environments in Bahrain. This work has been completed in an ethical manner and is highly transparent.

Data collection included semi-structured interviews, observation of middle managers' meetings and collection of operational documents. The obtained data was imported into the NVivo (version 12) software to store, organise and manipulate the data, bearing in mind the criticisms often levelled at using software to assist with qualitative data analysis.

Creswell's (2013) simplified data analysis approach was adopted to analyse all sources of data, and coding was employed to generate themes which constituted the outcomes of this research.

The chapter concluded by expanding on possible foreseeable limitations of this work and the researcher's strategies to address these limitations.

Chapter 4: Data Analysis

4.1 Introduction

While interpretation and insight into middle managers' teams sensemaking in the dynamic Oil and Gas (O&G) sector in Bahrain is found in Chapter 5; this chapter offers a deep dive into each theme and sub-theme that emerged during the course of thematically analysing the transcripts of the interviews, meetings' observations and documents. This is in line with Marshall and Rossman (1999: 152) who rationalise the purpose of such analysis is to gather the data into "manageable chunks and interpretations as the researcher brings meaning and insight to the words and acts of the participants of the study".

This chapter is comprised of eight main sections; the first seven sections provide the themes that emerged from the data and were used to address the two main research questions. The eighth section of this chapter summarises the data analysis phase of the study.

4.2 Data Analysis

As outlined in Chapter 3, all names used in this chapter are pseudonyms as it is important to protect the anonymity of the participants involved in the study. Supporting data, selected verbatim excerpts from the interviews, observations and documents are provided for each theme and sub-theme.

Overall, using inductive coding of text-based accounts from interviews, observations and documents, seven themes arose: (1) Sensemaking process, (2) Sensemaking properties, (3) Sensemaking triggers, (4) Sources of information, (5) Sensemaking influences, (6) Sensegiving techniques and (7) Sensebreaking techniques. The description of these themes and their associated 26 sub-themes is outlined.

As noted in Chapter 3, NVivo software package (Version 12) facilitated this research analysis by organising the interview scripts, observations and documents into more meaningful and easily manageable groupings and subgroupings. Appendix I is a screen shot taken from NVivo depicting the overarching themes together with their sub-themes which are elucidated in the following sections of this chapter.

4.2.1 Sensemaking Process

The process of sensemaking has been clearly demonstrated from the interviews, documents and in the sessions observed in both technical and non-technical business units. Four sub-themes that arose from the data are the components of the four-step sensemaking process in the O&G sector in Bahrain as it unfolds by teams of middle managers.

Although no formal process or policy exists in the organisation under study, the four-step process to sensemaking (which is presented in Chapter 5) was seen practiced by middle managers' teams in all observation sessions attended, in a number of the documents analysed and reiterated by several interviewees. The following provides an outline of each of these four steps.

4.2.1.1 Start with Most Reliable Information

The sensemaking process is seen as a jigsaw where middle managers start putting pieces together to attain a holistic understanding of events or situations. This is an approach middle managers adopt as smaller pieces of information are more manageable and easier to comprehend, leading to a better understanding of the whole situation. This was obvious in many interviews and observation sessions; for example, it was observed in the incident investigation meeting (MO-1) that

> "…the team [middle managers] posted on the screen tangible facts such as the weather condition on the day of injury, the scope of work as was mentioned in the permit to work document, the risk assessment documents, etc. to start drawing a picture of what had happened leading to the injury by gradually adding more less-tangible facts such as the injured health condition, feelings, etc."

Such "tangible facts" or the most reliable piece of information where no two managers disagree on its interpretation ensured the initiation of the sensemaking process, while "less-tangible" pieces of information were added progressively by middle managers to obtain a common understanding of the situations among the team.

4.2.1.2 Use of Analytical Tools

The use of analytical tools (e.g. semi-quantitative risk assessment, 5-why's for incident investigation, project management templates, etc.) to aid the sensemaking process are embedded in the procedures for both technical and non-technical business units. For example, HSE-L not only directed middle managers to use certain analytical tools but also outlined the purpose of these tools.

> "The purpose of the PSSR [Pre-Start Up Safety Review] is to ensure that all elements relevant to the safe operation of a plant / process or equipment have been adequately addressed and resolved prior to the initial startup of new or modified facilities, or startup following Turnaround & Inspection (T&I) of existing facilities".

Interviews revealed that such analytical tools were seen vital by middle managers in the process of sensemaking. Middle managers shared many examples of how these tools were used to better making sense as David MTC3 highlighted that

> “We [middle managers] carried out SWOT [Strengths, Weaknesses, Opportunities and Threats] analysis to switching to our lubricating oil which we used to eventually make the decision to go ahead with the switch over. It was a wise decision which made great savings to the organisation and the country as a whole”.

It seems that using these analytical tools; which were also mentioned in MO-2, MO-3 and MO-6; reassures middle managers that the sense they made through the jigsaw tactic is logical and would be seen objective by other stakeholders.

4.2.1.3 Create a Common Picture

To create the same understanding of the information from various sources among middle managers’ teams was observed to be a top priority not only by the team members but also by the chairperson. This theme was reiterated in the sessions observed. For instance, it was observed in MO-1 that

> “… the team [middle managers] were trying to create a common understanding of the incident [what has happened leading to the incident] by pulling all pieces of evidences before they transited to the next step of their incident investigation procedure”.

The significance of creating a common picture; which was observed in all observation sessions attended; of the situation analysed before moving to the next step was also obvious in the interviews with middle managers. In so much as it has been made as an unwritten prerequisite by several interviewees to progress further with the sensemaking process as Oliver MKTG1 argues that

> “I aim to obtain a general consensus of the sense we made among my team before moving on further… This general consensus should be at least 80% of team members to proceed to the next step”.

In addition to using analytical tools, this step in the sensemaking process is seen as a second reassurance layer where middle managers seek to create a common understanding among the team which is as objective as it can be. Once this common picture is created, the team transits to the final step of the sensemaking process.

4.2.1.4 Mirror Picture to Past

A consistent observation particularly in interviews is where middle managers seek to reconfirm the sense they made coincides with a sense made in their repertoire of sensemaking. This step is considered as the last part in the process of sensemaking as reiterated by many interviewees. For instance, Noah FN1 noted that

> “once we have a consensus among the team [middle managers] we confirm the picture we created of what was going on with a similar occurrence that we came across in the past”.

Once a similar occurrence is found to mirror the current situation or event, middle managers finally become more confident to confirm that the sense made is accurate, objective and reflecting the reality of what has happened. This can also be considered by middle managers as a layer of assurance that the team is proceeding in the right direction in their interpretation of events or situations.

4.2.2 Sensemaking Properties

Weick's (1995) seven sensemaking properties or characteristics surfaced explicitly in many middle managers' interviews, documents and observation sessions. The findings indicate that these seven sensemaking properties apply in both technical and non-technical business units which are interrelated and impact one another. However, some of these properties were found in line with Weick's orientation such as enact the environment, extract cues; while some were found contrary to Weick's argument such as accuracy not plausibility.

This theme is important because these properties play a critical role in guiding how the author of this work understands the sensemaking process. Provided in the following is an insight into each of these seven properties of sensemaking as they are manifested in the data.

4.2.2.1 Enact the Environment

Enactment focuses on the notion that middle managers create their own environment. The central point being that when middle managers enact, they bring structures, events, opportunities and constraints into existence and set them in motion.

Signs of enactment were clear throughout the interviews, as Henry FN4 noted that

> "…to close the gaps in our management systems, we [middle managers] tend to develop rules, follow them and once they work well, we enforce them across our scope".

As is evident in the data and Henry FN4's statement that as managers construct narrative accounts, it helps them to understand what happened or is happening and predict and control what will happen through setting and enforcing rules.

4.2.2.2 Extract Cues

The analysis revealed that middle managers' teams extract or bracket cues from their environments, attempt to interpret these cues and connect these cues to create an account of what was (or is) going on.

Jacob FN2 explained how he would extract cues from his environment to create a shared understanding among the team of what was (or is) going on:

> "I will have to give them the reasons behind my ideas [extracted from my environment] and explain thought behind my understanding of the event and give them some real-life examples of how my ideas and how they are linked to reality in our company. Until they are convinced that my ideas or my approach is workable".

Extracting cues from their environments to interpret what was (or is) going on seems to be an important sensemaking property for Jacob FN2 and several interviewees. Further, anchoring these cues to managers' lived experience appears to play a major role in interpretation and creating a shared understanding among the team members.

4.2.2.3 Identity

Identity construction manifested itself in three levels in the analysis, namely organisational level, individual and team level. When identity is clear at all of these three levels, extracting cues becomes clear, and the contrary applies.

On the organisational level, middle managers often alluded that their organisation had been well known for "excellence", "world class" and "industry leader" as explained by David MTC3:

> "…even though this organisation is more than 90 years old, it is known for being a reliable and safe organisation at national and international level".

When organisational identity is clear, the construction of meaning by extracting cues at organisational or macro level becomes a strong driver for sensemaking. It is distinct that managers' sensemaking behaviours are influenced when working for a long serving organisation or an "industry leader".

Further, middle managers repeatedly mentioned in the observation sessions attended (e.g. MO-2, MO-3, MO-4 and MO-6) that they are "well respected", "viewed highly by others" and "taken seriously". On an individual level, George MKTG2 noted that

> "I work for an organisation which has been around for more than 90 years…I spent all my career in this organisation and I can only think in the same flow of others who have been working in this organisation all their career".

George MKTG2 and other middle managers' identities play a critical role in the way they interpret and create collective meanings of their experiences when they are viewed highly by others.

On team level, the identity of team such as technical team, operation team, etc. also surfaced in many interviews:

> "We [middle managers' teams] do a lot of work with external agencies yes and some of the work may not be related to this company but they look at operation team as the subject matter expert" (Patrick OPS3).

Both individual and team identity were found to anchor around organisational identity. In other words, because the organisation is “world-class”, individuals who work for the organisation (including middle managers) are found to be “well respected” and teams of middle managers are considered as “subject matter experts”. Such identity at both individual and team levels appears to impact what middle managers enact and how they interpret events (Weick et al., 2005).

4.2.2.4 On-Going

It was evident in the research data that sensemaking is an ongoing interplay of actions and interpretation between middle managers. It was observed in all observation sessions without exception that middle managers continuously shape and react to the environment they face. For example, it was noticed in observation session (MO-1) that

> “… the process of sense making was ongoing where the team members kept going back and forth to update the incident timeline whenever new information emerged”.

It is clear that the sensemaking is ongoing and contained elements of learning where the team in MO-1 utilised the information available by going back and forth to understand the incident timeline, observed the learning and ultimately created an understanding of what exactly happened.

4.2.2.5 Plausibility vs. Accuracy

Contrary to Weick’s (1995) claim that sensemaking is driven by plausibility, the findings nonetheless suggest that accuracy is favoured over plausibility and is the practice in the dynamic business environments of the O&G industry in Bahrain.

It was noticed in all observation sessions that information accuracy in sensemaking process was dominant in middle managers' discussions. Sentences such as "…we don't and shouldn't have information that is not accurate 100% and 100% of the times" (MO-7), "…of course our information is accurate… our margin of error in interpretation what is going on is minimal" (MO-4) and "there is no room for plausible information in our business" (MO-3) were examples of how middle managers aimed for accuracy of information in their sensemaking process.

Many interviewees place great emphasis on the accuracy of information in the sensemaking process and considered it as "…most important to our line of business" (George MKTG2). This may be attributed to the fact that the O&G sector is by nature high risk where reliance on plausible information may generate inaccurate interpretation leading "…to adverse consequences like injuries, fires, explosions or major environmental disasters" (Jay OPS2). Furthermore, accurate information is seen objectively by all stakeholders whereby reading indicating high numbers may be a good or a bad sign is seen by everybody in the same way.

4.2.2.6 Retrospective vs. Prospective

According to Weick (1995), sensemaking occurs after an action when middle managers reflect back on what they did. While there is evidence that supports Weick's claim that sensemaking is retrospective, this study's findings suggest that there are also elements of prospective sensemaking in which expectations of the future emerge out of understanding as a guide to middle managers' actions. In this way, rather than a linear relationship with one element always preceding the other, the study suggests a dynamic relationship in which understanding and action inform each other. This relationship was observed in many sessions and MO-1 serves as an example:

> "Even though the outcomes of the investigation will be used prospectively, the information gathered to make sense of what led to the injury were mainly retrospective".

Despite the fact that middle managers utilised retrospective information in their sensemaking process, the outcomes are used to inform middle managers' future actions. In other words, the outcomes of the sensemaking process are orientated prospectively. Such orientation is also evident in the documents analysed such as ADM-P which is related to "loss prevention backcasting". This is a regular report containing technical data developed using retrospective information but used to inform middle managers of what lies ahead and helping them to predict their course of action.

4.2.2.7 Social

Sensemaking is inherently social (Weick, 1995), which occurs during middle managers interacting with each other to interpret reality. This sensemaking property is manifested in the data distinctly. Martin MTC2 explained how socialising or "social life" play an important role in the sensemaking process:

> "…I learnt that social life is really important in how we understand each other and therefore what is going on around us...I socialise with my colleagues socialise with my subordinates so that we become friends…aaah to be very honest with each other when we sit together to better understand situations or events".

It can be noted from Martin MTC2 and other middle managers' arguments that being social is a critical property of sensemaking without which, the sensemaking efforts is negatively impacted.

4.2.3 Sensemaking Triggers

This theme is about how sensemaking process is triggered by middle managers in their dynamic business settings. The findings suggest that conscious and deliberate efforts to make collective sense of events or information by middle managers' teams is the same in both technical and non-technical business units.

Overall, two circumstances commonly trigger sensemaking in the organisation under study; when middle managers seek to generate alignment among team members or they engage to solve issues. Both of these triggers are characterised by ambiguity and uncertainty. As noted by Weick (1995), the former is where middle managers are confused by too many interpretations and multiple possible meanings of information; whereas the latter is where middle managers engage in sensemaking because they lack information.

The following subsections expand on how these circumstances trigger the sensemaking process in dynamic O&G business environments.

4.2.3.1 Alignment

Meeting on a regular basis to making sense of information or events was found to be a repeated theme in data. Such venues are set by middle managers to address any overlaps and areas of mutual interests between departments and/or business units or when the outcomes of sensemaking efforts impact the whole organisation.

It was observed from the data, meetings that trigger sensemaking are either mandated or held as a best practice. Avoiding overlaps necessitates middle managers meeting on a regular basis as mentioned by Tom OPS4:

> “We [middle managers] have an early morning meeting [operation meeting] every day where we discuss what’s achieved yesterday and what’s the plan for today; and what are the expectations in a few days… we focus on areas of overlap between departments and aim to minimise confusions”.

Several other interviewees indicated that they meet to discuss and address issues of mutual interests within and between business units. Dabbie MKTG3 justified this sensemaking trigger by noting

> “… aaah we [middle managers] do have to make sense collectively especially where issues are impacting different projects and departments or the whole organisation”.

Both of these triggers of sensemaking (i.e. avoiding overlaps and discussing or addressing issues of mutual interests) act as venues or platforms for middle managers such as Tom OPS4 and Dabbie MKTG3 to engage with other stakeholders in the sensemaking process aiming to reduce or eliminate ambiguity and uncertainty.

4.2.3.2 Solving Issues

The data shows that the need to reach a consensus among the team is a strong sensemaking trigger. This theme appeared in the data in three forms, namely during brainstorming, to address disputes and in the midst of emergencies or business Interruptions.

Brainstorming sessions are mandated in procedures where middle managers need to brainstorm to arrive at a common understanding on projects’ planning and execution:

> "The Owner Department shall provide a minimum of one named representative [middle manager level] who shall participate in initial brainstorming and subsequent key project team meetings. The level of involvement will be governed by the project size, complexity and priority" (PDE-P).

Middle managers collectively engaging in the development of proposals for new projects, discussing new ideas that enhance the corporate image and brainstorming for health and safety campaigns are all examples of strong triggers to the sensemaking process in the organisation under study.

Addressing disputes also surfaced under the theme of solving issues. Issues ranged from personnel to technical. Bob OPS1 gave the following example that triggered the middle managers' team sensemaking process:

> "I recall an incident when I was covering other operation manager's position, where a dispute occurred between two senior supervisors and I had to intervene to solve the problem. Well, I had to involve other peers' managers to tap into their experience in solving the dispute".

Bob OPS1 was aiming to address too many interpretations and multiple possible meanings of information by inviting other middle managers to leverage on their sensemaking in addressing a personnel-related dispute.

As mentioned earlier, in the midst of emergencies or business interruptions is another sensemaking trigger which also emerged from the data under solving issues theme. For example, William FN3 cited his roles in the organisation's emergency and crises management procedure and the sensemaking process by noting that

> "…although we [middle managers] act in supporting capacity to the emergency commander, we still have to make sense of information in [emergency management] our unit to fit in well with other emergency and crises management units".

The example outlined by William FN3 clearly demonstrates that emergencies or business interruptions is a strong trigger to sensemaking whereby multiple teams' sensemaking may impact other teams' sensemaking creating both ambiguity and uncertainty.

4.2.4 Sources of Information

An important enabler for middle managers' teams in their sensemaking efforts is the accessibility of appropriate sources of information. The findings revealed that "sources of information" was a main theme which impacted the outcomes of the teams' sensemaking. Six sub-themes emerged under this theme that not only capture whereabouts middle managers draw the information from to make sense but also the type and quality of such information.

4.2.4.1 Data Type

The characteristics of data utilised by middle managers to make sense of events or situations stood out in the data. Overall, the data is drawn from the same or outside organisation, and is either qualitative, quantitative or mixed.

Such different types of data is found important for middle managers mainly because "…you would rarely get the full picture by the numerical information only" as noted by David MTC3 and many other interviewees, which necessitates drawing qualitative data such as expert opinions to obtain the full picture of reality.

However, it was reiterated by many interviewees and in several observation sessions that quantitative data is the most preferred type of data by middle managers. Debbie MKTG3 noted that

> “We [O&G business] are data driven; we [management including middle managers] always prefer and understand numbers [quantitative] better than texts [qualitative]”.

Such preference of quantitative data type as claimed by Debbie MKTG3 and others may be attributed to the fact that most middle managers in the O&G sector including those working in non-technical business units have an engineering background.

4.2.4.2 Empirical

Evidence from data indicates that middle managers favour empirical data from sources such as incidents, internal databases and laboratory test results.

Recalling similar incidents either in the same or outside the organisation to make sense of current events was observed in many instances in the observation session MO-8:

> “A manager recalled a fire incident while loading the same blend of [hydrocarbon product] elsewhere and questioned the organisation [under study] fire-fighting capability in the loading jetties despite the fact such shipment was approved by the organisation marine operations senior supervisor”.

Empirical data such as recalling the hydrocarbon product fire incident mentioned in MO-8 meeting enables middle managers to visualise and apply to their reality. Middle managers do not only value and take such empirical data seriously because they are “real” and “applicable” but also, they already led or may lead to adverse consequences to human, environment or assets.

Further, under empirical source of information adopted by middle managers to make sense of events or situations was the use of internal databases. Such databases utilised to archive information related to operations, maintenance, sales and marketing, environment, health and safety, finance and engineering.

It was clear that middle managers rely to a great extent on drawing information from these databases to understand and make sense of events or situations they encounter. For example, Tim MTC1 explained the electronic system that archives all maintenance-related records and referred to it as an extremely great source of information:

> “This system [assets maintenance management system] maintains a record of reference numbers for all equipment and their fittings, when they are changed, why they are changed, when they need to be changed, and so on”.

This source of information may be considered as an archive of normal and abnormal parameters or conditions for middle managers to refer to whenever they attempt to confirm the sense they made of an event or situation.

What also arose from the data as a source of information where middle managers take empirical information from is the results from laboratory tests. References to tests in the interviews, documents and observation sessions data included distractive and non-distractive material tests, alarms and trips tests, finished products tests and medical health surveillance tests. Bob OPS1 outlined how laboratory tests were utilised to understand various specifications of different products:

> “We [operation middle management teams] take a sample to the laboratory to analyse and confirm that this particular product is off specification, then we take an action to correct it”.

Although the situation is clear or the team already made sense, Bob OPS1 took a sample to the laboratory to reconfirm the situation as known to them. This is a demonstration of the power of empirical data such as laboratory tests for middle managers to believe in the sense they already made about an event or situation.

4.2.4.3 Experience

“Experience” stood out in the data as a source of information middle managers utilise to make sense of events or situations in the O&G sector. Such experience is either from the same organisation (e.g. experience of middle managers, their seniors, subordinates or an incident) or from other organisations either in Bahrain or outside (e.g. experience in increasing the feed to a crude oil processing unit which is similar to a unit in a neighbouring country).

Throughout the interviews, middle managers repeatedly referred to their and peers’ experience in understanding what is going on. As there is no shortage of information today, Patrick OPS3 argued that

> “…here’s come the experience, this is where the experience part comes to it [understanding what is going on]…the type and sources of information is important but putting all together to make sense and take decisions accordingly will need experience”.

In other words, experience plays a critical role in making sense of the information of different format and quality from various sources. Without such experience, middle managers’ attempts to make sense of information becomes somewhat challenging.

The use of experience from within the same organisation as a source of information in the sensemaking process was also observed in many observation sessions:

> “In interpreting the timeline [of the incident], the team members used their experience gained in the same organisation where the incident took place to reflect on what happened and why it happened” (MO-1).

Utilising the experience from the same organisation is not only essential to making sense of the information from different sources but also facilitates relating such sensemaking to specific events in the organisation.

Likewise, the use of experience from other organisations in the sensemaking process emerged in the data. Jay OPS2 reiterated that

> “As subject matter experts, we consult with our peers from organisations in the region of Arabian Gulf or even internationally”.

Jay OPS2 leveraged on peers’ experience from outside his organisation to have a high-level understanding or confirmation of a sense already made i.e. all risks have been accounted for and managed in their sensemaking process.

4.2.4.4 Least Reliable

Even though used extensively, some sources of information are considered least reliable in the sensemaking process by middle managers. These sources of information which include the internet and intuitive feelings are used to mainly triangulate other more reliable sources of information or develop a general feeling of what is going on.

For example, Debbie MKTG3's response when asked about the least reliable sources of information:

> "…we [middle managers] rarely use information from the internet but sometimes we surf the internet to have some initial ideas about the undertaking at hands".

Despite the fact that middle managers recognise that the internet is not a reliable source of information; it is used to reassure themselves that the sense they made of the event or situation is in line with others in the world.

As mentioned, several middle managers noted that they used their intuitive or gut feelings as a source of information. For instance, Justin MTC4 noted that in some situations:

> "…I would really go with my gut feelings or with my intuition to get this assurance or the inside voice saying yes… this sounds right".

Whether used consciously or subconsciously, intuitive or gut feelings are used as a repertoire of frames in "some situations"—as argued by Justin MTC4 and others—in their sensemaking process. It is treated by middle managers as "consulting" with or recalling their own experience to support or not support their preliminary sensemaking.

4.2.4.5 Most Reliable

Findings from the data illustrate that all middle managers consider certain sources of information as most reliable in making sense of events or situations in the dynamic business environments. This is the starting point in the four-step sensemaking process as illustrated in Section 4.2.1.1 and is further explained in Chapter 5.

An example of such a reliable source of information is seeking a third-party opinion which repeatedly surfaced in the data, particularly in the interviews. Several interviewees indicated that opinions given by a third party are considered as one of the most reliable sources of information. Bob OPS1 explained how their doubt about a technical issue is cleared when a third-party opinion was engaged:

> "…after engaging the external consultant, our doubt was confirmed correct. We [middle managers] needed external opinion to confirm our opinion where we had iron oxide in the tank which created an ignition and facilitated the explosion due to vapour present".

Engaging outside experience to help in "clearing doubts" is a routine practice especially when dealing with high-risk situations that may lead to severe consequences to the organisation, human or environment if not interpreted well enough.

Other sources of information were considered most reliable by many middle managers interviewed included electronic monitoring systems, process licensers and manufacturers' specifications. For instance, George MKTG2 pointed out that

> "…I trust the most the information from the manufacturers of our equipment and information obtained from our equipment monitoring devices or systems".

These sources of information are considered one of the most reliable sources of information because they are empirical, reflecting reality and objective as seen by middle managers. Therefore, middle managers would read the information and agree on their meanings in the same way.

4.2.4.6 Written Information

Written information such as procedures (either from within or other organisations), local and international regulations are considered most reliable sources of information by many interviewees. Bob OPS1 cited a company guideline he followed to make sense of a particular situation and take an appropriate course of action:

> "…I relied on information from our company's guidelines with the fire that broke out last year. The guidelines say that we shut down and start isolating specific valves to control the situation… That is exactly what we did and it worked".

What made written information as most reliable is the fact that written procedures and regulations proved to be effective when used previously as with the example of making sense of and controlling the fire incident cited by Bob OPS1.

All documents reviewed were written in a language which supported the notion that procedures are a trustworthy source of information. INS-P is a sample which stated in its purpose section:

> "… is to provide general guidelines to ensure that the Risk Based Inspection Process is used in the most effective manner. The basic premise is that the integrity of the asset can be determined and monitored in a consistent manner by using a risk-based approach".

These procedures are not only mandated by the organisation whereby all middle managers have to follow but they also simplify how events or situations are interpreted and understood.

In addition to procedures developed by the organisation, regulations were also cited as most reliable source of information in the sensemaking process by many middle managers interviewed. Patrick OPS3 referenced a number of health and safety regulations that the organisation have to follow. He argued that

> "… if we [the organisation] decide on a certain safety design issue, it has to be in line with local health and safety regulations".

Reference to regulations was also made in many of the documents reviewed which was framed as a reliable source of information. For example, COVID19-2 guidelines cited the government regulations related to COVID-19 management:

> "… this [organisation procedure] will not supersede or replace any governmental instructions and procedures requested (e.g. The Official (Ministry of Health) COVID-19 test or any other procedures directed by The National Taskforce)".

Regulations—especially those that are descriptive such as COVID19-2 and health and safety regulations referenced by Patrick OPS3—help middle managers navigate through dynamic business environments as they enlist step-by-step approaches to make sense of events or situations aiming to diminish any likelihood of subjectivity.

4.2.5 Sensemaking Influences

As sensemaking process unfolds in the dynamic environments, four sub-themes transpired from the data that describe how the sensemaking process is influenced in the O&G industrial setting in Bahrain. These influences, which are outlined below, may positively or adversely impact the sensemaking efforts by middle managers' teams.

4.2.5.1 Information Context

The data illustrates how the context of the information (e.g. confidentiality, format, technology and the situation) influenced the sensemaking process made collectively by middle management teams in both technical and non-technical business units in the O&G industry in Bahrain.

If the information used in the sensemaking process is labelled "confidential" or inaccessible, many middle managers interviewed noted that such information would hinder the way events are understood by the team. Several interviewees gave examples of information confidentiality that cannot be shared with other colleagues in their team such as working directly with senior management on projects that were not yet approved to go public. For example, Debbie MKTG3 argued that

> "Confidentiality of information I have may be another influential factor impacting how we interpret information…because of the criticality of the information, I can't share with my colleagues".

Looking back at the four-step process to sensemaking, explained earlier, it can be very challenging for middle managers to put the jigsaw pieces together especially if the piece that contains the most reliable information is "confidential".

Another factor related to the information context is the format in which the information manifested itself. For example, using colour codes to make sense of the conditions of a piece of equipment may not be the best option in certain contexts. This issue has been identified and clearly outlined in ALR-P:

> "Overuse of colours on process graphic should be avoided. As red, magenta and yellow are used for the 3 annunciated alarm priorities, wherever possible they should not be used for equipment, process lines or indicate other non-alarm conditions".

Especially if it is the only available information, its format is so critical for middle managers' teams to make an objective sense of the situation. In the case above (ALR-P), the more colour codes there are the more scope of different interpretations exist.

Further, what is found to impact the sensemaking process is whether the information is qualitative or quantitative. This was repeated by several interviewees and observed in many observation sessions such as MO-5 where

> "Quantitative data seemed to be a form of data that is trustworthy and undefeated in this business unit [technical business unit], a form of data that could not be debated".

As noted in Section 4.2.4.1, although quantitative information was found to be a preferred type of information by middle managers' teams; it may impact the process of sensemaking adversely. This is because some qualitative information may reflect reality more objectively than some quantitative information.

Technology or electronic systems was cited often in the documents reviewed and the observation sessions attended and by the interviewees as an influencing factor of the sensemaking efforts. For instance, Patrick OPS3 explained that

> "There are etools [electronic tools] to help us get and understand the information. These etools are used by, for example, the process operations and laboratory guys to predict and identify any foreseeable issues".

As noted by Patrick OPS3, these electronic tools have proven to be helpful in amalgamating and making sense of parameters such as pressures, temperatures, flow rates. However, these etools can hinder the ability of middle managers' teams to make sense if they are not calibrated or they malfunction for any reasons.

What was also mentioned in the data was that the situation in which the information was originally created impacts the way sense is made collectively by middle managers. Oliver MKTG1 noted that the "motives" of creating the information would impact the sensemaking process by arguing that

> "…there are different motives for publishing documents by different parties where their motives may not be matching with ours…an area which I usually challenge my peers".

The circumstances in which the information was created—including the motives, age of the information, originator, etc.—raise many questions; overall, whether or not the information fits the circumstances of the current situation is important to know.

4.2.5.2 Power of Authority

This sub-theme emerged in three forms in the data; the first the consequences of the topic the team is trying to understand. Patrick OPS3 explained the criticality of health and safety; and how sense is made around it:

> "Safety and health is the highest priority in this organisation and does play a major, critical role in how we understand issues around here".

The topic of health and safety picked its power from being the highest priority. Therefore, it orientates middle managers' sensemaking efforts towards health and safety or any other topic deemed to be high priority (e.g. profit, productivity, image, etc.).

The second form of power of authority is the embodiment of politics which arose from the data which occurs when new knowledge is negotiated, enacted or reproduced. This is to say that politics has the power of authority to shape how sense is made. For instance, avoiding conflict of interests when confronted with a new situation was cited in many middle managers' interviews and noted several times in the sessions observed. There was a discussion in MO-1 about a contractor committing a major violation which was supposed to result in an immediate suspension of the contractor in question. The following note illustrates how politics played an influential role in the sensemaking around the violating contractor:

> "…But since this particular contractor track record was excellent, and this contractor is handling maintenance work that cannot be handled by any other contractor in Bahrain, the focus on the middle managers was mainly on the individuals who caught violating not the contractor as a company".

Because the team wanted to retain the contractor company in the organisation, they had to create a sense around limiting the severity of the disciplinary action to only individual employees working for the violating contractor company.

Seniority emerged in the data as the third form of power of authority. A long serving manager, or the head of the business unit attending a sensemaking event with his or her direct reports stood out as influencing the sensemaking process. Even though there was no actual interaction between the seniors and their direct reports, their presence was noted to impact the way middle managers create a common understanding around events. This observation was mentioned by many interviewees and noted in many sessions observed. For example, it was observed in MO-5 that

> "The longest serving member in the team was chairing the meeting … although he was quiet, it felt that middle managers were careful what to say or not to say and how to say".

The power of authority from a seniority perspective appeared to influence not only the sensemaking process of individual managers, but also the collective sensemaking process by the team.

4.2.5.3 Power of Experience

This strong influencing factor emerged from the data in four forms. The first form of the power of experience was middle managers' age. As mentioned by several interviewees, the manager's age can impact the sensemaking process positively if old or negatively if young. For example, George MKTG4 explained how being in his fifties can impact the sensemaking of the team:

> "…I think age plays a role in influencing my peers who are younger than me. I see age as a convincing parameter because

> people would relate age with individual's experience and knowledge".

It is clear from the comments of the interviewees including George MKTG4 that the age of managers is tied with their experience which defines how capable these managers are in information interpretation and hence empowers them to influence the team's collective sensemaking.

Furthermore, the second form of the power of experience influencing sensemaking which appeared in the data is the managers' experience in terms of the number of working years. Similar to the age form, middle managers' experience was viewed as either a positive or negative influence. William FN3 gave an example of how middle managers' experience played a positive role in impacting the team's sensemaking:

> "I often get challenged by a peer who has been serving fewer years than me as a manager but as soon as I refer to my experience in the conversation, he tends to nod his head in agreement".

Unlike William FN3, other interviewees such as Jay OPS2 argued that "old" experience may not be applicable today with the technological advancement and noted that "… experience of 20 years ago may hinder our capability of understanding today's information".

Whether it is an enabler or withholder, the managers' experience does have the power to influence the teams' collective sensemaking efforts as noted by the majority of the interviewees including William FN3 and Jay OPS2.

The third form of the power of experience that surfaced in the data to influence the sensemaking process is middle managers' tenure. This refers to the number of years in the same position in the same organisation. Many middle managers interviewed mentioned that “tenure” had an impact on the sensemaking process of the team. David MTC3 explained how his tenure as a manager played a role in the team sensemaking:

> “I have been a manager in this organisation since 2002 and certainly makes me empowered and influence the collective understanding of the team”.

David MTC3 realised that the longer he occupies a manager’s position, the more respectful and trustworthy he becomes and the more his voice supersedes his peers which impact the collective team’s sensemaking.

The fourth form of the power of experience which emerged from the data that influenced the teams’ sensemaking efforts is the ability of the middle managers to create and share the information or use of the language. Many interviewees noted how manipulating the information or putting it in a format that eventually impacted the teams’ sensemaking efforts could be an issue.

Another factor impacting the sensemaking process of middle managers’ teams was how language is used. In other words, the language in which information is created and shared was found to be an influencing factor in how teams collectively make sense of events.

Martin MTC2 explained how empowered he felt when he was able to shape the information in a way to influence the team’s understanding:

> “I feedback my peers in a language they understand such as cost, and cost reduction or optimisation, equipment reliability. Only this way I get my voice heard across the team”.

As managers are well aware of the power of being able to create the information in a language that most understood by other team members, it is deliberately used by many managers to influence the collective sensemaking of the team.

4.2.5.4 Team Capability

Several forms emerged from the data under team capability that can influence the sensemaking of middle managers' teams. These forms were team data analysis skills, the education and training background of team members, the use of their emotions, ethnicity, gender, peer pressure, team members possessing more information than others, team composition and how the middle managers trust or distrust each other.

Middle managers' team ability in data analysis emerged from the data as a form influencing the team sensemaking capability. This form was apparent in the documents analysed where it was expected from middle managers to perform detailed analysis to understand events as cited in PRO-P:

> "[middle manager] to perform Category Analysis, Internal Spend & Supplier Portfolio Analysis, External Market & Trend Analysis to develop overall Category Plan & sourcing strategies for the Category".

It can be noted from interviews and attended observation sessions that there is no shortage of data in the organisation under study and in an old industry such as O&G; however, it needs someone with the right set of skills to analyse the information and relate to the issues at hand.

Further, the team educational and training background was referenced by several managers as critical to the team capability in their sensemaking process. Martin MTC2 elaborated how his educational background helped him in understanding the information in his scope of responsibilities:

> “My educational background is also an important factor to learn some terminologies, I would need to know some equations and tools to understand the information or data I am trying to make sense of”.

Without adequate educational and training background, a crucial element of team capability is missed, making it difficult for middle managers’ teams to make sense of the information.

Moreover, the role of emotions in sensemaking was cited multiple times in the data. Such emotions can be negative (e.g. fear, depression, anxiety, panic) or positive (e.g. happiness, joy, love, empathy). Patrick OPS3 explained the impact of emotions on the process of teams’ sensemaking by noting:

> “Sometimes it works where someone shouts in meetings for no good reason and they are very vocal about their arguments and it detracts others from contributing in the sensemaking and decision-making process”.

Understanding the crucial role emotions play in the sensemaking process in the way explained by Patrick OPS3 and others, middle managers are able to detect and attend to abnormalities when sensemaking is made in their teams.

Furthermore, ethnicity of the team members surfaced in the data to impact the team sensemaking process. Several managers noted the benefits of having teams from different ethnicities to the sensemaking process. For example, William FN3 explained the impact of such teams to sensemaking process by noting

> "…we have in our management team someone from England and another from the United States; and I am positive their background impacts the way we understand the information and what's behind the information".

The values these management members William FN3 referenced were obvious in the collective sensemaking efforts of the team. Members from different ethnic backgrounds bring with them different techniques of information interpretation.

An interesting team capacity form is the influence of gender to the teams' sensemaking process which surfaced in the observation sessions as well as the interviews. George MKTG3 illustrated how males and females bring different perspectives to information interpretation in team settings:

> "I think gender plays an important role; it may not be a major role, but being a male or female influences the way information is interpreted. Females look at issues differently than men do; I am not saying in a bad way, but saying a different way".

The O&G industry is a sector mostly dominated by males. Having females who look at issues in a "different way", as argued by George MKTG3, may deem essential to the process of team's sensemaking.

Another team capability form is peer pressure which is found to influence how middle managers understand information. Peer pressure was mentioned in the data in many formats including direct, indirect, negative or positive. Jack MKTG4 gave an example of how peer pressure played a major role in influencing how middle managers interpret the information by noting

> "… if all of your peers seem to interpret the information in a certain way you may be dragged to agree with them to maintain the team spirits".

Driven by various motives of responding to peer pressure "maintain team spirits" in Jack MKTG4's case—teams' interpretation of certain situations can be influenced positively or negatively.

Team members possessing more information than other peers was also cited repeatedly in the data as an advantage and reported to positively impact the sensemaking process. As noted, many managers argued that they feel more "empowered" when they possess more information than their peers and would in turn make the sensemaking process more effective:

> "I feel empowered and able to influence the outcomes of any meeting… when my knowledge and experience exceeds my colleagues" (William FN3).

Information is power and undoubtedly adds value to any discussion. The fact that certain team members possess information which no one in the team has access to; can help the team to arrive at an objective interpretation of information.

Additionally, team composition appeared as another form of team capability which impacted the teams' sensemaking process. The emphasis on team composition was repeated in the interviews' data and was an obvious theme in the documents reviewed. For example, PDE-P listed the various disciplines in project teams:

> "The Project Team consists of a Project Manager and the Operating/ Originating Department Representative as a

> minimum. For most projects, a Maintenance Representative is also required. Representatives from other disciplines may be included depending on the size and complexity of the Project".

This is an obvious form of team capability and an obvious factor influencing teams' sensemaking efforts, because multidisciplinary teams have the technical ability to make sense of technical information. In other words, a project manager has the technical know-how to manage projects, the maintenance representative has the technical ability to analyse maintenance-related information and so forth.

The last but not least form of team capability is the trust among team members which was highlighted as critical to teams making sense of information. Not only teams trusting their peers—that was repeatedly mentioned—but also trust between managers and their senior and their direct reports. Justin MTC4 highlighted the importance of trust among team members by noting:

> "…I trust those reporting to me, and our senior manager trusts us a great deal…when trying to understand events or equivocal situations and we trust each other's capabilities, we tend to accept each other's arguments or claims".

Again, similar to team composition; trust among team members and their senior is an obvious form of team capability without which it has become almost impossible for team members to even initiate the sensemaking process.

4.2.6 Sensegiving Techniques

Sensegiving is used as an integral part of sensemaking process whereby middle managers aim to "influence the sensemaking and meaning construction of others [middle managers] towards a preferred redefinition of organisational reality" (Gioia and Chittipeddi, 1991: 442). The findings show that sensegiving serves as a strategy in both technical and non-technical business units to influence peer middle managers' sensemaking efforts.

Three sensegiving techniques or sub-themes arose under this theme from the data. While some sensegiving techniques are common, some techniques are found to be uniquely used in the non-technical business unit.

4.2.6.1 Dominating Meetings

It was evident in the data that middle managers in both technical and non-technical business units adopt the dominating meetings technique to influence other peers' sensemaking and meaning construction in team settings. This technique of sensegiving is where a middle manager simply "hijacks" the meeting from the chairperson and influences other team members' sensemaking. This "hijacking" was seen in several sessions attended, for example in MO-8:

> "The head of the business unit literally kept listening to his managers' discussions with little or no input; and that the one manager was taking the discussion in the directions he wanted".

The main ingredients of this technique seemed to be a weak chairperson and a strong team member. That manager who applied this technique in MO-8 did manage to shape not only other team members' sensemaking but also the chairperson's sensemaking and meaning construction.

4.2.6.2 Interpretation on Behalf of Others

This sensegiving technique is concerned with middle managers' tendency to offer interpreting information on behalf of other middle managers. Interpreting information enables one party to define the meaning to another party. Defining the meaning gave those middle managers the edge to give sense to other middle managers. Jack MKTG4 talked about how interpretation of information on behalf of others enabled him to influence team members’ sensemaking efforts by noting:

> “…my team and I work closely with operations and customers by linking them together…it is easy for us to influence the thinking of either party as we produce information to both”.

This technique of sensegiving only surfaced in the non-technical business unit which may be attributed to the fact that the non-technical business unit acts as a service unit that provides information to the technical business unit.

4.2.6.3 Showing Emotions

In addition to middle managers using emotions to influence the collective sensemaking of the team which was earlier noted, emotions (e.g. anger, passion, fear, etc.) also emerged as a technique used by middle managers to give sense to individual middle managers in both technical and non-technical business units. This technique was evident in several observation sessions:

> “… the fear from other managers’ reaction prevented other managers who are the subject matter expert to agree with each other on how the incident had happened” (MO-1).

This technique of sensegiving was also cited by many managers interviewed. Showing aggressive behaviours by one middle manager prevented other team members from speaking up, as noted by Jacob FN2:

> “…we [non-technical business unit] have a person who is always aggressive in the way he put things on the table. I don't keep quiet, especially when he says things in my area I challenge”.

Both the observation cited from MO-1 and Jacob FN2's comment demonstrate how individual manager's sensemaking can be influenced by other managers who are expressing emotions that impose fear, anxiety or discomfort. Further, expressing such emotions may elicit powerful, but unsustainable sensegiving of other middle managers.

4.2.7 Sensebreaking Techniques

Sensebreaking (or sense unmaking) highlights the ways middle managers break down sense in order to give sense and ultimately impact the team's sensemaking process. Sensebreaking involves breaking down the meaning and occurs when a person's process of sensemaking is disrupted by contradictory evidence (Pratt 2000).

Overall, this work findings noted that sensebreaking actions take place in teams of middle managers in the O&G sector in Bahrain in the forms of questioning, reframing and redirecting, which can lead to positive evolutionary or learning scenarios for the team, or sometimes to failures as argued by Maitlis and Christianson (2014).

As illustrated in Table 5, two main themes or approaches related to sensebreaking surfaced from this work data; these were referencing and tools. The first approach takes place in two forms, namely benchmarking and using intuition feelings. However, the latter approach to sensebreaking occurs in three forms, specifically second opinion, structured questioning and verifying using other means.

It is interesting to note that sensebreaking techniques adopted by middle management teams differed in technical and non-technical business units. While some sensebreaking techniques are commonly used in both business units (e.g. benchmarking), some techniques are confined to technical business units (e.g. structured questioning). However, other sensebreaking techniques were found to be practiced in the non-technical business unit only using intuitive feelings.

4.2.7.1 Referencing

Referring the sense made by the team to a pre-existing sense to break the sense already made by the team was found in two forms in the data as noted above, namely via benchmarking and using intuitive feelings. The former form of referencing was noted in both technical and non-technical business units; the latter surfaced only in non-technical business units.

Using a pre-existing picture to challenge or break the sense already developed by the team or benchmarking was employed by team members to break the sense aiming to generate learning scenarios as noted earlier. Patrick OPS3 illustrated this sensebreaking technique by noting

> "…we [teams of middle managers] constantly compare and contrast the sense we made to our experience repertoire…it helped us in uncovering areas we didn't see in our first round of sensemaking".

It is evident from Patrick OPS3's example that benchmarking against the team's experience caused the sense to be unmade, which gave the team another opportunity to revisit and reframe the sense they made.

Another form of referencing technique that appeared in only non-technical business units' data was middle managers employing their intuitive feelings to break the sense the team collectively made. Oliver MKTG1 explained his feelings when an understanding of a situation is conveyed to him:

> “sometimes I get a picture of a situation from my team I know it's not right and it’s mostly my gut feelings made me pause, reflect, project on the situation and know it’s not right”.

It also was noted in many observation sessions attended that words like “my gut feelings” and “my feelings” were employed as a technique to break the already sense which directed the team to revisited the meaning construction or sensemaking they had established.

Even though it is not based on science, intuitive feelings seemed to elicit the opportunity for middle managers to revisit their already created sense to add learnings and therefore perfect the meaning construction process.

4.2.7.2 Tools

Whether intentionally or not, the O&G sector in Bahrain seems to possess many tools that enable the sensebreaking process to occur. Several of these tools deliberately exist as part of industry best practices and are integrated in other processes (e.g. due diligence), while others (e.g. structured questioning) unintentionally transpire in both technical and non-technical business units’ data.

Seeking a second opinion to break the already sense made by either a third-party audit or through a due diligence survey was cited in the technical business unit data. Justin MTC4 noted that because of operating in a high-risk sector such as the O&G by arguing that

> “… we [teams of middle managers] always seek other opinions to confirm that our understanding is watertight. We ask our colleagues from a different oil and gas sector to perform due diligence before we proceed with the understanding we made”.

Justin MTC4 and others feel more comfortable and reassured getting a second opinion on issues the team scrutinized already. Seeking a second opinion to break the already established sense by Justin MTC4 and his team connect the learnings from the process of sensebreaking to sensemaking.

Another technique used unintentionally in the technical business unit to break sense is “structured questioning” where middle managers ask a series of questions to challenge the sense made by the team aiming to improve the already team established sense. Many of the interviewees have subconsciously used structured questioning as a sensebreaking tool to add more quality to their collective understanding. Bob OPS1 gave an example of the “structured questioning” technique of sensebreaking by using “why”:

> “…why we [teams of middle managers] need to develop a procedure? Then I ask why we use this information source? And so on; until we’re happy about what we understood, it is important to see the same thing, otherwise we’d redo the entire exercise”.

The structured questioning technique was observed during several sessions attended. For example, in MO-1, the chairperson kept posing the same questions in different formats to different team members to ensure that the information painting the story of what had happened was consistent among all team members.

Despite being simple and unintentional, the structured questioning technique seems to agitate questions and provides answers to cover any gray areas in the sense created by the team. It seems from examples given that Bob OPS1 and MO-1 are placing so much importance on “structured questioning” that if it fails to create an objective sense, the sensemaking exercise is repeated.

In addition to “using second opinion” and “structured questioning” to break the sense in the technical business unit, “verifying using other means” was common in both technical and non-technical business units. Verifying, calculating, recalculating qualitative, quantitative and/or mixed data by managers or other managers was an approach adopted by several middle managers to break sense of the sense already made collectively by the team. David MTC3 explained how he would break the sense made in the form of numbers by noting

> “When I get information from my team expressed in numbers, I start calculating the numbers myself from scratch to determine if they’re correct”.

The process of calculating and recalculating numbers or information is an illustration of dismantling the pieces of the “jigsaw” already put together by the team, inspecting each and putting them back to obtain an objective sense of reality to all team members.

4.3 Summary

This chapter set out to analyse the qualitative data collected from an O&G organisation in Bahrain. The data was in the form of semi-structured interviews conducted with middle managers, overt non-participant observations and operational documents. Using NVivo software (Version 12) to facilitate thematic analysis of the collected data, seven themes and 26 sub-themes that surfaced were analysed (summarised in Table 5 mapped against existing literature), which revealed how sensemaking process —supported by sensegiving and sensebreaking—is used in a dynamic business environments of the O&G sector in Bahrain.

Table 5: Description of themes and their sub-themes

Theme/sub-theme	Description	Existing in literature (YES/NO)
Sensemaking process	The process of sensemaking.	
Creating a common picture	The chair begins with an overview of issue to start sensemaking process.	No
Linking past and current	Using both past and current data to understand how future looks like.	No
Unfolding sensemaking	How managers or the approach adopted to initiate the sensemaking process. The actual process of sensemaking as it unfolds.	No
Use of analytical tools	These tools help in making sense of data.	No
Sensemaking properties	Sensemaking properties as outlined by Weick (1995).	
Enact the environment	Middle managers constructing their own environment and the premises for future sensemaking.	Yes
Extract cues	This where attempts are made to link data or ideas to the situation or reality.	Yes
Identity	Linking his/her identity with the organisation.	Yes
On-going activity	Middle managers continuously shaping and reacting to the environment they face.	Yes
Plausibility Vs. accuracy		
Data accuracy	This node describes the notion of using accurate information or data to forecast the future to near perfection.	No
Plausibility	Middle managers tendency to aim for plausibility when making sense of events.	Yes
Retrospective Vs. prospective		
Prospective	Using prospective information to feed the sensemaking process.	No
Retrospective	Using retrospective information to feed the sensemaking process.	Yes
Social	Middle managers socially construct a sense of shared meaning.	Yes
Sensemaking triggers	The instances that trigger sensemaking effort by middle managers.	
Alignment		
Avoid overlaps	Addressing any overlaps between departments and/or business units (e.g. carrying out the same task by two different identities).	No
Mutual interest issues	Discussing issues of mutual interests to all middle managers' scope (e.g. a joint project).	No
Solving issues		

Brainstorming	Brainstorm ideas for an issue aiming to make sense of it and suggest recommendations going forward (e.g. marketing a new blend of oil to a certain market).	No
Disputes	Addressing disputes (e.g. personnel, contractors, contracts).	Yes
Emergencies and Business Interruption	When something is expected to happen but never happen, or something not expected but happen.	Yes
Sources of information	The sources of information middle managers use to make sense of events.	
Data type		
Qualitative	Such data is either from the inside or outside the organisation (e.g. reports contains photos).	Yes
Quantitative	Such data either from inside or outside the organisations (e.g. a spread sheet showing a process unit numerical parameters).	Yes
Empirical		
Incidents	Learnings from incidents occurred within or outside the organisation (e.g. personnel injury, process incident, environmental loss of containment).	Yes
Internal database	Data pulled from databases maintained by the organisation (e.g. safety data sheets for chemicals).	Yes
Test results	Information generated from test results (e.g. non-destructive tensile test for materials).	Yes
Experience		
Experience from other organisations	Experience from other organisations either in Bahrain or outside (e.g. increasing the feed to a unit which is similar to a unit in a neighbouring country).	Yes
Experience from same organisation	Experience from the same organisation (e.g. middle managers, their seniors or subordinates).	Yes
Least reliable		
Internet	Information obtained from the internet.	Yes
Intuitive feelings	Information based on middle managers' intuition.	No
Most reliable		
Third party opinion	Obtaining a third-party opinion (e.g. due diligence).	No
Written information		
Internal procedures	These documents from the same organisation or outside (e.g. standards, procedures).	Yes
Regulations	Legislative framework the organisation has to follow (e.g. health and safety regulations).	Yes

Sensemaking Influences	Factors that influence sensemaking process.	
Information context		
Confidentiality	The confidentiality of the information and its sources used to make sense.	No
Format	The format of the information e.g. qualitative, quantitative, etc.	No
Technology	The technology used to store and display the information.	Yes
Power of authority		
Consequences	The impact (on the organisation) of the issue the team is making sense of.	No
Politics	The politics of interpretation and conflict of interests.	Yes
Seniority	The influence the position in the organisation i.e. senior manager influences his manager's sensemaking ability. Seniority is not in the context of age.	No
Power of experience		
Age	The role middle manager's age play in sensemaking.	No
Experience	Experience of the middle managers in terms of the total number of years spent as a manager.	No
Tenure	The time spent in the same organisation.	No
Use of language	How middle managers use language (e.g. discourse, narratives, rhetoric, tropes and stories) to influence sensemaking.	Yes
Team capability		
Data analysis skills	Employing data analysis skills to make sense.	No
Educational and training background	The educational and training ground of the middle managers.	No
Emotions influence	Negative (e.g. fear, depression, anxiety, panic) and positive (e.g. happy, joy, love, empathy) emotions.	Yes
Ethnicity	The ethnicity of team members.	No
Gender	Gender roles in information processing.	No
Peer pressure	All type of peer-pressure (direct, indirect, negative, positive) used by middle managers.	Yes
Possess more information	Having the advantage of having more information than the rest of the team.	No
Team composition	The profile of the team and who they report to.	Yes
Trust	Team trust their senior, each other and their subordinates.	Yes
Sensebreaking techniques	Strategies used by middle managers in challenging information obtained to make sense (i.e. sensebreaking).	
Referencing		
Benchmarking	Use pre-existing picture to compare the picture developed by the team of current situation (e.g. compare a situation in one department to that of other in the same or other business units).	Yes

Using intuition feelings	Employing own intuitive feeling as a reference to verify the sense made by the team.	No
Tools		
Second opinion	This is where a second opinion is sought to confirm the sense made after breaking it (e.g. a third-party due diligence).	No
Structured questioning	A series of question used by middle managers to verify the sense made by the team.	Yes
Verifying using other means	Verifying/calculating/recalculating both qualitative, quantitative and/or mixed data by the manager him/her self (e.g. if the sense made by middle managers, asking middle managers from a different business unit serves as other means to confirm the sense made).	No
Sensegiving techniques	The techniques or approaches used to influence how other middle managers make sense in a team.	
Dominating meetings	Being the first among fellow managers to comments, question, analyse or give own opinion.	No
Interpretation on behalf of others	One manager interprets information for other manager to use in their sensemaking process.	Yes
Showing emotions	Showing emotions when discussing or expressing opinion such as disagreement in opinions or sensemaking.	Yes

Chapter 5: Discussion

5.1 Introduction

As discussed in Chapter 2, the gap in the literature is that the dynamics of creating a common understanding of organisational realties among team members remain unclear (Stigliani and Ravasi, 2012; Maitlis and Christianson, 2014; Martin, 2015; Sandberg and Tsoukas, 2015; Kudesia, 2017; Merkus et al., 2017). This research's purpose grew out of a desire to address this gap by exploring middle management teams' sensemaking, sensegiving and sensebreaking processes in the Oil and Gas (O&G) sector operating in dynamic business environments in Bahrain. Specifically, the study sought to answer the following two research questions:

RQ1: How do teams (comprised of middle managers) make sense of situations/ events and influence others to ultimately make decisions in the oil and gas sector in Bahrain?

- RQ1a. What is the process of sensemaking used by teams (middle managers)?
- RQ1b. What are the differences in the sensemaking process between technical and non-technical business units?
- RQ1c. What are the approaches adopted to influence team members' sensemaking process (sensegiving)?

RQ2: How is sensebreaking used to influence the sensegiving process by teams in technical and non-technical business units?

This chapter evaluates the research's findings with respect to the above questions. To achieve this, the findings provided in Chapter 4 are discussed with reference to the literature review presented in Chapter 2.

As described in Chapter 4, seven themes and 26 sub-themes typified the main findings of the research which are visualised in the sensemaking framework in the O&G sector in Bahrain (Figure 7). This framework is used to structure the answers to the research questions in Section 5.2. Section 5.3 concludes by summarising the main highlights of the chapter.

5.2 Findings and Interpretations

In this section, each of the themes emerged from this research is discussed in turn by relating them to the sensemaking framework (Figure 7), research questions and to the literature.

The sensemaking framework consists of the four-steps of sensemaking as it unfolds by middle management teams in both technical and non-technical business units. The framework also illustrates sensemaking properties, its triggers, its influences and source of information middle management teams adopt to collectively make sense. Further, Figure 7 shows the different sensegiving and sensebreaking techniques adopted by the middle management team in technical and non-technical business units.

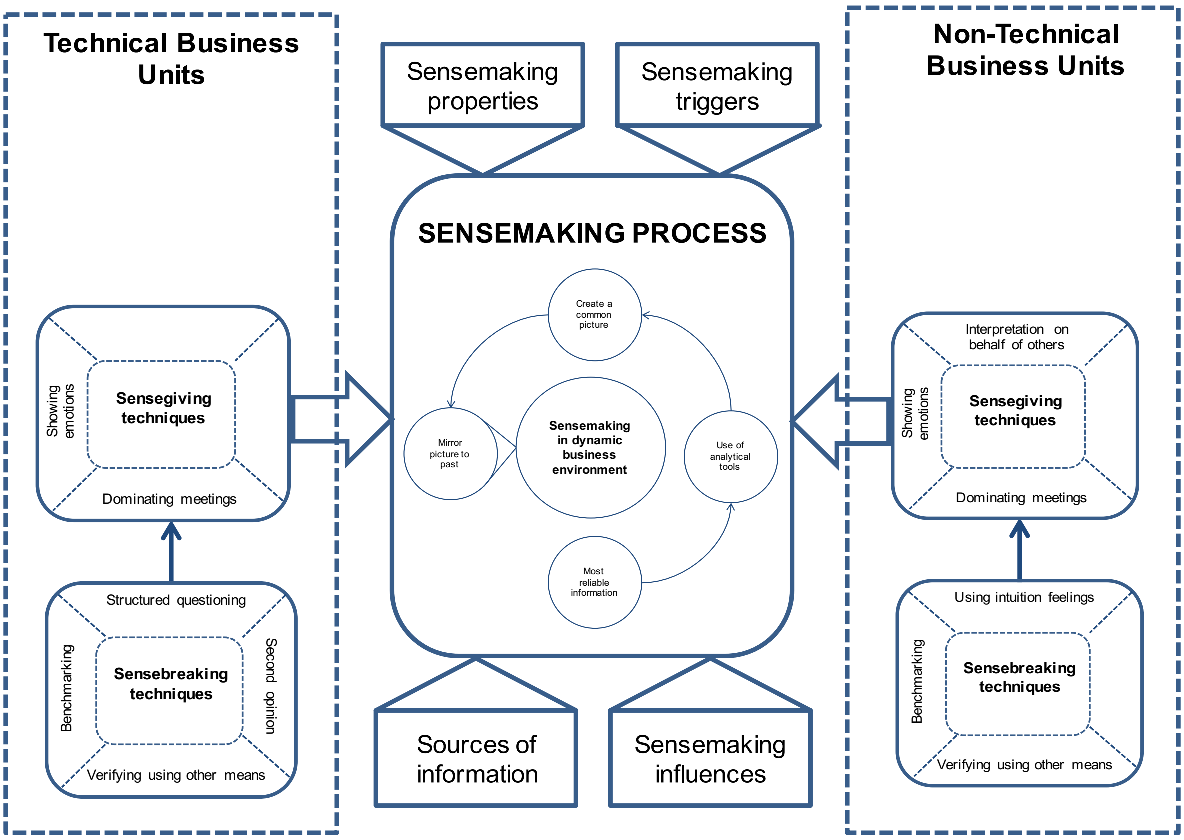

Figure 7: Sensemaking in the oil and gas sector in the Bahrain framework

Overall, the sensemaking process as it unfolds (RQ1a) by teams of middle managers is the same in technical and non-technical business units (RQ1b) in the dynamic business environments of the O&G sector in Bahrain. The sensegiving (RQ1c) and sensebreaking (RQ2) techniques exist to support the sensemaking process. Nonetheless, while some of these sensegiving and sensebreaking techniques are commonly used in both technical and non-technical business units, some are favoured in one business unit over the other.

5.2.1 Sensemaking Process

At the centre of the sensemaking framework illustrated in Figure 7 lies the process of sensemaking which answers research questions RQ1a. and RQ1b. Figure 8 shows the four-step sensemaking process which occurs sequentially. Such four-step process to make sense of events or situations in dynamic business environments in the O&G sector in Bahrain by teams of middle managers begin with the *most reliable information* where all members agree on its reliability. The most reliable information is further processed by the team *using analytical tools* to reconfirm understanding and *create a common "picture"* among middle managers' team members. The last step—which is critical to the sensemaking process—is to reconfirm the "picture" drawn with an event or a situation that occurred in the past or *mirror picture to past*.

A number of observations can be deduced from this four-step sensemaking process in light of the literature discussed in Chapter 2. The first is that sensemaking is a "process" as argued by several authors (Weick, 1995; Balogun and Johnson, 2004; Maitlis and Christianson, 2014). The second observation is that middle managers rely on internal information to initiate the process of sensemaking which is contrary to Klein et al.'s (2010) claim that organisations fail to use internal information to make sense. The third observation is that the four-step sensemaking process simplifies how team members collectively engage in making sense of events which is considered to be unclear by several scholars (Holt and Cornelissen, 2013; Maitlis and Christianson, 2014; Sandberg and Tsoukas, 2015 Kudesia, 2017; Merkus et al., 2017).

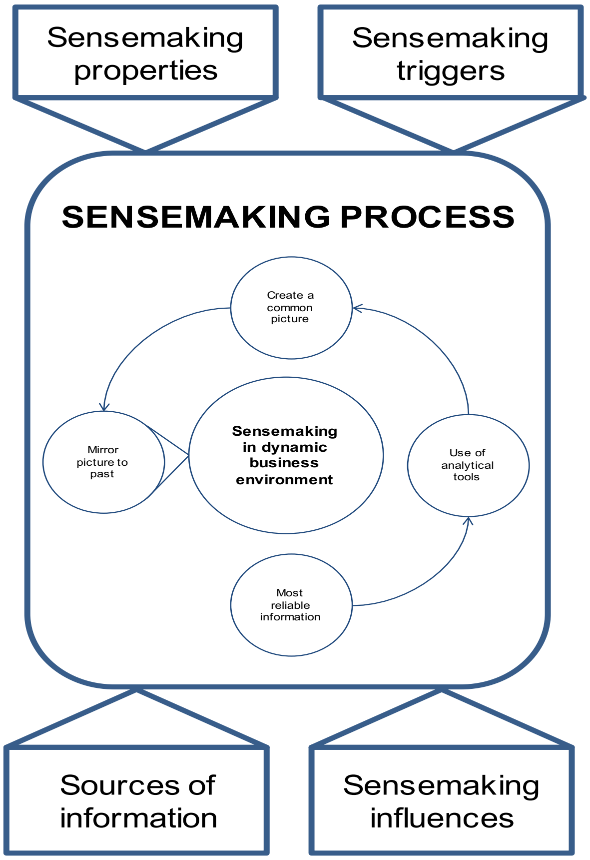

Figure 8: Sensemaking process

Furthermore, the findings uncovered a number of conditions for the four-step sensemaking process to occur among teams of middle managers as explained above. These are sensemaking properties, sensemaking triggers, source of information and sensemaking influences (Figure 8).

As noted in Chapter 4, five sensemaking properties (e.g. enact the environment, extract cues, identity, on-going, social) are found in line with Weick's (1995) orientation; while two (e.g. plausibility and retrospective) are contrary to Weick's argument. All of these seven properties apply consistently in both technical and non-technical business units as shown in Figure 8. The findings revealed that teams of middle managers in dynamic business environments in the O&G sector in Bahrain favour accuracy of information in their sensemaking process over plausibility which is contrary to the claim made by several scholars (Weick, 1995; Currie and Brown, 2003; Abolafia, 2010). In line with Corley and Gioia (2011), MacKay and Parks

(2013) and Sandberg and Tsoukas (2015, 2020), the findings also uncovered that middle managers are more orientated towards using sensemaking in a prospective way as opposed to retrospective to construct interpretation of reality as argued by Wieck (1995).

It was clear from the findings that recognising sensemaking triggers was part of the overall sensemaking process (Figure 8). It helps middle managers' teams to anticipate triggering events and contain these events when they arise; this is especially prevalent in high-reliability organisations such as those operating in the O&G sector, where sensemaking failures can prompt disasters (Weick and Sutcliffe, 2003). Recognising such triggers of sensemaking is found to build teams' capacity for anticipation which enables them to better collaborate and prepares them to handle undesired and foreseeable occurrences (Rosness at el., 2016).

This said, what triggered the sensemaking process in dynamic environments in the O&G sector in Bahrain was (1) *alignment* and (2) *solving issues*, which was found to be consistent with the literature. These two triggers to sensemaking process are characterised by being discrepant events, or surprises which trigger a need for explanation, or post-diction, and, correspondingly, for a process through which interpretations of discrepancies are developed (Louis, 1980). Mandler (1984 cited in Weick, 1995) went further by categorising these discrepant events, surprises or interruptions into two types. The first is a new event that is not "expected", that does not fit into the ongoing interpretation of the environment (i.e. emergencies and business interruptions) and the "expected" event that does not happen (i.e. alignment).

The findings noted that *sources of information* (e.g. *data type*, *written information*, *from experience*, *empirical data*) is also critical to the sensemaking process in both technical and non-technical business units in the O&G sector in Bahrain. While there is no scarcity of information in the O&G sector, middle managers attempt to gather enough information to drive the sensemaking process that is seen as objective as possible by all team members.

Information, its format, sources and quality also are considered critical to the sensemaking process in the literature. Klarin and Sharmelly (2021) cite implicitly the importance of information in the sensemaking process, but associate it largely to “extracting” information or “cues” from the environment to help actors (i.e. middle managers) decide on what information is relevant and what explanations are acceptable (Brown et al., 2008). Although the findings indicate that information sources are from both internal and external environments, middle managers consider information from the internal environment as most reliable to initiate the sensemaking process. To put an emphasis on this finding, Klein and colleagues (2010) note that failures largely are associated with a classification in organisational sensemaking where crucial cues are overlooked and organisations neglect to analyse and use existing information in their internal processes.

Furthermore, *sensemaking influences* such as *information context*, *power of authority*, *power of experience* and *team capability* appeared to impact the sensemaking process as shown in Figure 8. Of all factors found influencing middle managers’ sensemaking process in the O&G sector in Bahrain that attracted the attention of scholars is linguistic factors (Weick, 1995; Weick et al., 2005; Sandberg and Tsoukas, 2015; Logemann et al., 2019). In the same way, the impact of language on sensemaking process was observed in Balogun and Johnson’s (2004) study where middle managers were very active in interpreting the meanings of events for themselves and their teams through a range of verbal, textual and non-verbal behaviors. Linguistic factors influencing sensemaking efforts include discourse, narratives, rhetoric, tropes, and stories (Cornelissen et al., 2012; Sandberg and Tsoukas, 2015). This is so since sensemaking occurs by teams of middle managers producing discursive accounts (Cornelissen, 2012) that organise their thoughts and actions (Weick, 2009).

Another influencing factor which is aligned with the literature was the *roles of emotions* (e.g. anger, passion, fear, etc.) in the process of sensemaking (Maitlis et al., 2013; Kataria et al., 2018). The findings show that positive emotions acted like a catalyst in the sensemaking process, while negative emotions hindered middle managers' ability to make sense (Stein, 2004). Additionally, *embodiment of politics* in the team's sensemaking process or a middle manager directing the sense making efforts to his or her advantage is found to be in line with the literature (Balogun and Johnson, 2004; Filstad, 2014). The *experience of team* members is also found to be a core competency and influences the sensemaking efforts in these research findings as well as in the literature (Robertson, 2006). Furthermore, the *use of technology* (e.g. databases and analytical tools) positively impacts the sensemaking efforts of middle managers' teams and is found to be consistent with the claim made by Sandberg and Tsoukas (2015).

Other factors influencing the process of sensemaking uncovered by this research findings but not cited explicitly in the literature include *team data analysis skills*, *the education and training background* of team members, *ethnicity*, *gender*, *peer pressure*, team members *possessing more information than others* and *team composition* which all fall under a team *sensemaking capability* sub-theme. As noted in Chapter 4, these factors impact to a great extent the sensemaking efforts of middle managers' teams and are one of the core competencies of any organisation (Akgün et al., 2012). The absence of such influencing factors in the literature may be attributed to lack of research that focuses on unfolding the process of team sensemaking (Morgeson, 2005; Weick et al., 2005; Maitlis and Sonenshein, 2010; Van Marrewijk et al., 2014; Martin, 2015; Merkus et al., 2017).

To summarise this section, the sensemaking process at a team or collective level can lead; if collapsed; to adverse consequences such as the case where only 3 of 18 of a fire-fighting team survived the Mann Gulch forest fire (in 1949 in Montana, USA) (Weick, 1995) or positive consequences; if successfully executed; such as teams of surgeons in operating theaters (Rosness et al., 2016). These research findings coincide with the latter where teams of middle managers in the O&G sector in Bahrain recognise the triggers to sensemaking and use several sources of information to create an objective collective sense of events or situations in dynamic business environments. While teams of middle managers aim to make such an objective sense, sensemaking properties (Weick, 1995) and sensemaking influences remain crucial to the sensemaking process in the O&G sector.

5.2.2 Sensegiving

In response to RQ1c, the findings revealed three approaches or techniques of sensegiving middle managers as a team adopted to influence the sensemaking process of their peers (Figure 9). Figure 7 nonetheless shows the connections of sensegiving to the sensemaking process in both technical and non-technical business units in the O&G sector in Bahrain.

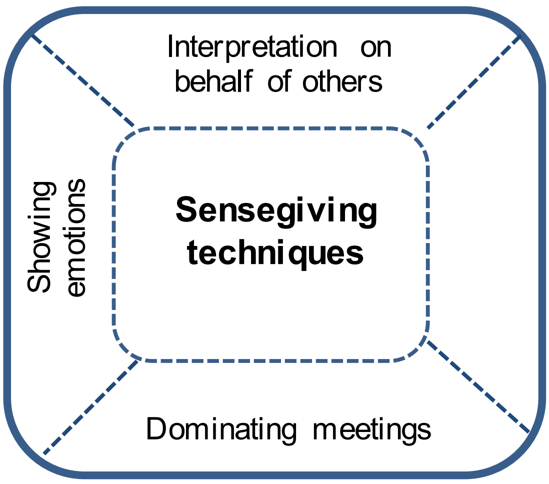

Figure 9: Sensegiving techniques (Non-technical business unit)

In line with Gioia and Chittipeddi’s (1991) claim, these research findings reveal that sensegiving is a sequential and reciprocal process where the sensegiver and the sensemaker respectively are primarily dealing with influence and understanding.

Chapter 4 elucidated that two of these sensegiving techniques (i.e. *dominating meetings* and *showing emotions*) are commonly used by teams of middle managers in both technical and non-technical business units, while the *interpretation on behalf of others* technique of sensegiving is only used by middle managers in the non-technical business unit. The latter may be attributed to the fact that the non-technical business unit is a service provider that by default offers information and support to the technical business unit to further process.

As noted in Chapter 2, sensemaking without sensegiving is incomplete (Will and Pies, 2018) and this is clearly evident in the findings of this work that sensegiving complement the sensemaking process and cannot be separated (Rouleau, 2005).

Among the other two techniques, *showing emotions* was clearly evident in the findings in teams of middle managers in the O&G sector in Bahrain. Emotions such as anger, happiness, gratitude towards other middle managers appeared to be an effective technique to influence other team members' sensemaking efforts in the O&G sector in Bahrain. This finding is in line with Kataria et al. (2018) who find that emotions play a catalyst role sensegiving process which trigger individuals to try to sensemake in the first place (e.g. to reduce ambiguity surrounding puzzling phenomena, to reduce anxiety surrounding uncertainty).

Another sensegiving technique which was found to be practiced by middle management teams in the non-technical business unit only is *interpreting information on behalf of other* team members. *Dominating meetings* is also a sensegiving technique utilised by middle managers to influence other team members' sensemaking efforts. Although both of these techniques of sensegiving are not explicitly referenced in the literature, they are consistent with the general description of how sensegiving literally takes place by some scholars. Both sensegiving techniques (i.e. interpreting information on behalf of others and dominating meetings) offer descriptions and explanations; provide signals (Lin et al., 2005); construct credible, consistent narratives and project images through stories, slogans, metaphors and artifacts (Ravasi and Schultz, 2006) to team members.

These research findings contradict to some extent with many scholars who consider sensegiving as either a top-down, a bottom-up or a horizontal process (Brown and Humphreys, 2003; Maitlis, 2005; Ravasi and Schultz, 2006). Those scholars asserting that sensegiving is top-down justify their claim by noting that leaders are institutionally empowered for sensegiving as they act as official representatives of the organisation and have privileged access to internal information (Brown and Humphreys, 2003; Ravasi and Schultz, 2006). Further, leaders have been described as co-creators or co-authors of meaning (Gerardo, 2017) and share it (i.e. sensegiving) with their subordinates in the organisation to accommodate in their sensemaking. The school of thought advocating sensegiving as a bottom-up process substantiate their claim by noting that managers in a lower management hierarchy (e.g. middle managers) possess resource power and are in a default position to influence their superiors' sensemaking process (e.g. Hope, 2010). However, it is evident from the findings that sensegiving is not only top-down and bottom-up but also a horizontal process in the dynamic business environments of the O&G sector in Bahrain. In other words, in addition to the head of business units impacting middle managers' sensemaking efforts; middle managers adopting these three sensegiving techniques to influence the sensemaking process of the head of business units, their peers and direct reports.

The synopsis of this section is that sensegiving is an inseparable part of the sensemaking process of middle managers' teams in the O&G sector dynamic business environments. There are three sensegiving techniques adopted by middle managers to influence other team members' sensemaking process. Some of these techniques are common in both technical and non-technical business units (e.g. *dominating meetings*, *showing emotions*), while *interpreting information on behalf of others* is unique to non-technical business unit managers. Further, middle managers' sensegiving orientation is not only a top-down and a bottom-up but also a horizontal process enabling middle managers to impose a 360-degree influence on stakeholders' sensemaking process.

5.2.3 Sensebreaking

In responding to RQ2, Figure 7 visualises how sensebreaking influences sensegiving which ultimately influences the sensemaking process in both technical and non-technical business units in the O&G sector dynamic business environments in Bahrain. This relation is aligned with that cited in the literature, which argues that sensemaking, sensegiving and sensebreaking are interrelated processes and they influence one another (Pratt, 2000; Kataria et al., 2018).

Figure 10 which is an extract from Figure 7, shows the four different sensebreaking techniques practiced by teams of middle managers as revealed by this work's findings.

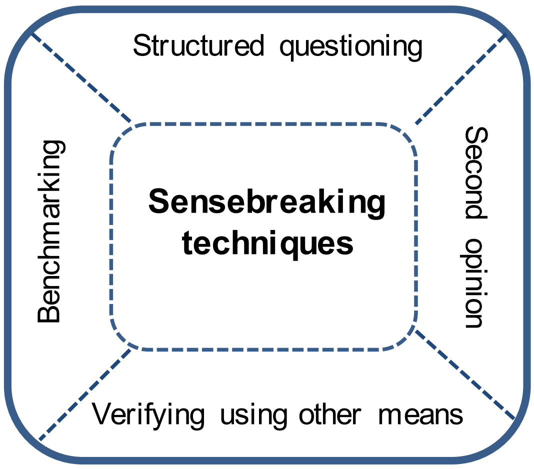

Figure 10: Sensebreaking techniques (Technical business unit)

It was elaborated in Chapter 4 that these four sensebreaking techniques included benchmarking, verifying using other means, structured questioning and second opinion. The first three are adopted by teams of middle managers in both technical and non-technical business units, while the last sensebreaking technique is only used by technical business units' middle managers. Moreover, these sensebreaking techniques are used by teams of middle managers with no defined flow but instead used by middle managers to fit particular scenarios. For example, seeking a second opinion by a technical business unit before starting up a process unit after it was shut down for repair work is a scenario that warrants conducting due diligence to break the sense already made by the team of middle managers.

It also is interesting to note that middle managers use their intuition as a reference to break the sense in a non-technical business unit (Figure 7). Even though "intuition" has been associated with the sensemaking process—which Weick (1995) argues that sensemaking involves a higher reliance on intuition than it does on careful analysis that systematically eliminates "bad" choices from "good" or "better" choices—it has not been associated with sensebreaking in the literature.

While there is less research on sensebreaking (Austin et al., 2020), it is known that the forms in which sensebreaking occur are questioning, reframing and redirecting (Dervin, 1998; Vlaar et al., 2008; Almqvist et al., 2011; Maitlis and Christianson, 2014; Kaffka et al., 2021). Questioning, reframing and redirecting are aligned with structured questioning, benchmarking and verifying using other means of sensebreaking techniques respectively. However, the second opinion technique to break the sense has not been cited in the literature despite the fact that it is a tool (i.e. due diligence, third-party audits) the O&G sector has already adopted in Bahrain and in the O&G industry worldwide. To put it differently, using the second opinion technique to sensebreaking is not labelled or associated with sensebreaking. Nevertheless, all of these four sensebreaking techniques fall under the overall purpose of sensebreaking as coined by Maitlis and Lawrence (2007) which is to disrupt another individual's sense of self or to cause the other individual to devalue self.

With the exception to seeking a *second opinion* to break the sense, it is noticeable that middle managers' teams in both technical business units systematically practice sensebreaking through "unwritten" techniques that exist in their organisation's management systems as industry best practices.

This section can be summarised by noting that sensebreaking techniques impact sensegiving and sensemaking in a team setting in dynamic business environments. Although sensebreaking is not a cited phrase or label in the O&G sector, middle managers in teams tend to deploy these techniques under different labels (e.g. due diligence, external audits, questioning, etc.) that break the sense of situations or events in the O&G sector to ultimately influence middle management teams' collective meaning construction.

5.3 Propositions

Based on the overall literature analysis, empirical data and proposed framework for sensemaking in the oil and gas sector in Bahrain, this research makes the following proposition which can be further validated to support the four-step sensemaking process framework (figure 7):

1. Middle management teams favour accuracy over plausibility in their sensemaking process.
2. In dynamic business environments, middle management teams adopt the same steps in their sensemaking process.
3. Technical and non-technical middle management teams use different sensegiving and sensebreaking techniques.

5.4 Summary

This chapter has discussed this research findings in the light of debates arising from the literature review delineated in Chapter 2 and in the context of the case study organisation. The discussion has been structured around the sensemaking process in the O&G sector in Bahrain framework in Figure 7 emerging from the analysis process which allows contributions to both the knowledge of sensemaking, sensegiving and sensebreaking and to the professional practice to be made. These include the introduction of sensemaking process by teams of middle managers in dynamic business environments such as the O&G sector, sensegiving and sensebreaking techniques. These contributions and recommendations going forward are made explicit in the next chapter. This chapter concludes with some propositions which can be further validated to support the sensemaking process framework.

Chapter 6: Conclusions and Implications

6.1 Introduction

This chapter draws a close to this work by revisiting the research aim and objectives to reflect on how they are achieved. This chapter further outlines the contributions that the research has made to the literature along with the contributions to the practice of sensemaking, sensegiving and sensebreaking. The limitations of the research that emerged as the research progressed are highlighted along with recommendations for future research. This chapter also provides a summary of this work's main findings by highlighting the findings that are either new or contradict the literature of sensemaking, sensegiving and sensebreaking.

The last two sections of this chapter are the researcher's personal reflections and an overview summarising this chapter.

6.2 Revisiting Research Aims and Objectives

As indicated in Chapter 1, the aim of this research was to explore the processes of sensemaking, sensegiving and sensebreaking in Oil and Gas (O&G) dynamic business environments. The following objectives were set to achieve the research aim:

1. Investigate the contextual background of sensemaking, sensegiving and sensebreaking with particular focus on dynamic business environments and middle management teams by critically reviewing the existing literature.
2. Identify the potential theoretical lens for exploring the emerging themes in this research and to formulate a conceptual framework based on this lens.
3. Establish the research needs and review appropriate research methodologies for formulating the methodological approach to be used in the research.

4. Conduct a qualitative empirical enquiry to explore how teams of middle managers make sense in dynamic O&G business environments in Bahrain and how they use sensegiving and sensebreaking to influence the team sensemaking efforts.
5. Analyse the empirical data and propose a framework for the sensemaking process in the O&G sector.
6. Offer practical and theoretical implications concerning the key findings and provide recommendations for future research.

For the first and second objectives, Chapter 2 critically reviewed sensemaking, sensegiving and sensebreaking literature in the context of middle management teams and dynamic business environments to develop the contextual background of this research. Chapter 2 also identified Wieck's (1995) sensemaking framework to adopt in exploring the emerging themes in this research. Chapter 3 addressed the third objective by outlining the research methodology which included the research epistemological and ontological orientation, data collection and data analysis methods. To achieve the fourth objective which was articulated in Chapter 4, a qualitative empirical enquiry was conducted in an O&G organisation in Bahrain to explore middle management teams' sensemaking and how sensegiving and sensebreaking processes were used by the teams to influence their sensemaking process. Chapters 4 and 5 addressed the fifth objective by providing analysis of the qualitative data which generated seven main themes and 26 sub-themes and introducing the four-step sensemaking process framework in the O&G sector in Bahrain. This chapter delivered the sixth objective by outlining the practical and theoretical implications of this work and making future research recommendations.

6.3 Contributions to Literature

This research provides empirical work exploring middle managers' teams operating in dynamic O&G business environments which so far has been largely ignored by the literature (Maitlis and Christianson, 2014; Sandberg and Tsoukas, 2015; Kudesia ,2017; Merkus et al., 2017). This work specifically contributes to the sensemaking, sensegiving and sensebreaking body of knowledge in the following ways:

1. The four-step sensemaking process (Figure 7) proposed in this work provides a descriptive framework for better understanding of sensemaking, sensegiving and sensebreaking by extending the existing sensemaking literature. The framework further expands on the properties of sensemaking (Weick, 1995), how the sensemaking process is triggered, and how sensegiving and sensebreaking work together and influence the sensemaking process to create an objective picture of organisational reality by middle management teams. This work fills in a gap in the literature (Stigliani and Ravasi, 2012; Maitlis and Christianson, 2014; Martin, 2015; Sandberg and Tsoukas, 2015; Kudesia, 2017; Merkus et al., 2017) by capturing sensemaking, sensegiving and sensebreaking processes as they manifest themselves among teams comprised of middle managers in dynamic O&G business environments.

2. The presented work sheds some light on the dynamics of creating common understanding among team members in an inter-organisational context which has been identified as unclear by several authors (e.g. Holt and Cornelissen, 2013; Maitlis and Christianson, 2014; Sandberg and Tsoukas, 2015; 2020). Furthermore, the presented work confirms several claims cited in the literature to apply to the individual's sensemaking process also apply to the team's sensemaking. For example, five of the seven sensemaking properties identified by Weick (1995) (i.e. enact the environment, extract cues, identity, on-going, social) apply to both individuals as well as teams. Moreover, this work challenges some assumptions that are cited to be influencing individuals' sensemaking process which have been treated as given and remain unchallenged in the current sensemaking literature (Sandberg and Tsoukas, 2020). For instance, two of Weick's (1995) sensemaking properties are found contradicting with the

literature when considered at the team level (i.e. plausibility Vs. retrospective, plausibly Vs. accuracy).

3. In addition to introducing clear sensegiving techniques as they unfold in a team setting, this work introduces a number of sensebreaking techniques to the existing knowledge, an area which is claimed to be blurred by several authors (Morgeson, 2005; Weick et al., 2005; Maitlis and Sonenshein, 2010; Van Marrewijk et al., 2014; Martin, 2015; Merkus et al., 2017; Austin et al., 2020). Such new knowledge on sensebreaking attempted to understand further how sensebreaking occurs in middle management teams to influence sensegiving of individuals which ultimately impacts the team's collective sensemaking or meaning construction. This is a significant addition to the literature of sensebreaking as it is still immature (Austin et al., 2020) where sensebreaking has primarily been explored as activities carried out by senior leaders (Pratt, 2000; Mantere et al., 2012; Maitlis and Christianson, 2014).

4. This work introduces the notion that different sensegiving and sensebreaking techniques can be utilised by teams of different portfolios or backgrounds (i.e. technical and non-technical). Such contributions to knowledge serve as an extension to the work that attempts to further understand the effects of different forms of managerial sensegiving and sensebreaking on the sensemaking process (Logemann et al., 2019).

5. The presented findings add a new dimension to middle management team members' sources of information preferences. The information sources, their format and quality are a significant addition to the knowledge of sensemaking particularly in team settings. Contrary to current knowledge (Klein et al., 2010), members of middle management teams favour using internal information in their

organisation over external sources of information in the sensemaking process.

6. An interesting contribution of this work to the knowledge of sensemaking and its supporting constructs is that the orientation of sensegiving was found not only to be a top-down and bottom-up process but also horizontal. Sensegiving is typically considered to involve the creation of meanings by a higher management influencing the sensemaking of a target audience which is a lower manager level (Gioia and Chittipeddi, 1991; Maitlis and Christianson, 2014). This contribution brings some implications to the way sensegiving is currently understood and studied particularly in team settings.

6.4 Contributions to Practice

The findings of this research benefit a broad range of practitioners including middle managers themselves, senior management, human capital practitioners interested in middle managers' development, human resources recruitment practitioners, educators and learning professionals and organisations that support middle management development. The following are this work's main contributions to practice:

1. Recognising the language and actions of sensemaking, sensegiving and sensebreaking in the organisation as they manifest themselves in social and formal networks can aid in pinpointing sensemaking, sensegiving and sensebreaking as areas of influence. The practical significance of this research is to create knowledge for middle management teams and senior managers in the O&G sector in Bahrain by introducing the four-step sensemaking framework as a tool in the organisation to organise information related to events or situations in an objective manner. This framework can be utilised by management development practitioners as a base for the middle managers' competency matrix and integrate as a taught module in the middle managers' development program in the O&G sector in

Bahrain. This taught module can also be extended to include other layers of management (e.g. senior and executive management) to instill consistency and alignment across all management hierarchy.

2. The themes and the sub-themes of the presented research can be used as a basis to develop a questionnaire template to assess individuals' sensemaking, sensegiving and sensebreaking capabilities. This assessment can be incorporated in the recruitment policy for the selection of new managers and also in the management development policy for existing managers to identify and address their weaknesses on sensemaking and its related constructs; and capitalise on their strengths. These changes in policies can also be extended to include senior managers' recruitment and development.

3. The O&G organisations supporting the development of middle managers may leverage the triggers of sensemaking—discussed in the findings—to build team capacity and anticipate events or situations which are worthy of the sensemaking exercise to enable them to better collaborate and prepare to handle undesired and foreseeable occurrences. In doing so, the team will have a better reaction to navigate into dynamic business environments (Martin, 2015).

4. The catalyst role of sensegiving and sensebreaking in the sensemaking process cannot be overlooked as discussed in the findings. Recognising the fact that sensegiving and sensebreaking techniques adopted in technical and non-technical business units among teams of middle managers are not the same, direct the efforts of management development practitioners to focus on particular techniques pertaining to specific groups of middle managers. Knowing the target audience proved to be effective in the management development and learning literature to introduce and instill skills leading to better performance (Longenecker and Fink, 2001; Hsu et al., 2006).

5. The final overarching implication for the practice is related to how organisations evaluate the effectiveness of sensemaking in dynamic business environments. Knowing the vital role the sensemaking process plays in organising information in organisations (Weick, 1995; Holt and Cornelissen, 2013; Maitlis and Christianson, 2014; Sandberg and Tsoukas, 2015; Goretzki and Messner, 2016; Kataria et al., 2018; Sandberg and Tsoukas, 2020), developing a tool based on the four-step sensemaking process framework to measure the organisation sensemaking capability may help organisations identify and address areas for improvement in how teams make sense to understand and manage events in a more proactive manner.

6.5 Limitations of this Research

At the outset of the research in Chapter 2, two types of limitations were anticipated which involved the generalisability of the findings and conclusions' transparency. As the research progressed, two additional limitations may have been encountered independent of expected limitations or corresponding with the two before-mentioned limitations.

The first limitation was the nascent capability of the researcher. Researcher bias or inexperience as an interviewer could have artificially framed the context of the research during the data collection stage particularly during interviews and possibly created inferences that channel participant responses. As outlined in Chapter 2, this has been addressed during the pilot interviews by having a professional interviewer shadow the researcher and provide him feedback to avoid such a limitation.

The second limitation is related to the participants' demographic where there was only one female in the sample interviewed. This is due to the fact that few female middle managers hold such positions in the O&G sector not only in Bahrain but also in the Arabian Gulf region. As revealed by this work that "gender" influences how the sensemaking process occurs in team settings.

Having a mixed balance of males and females in teams investigated in this work may have added more breadth to the understanding of how teams' sensemaking, sensegiving and sensebreaking processes unfold in the O&G sector.

6.6 Recommendations for Future Research

The presented research opens up several lines of research opportunities that can be investigated based on the research findings and limitations outlined in Section 6.5.

Future researchers also can extend this work by conducting quantitative research to test the four-step sensemaking framework and validate it to include other industries critical to the economy in Bahrain and Middle East region that operate in dynamic business environments such as aluminum smelting, fertilizers and ship repairs. The current research questions, the seven themes and other associated sub-themes can serve as a basis for designing the quantitative data collection instrument. The results of the quantitative study could reveal additional information around sensemaking, sensegiving and sensebreaking that would streamline the sensemaking process among middle managers' teams. In addition, future research may reveal some interesting findings by converting the work findings to hypotheses and testing them using quantitative surveys.

Future research can also extend testing the applicability of the four-step sensemaking framework to shop-floor employees' teams and senior management teams. Gaining an insight into how all layers of employees within organisation make sense of events and situations would benefit the contributions to the practice outlined in this work.

Finally, it would be of interest to expand the research further to focus on middle management teams' sensemaking process from a "team capability" perspective with particular emphasis on the influence of gender on sensemaking process (Grisoni and Beeby, 2007; Cherneski, 2021). Further, future work may be extended to include other factors under team capability as explained in Chapter 4 such as team data analysis skills, the education and training background of team members, the use of their emotions, ethnicity, peer pressure, team members possessing more information than others and team composition. A team capability expanded research would provide further insights into the influences of teams' sensemaking process.

6.7 Summary of Main Findings

Table 6 summarises the main findings of this work by listing all findings for each theme that emerged from the data. As explained in the sections above, these findings may have either contributed to the literature or the practice of sensemaking, sensegiving or sensebreaking.

While some of the findings of this work are in line with the literature (e.g. emotions in sensegiving, influences of sensemaking, sensemaking is social, on-going, etc.); further delineated in Chapter 5; some either novel or contradict with the literature of sensemaking, sensegiving and sensebreaking. Table 6 outlines these novel contributions to the literature of sensemaking, sensegiving and sensebreaking.

6.8 Personal Research Reflections

Overall, this research was a massive investment in time and effort for the researcher; and contributed greatly to the researcher's professional development. As a middle manager in the O&G sector in Bahrain, research in teams' sensemaking fascinated the researcher and was a thought-provoking experience. Reflecting on such experience creates space to challenge assumptions and to enable new understandings going forward.

The research has essentially achieved its aim of making a number of modest but valuable contributions to the sensemaking, sensegiving and sensebreaking literature, and to the practice. The amount of qualitative data, permitted the creation of holistic findings as a platform for further research in the area of teams of middle managers making sense in the dynamic business environment in the O&G sector in Bahrain.

In terms of the methods used, it is believed that semi-structured interviews, observations and documents enabled the researcher to address research questions. However, a larger pool of middle managers (i.e. mixed gender) to interview and more observation sessions to be conducted would have yielded richer results. It was felt that the thematic analysis method using NVivo software (Version12) was well suited to the aim of this research which provided a transparent way of generating contributions to both theory and practice. Nonetheless, it was time-consuming to learn how to set up and navigate through NVivo software which the researcher learnt at the data analysis stage. Allocating ample time in the research timeline to learn NVivo software before the data collection stage would have put the researcher in a better position to complete the data analysis stage ahead of the time.

Further, part of the researcher's journey was to maintain a balance between work, life and research. Perhaps, this has been the greatest challenge to overcome specially at the data collection and analysis stage. It was even more challenging when the researcher's academic supervisor was changed twice and the supervisor at work three times. Adding to the dilemma of striking a work, life and research balance was the COVID-19 pandemic which in a big way disturbed the researcher's completion plan. As a matter of fact, such conditions created a perfect dynamic environment for the researcher to make sense of what was going on, make decisions to strike and sustain that balance.

The fact that the study is limited by its focus on a small sample of middle managers from only one O&G organisation in a small country such as Bahrain; provides many new opportunities for future sensemaking, sensegiving and sensebreaking research. In this respect, Weick's (1995) acknowledgement that sensemaking never starts because it never stops seems appropriate as a closing thought for this research.

Table 6: Summary of main findings

#	Theme	Main findings	Comments
1.	**Sensemaking triggers**		
		a. Alignment and solving issues.	Both are part of sensemaking process.
2.	**Sensemaking properties**		
		a. Teams favour accuracy over plausibility retrospective.	Contrary to Wieck (1995).
		b. Teams lean more towards using the sensemaking process as a prospective rather than retrospective tool.	Contrary to Wieck (1995).
3.	**Sensemaking process**		
		a. Four steps to sensemaking in a team setting.	This is the main part of the four-step sensemaking framework which is novel to current literature.
4.	**Sensemaking influences**		
		a. Team sensemaking capability: team data analysis skills, the education and training background of team members, the use of their emotions, ethnicity, gender, peer pressure, team members possessing more information than others, team composition.	Novel to the literature of sensemaking.
5.	**Sources of information**		
		a. Information, its format, sources and quality.	Literature cites implicitly.
		b. Team members of team preference is to use information from the internal environment.	Literature notes that sensemakers favour information from external environment.
6.	**Sensegiving techniques**		
		a. Three sensegiving techniques used by teams: dominating meetings, showing emotions and interpreting on behalf of others.	New labels added to the knowledge of sensegiving.
		b. Two sensegiving techniques adopted by both technical and non-technical while other is unique to non-technical business unit (i.e. interpretation on behalf of others).	
		c. Sensegiving is found to be not only a top-down and a bottom-up but also a horizontal process.	Novel contribution to the knowledge of sensegiving.
7.	**Sensebreaking techniques**		
		a. Four sensebreaking techniques: benchmarking, verifying using other means, structured questioning and second opinion.	Novel contribution to the knowledge of sensebreaking.

		b. Three sensebreaking techniques adopted by both technical and non-technical while other is unique to technical business unit (i.e. second opinion).	Novel contribution to the knowledge of sensebreaking.

6.9 Summary

This final chapter outlined the contributions of this work to the literature of sensemaking, sensegiving and sensebreaking, as well as their implications to the practice and policy makers which are worthy of adopting in dynamic O&G environments in Bahrain. The chapter also outlined the two limitations that were encountered—as the research progressed—for the readers of this work to be mindful of. A number of recommendations for future research were suggested to expand on this work. The main findings emerged from the data analysis and also were outlined to summarise this work's contributions to the literature and practice. The author's *personal* reflections which outlined his journey to complete this attention-grabbing work concluded the chapter.

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Appendixes

Appendix A: Email Sent to Management

Dear all,

In 2013, Ismail Mohamed, Superintendent Occupational Hygiene & Safety at HSE Department, started his Doctor of Business Administration (DBA) at Bradford Business School, Bradford University, UK. He is carrying out this personal development programme on a part-time basis, and he has set out to explore sensemaking in dynamic organisations with the focus on the oil and gas sector in the Kingdom of Bahrain. He is at the data collection stage of his programme, which entails conducting face-to-face in-depth interviews, attending divisional/departmental meetings as an observer and reviewing minutes of meetings. The data collection phase may take three months to complete and will be carried out in the strictest of confidence. During this phase of the work, he is trying to identify how teams make sense of events and how they influence each other's thinking in order to make effective decisions.

His research will close a theoretical gap and also will contribute to how knowledge is managed, which will help in development of existing and future managers. The focus on the oil and gas sector is directly related to our business. The outcome of his research will be presented to Bapco management to determine how it can be used further as part of personal development action plans for the next generation of leaders.

I, therefore, would appreciate if you could support Ismail in any manner you can. In the meantime, please contact Ismail on 39711990 if you require any further information.

Regards,

Head of Operations

Appendix B: Interview Protocol for the First Wave of Interviews

INTERVIEW PROTOCOL (1st wave of interviews, vr.01)

Sensemaking in dynamic environments: Managerial practices in oil and gas sector in Bahrain

<table>
<tr><td>Details</td><td>Interviewee: ____________________________
Date: ___________
Time: __________
Venue: __________
Approx. duration: _________ minutes</td></tr>
<tr><td>Establish a rapport</td><td>Introduction
- My research is about studying the processes before decisions are made (i.e. sensemaking, sensegiving and sensebreaking) by teams of middle managers in the oil & gas sector in Bahrain.
Purpose of the interview
- Gather information about meetings are involved in as managers (e.g. frequency of meetings, purpose, who attended, etc.).
- Procedures in this organisation you use to make decisions.
- Decision-making processes in this organisation.
Address ethical issues
- Confidentiality issues.
- Can stop anytime in the interview.
- Notes will be taken.</td></tr>
<tr><td>Topics to cover</td><td>1. Can you tell me the timing and the frequency of meetings you and your peers attend? [Probe: at business unit’s level, regular meetings or ad hoc, managers from same business unit]
2. What types of decisions made by teams comprised of middle managers? [Probe: strategic decisions, operational, long-term, short-term]
3. What are the differences (if any) between decisions made by teams in different business units? [Probe: technical vs. non-technical business unit]
4. What documents in this organisation do you use as a manager to help you make decisions? [Probe: name the titles of the documents, how to retrieve]</td></tr>
<tr><td>Ending the interviews</td><td>Thank you very much for taking the time to talk to me today. If you have any questions about this research, please feel free to contact me at any time.
I will be in contact with you as soon as the transcription is completed for you to review.</td></tr>
</table>

Appendix C: Details of First Wave of Interviews

	Who	Gender	Age	Years of experience	Date/ Time	Duration (mins.)	Venue	Interview language	Ethnicity
Operation	Ops 1-1 – Bob	Male	58	35	08 Jan. 18 1230 hrs.	40	Ops1 office	English	Bahraini
	Ops 2-1 – Jay	Male	53	22	10 Jan. 18 1230 hrs.	45	Ops2 office	English	Bahraini
Maintenance	Mtnce 1-1 – Tim	Male	55	30	17 Jan. 18 1130 hrs.	45	Mtnce1 office	English	Bahraini
	Mtnce 2-1 – Martin	Male	58	33	30 Jan. 18 1330 hrs.	40	Mtnce2 office	English	Bahraini
Finance	Fn 1-1 – Noah	Male	57	33	15 Jan. 18 0830 hrs	45	Fn 1 office	English	Bahraini
	Fn 2 -1– Jacob	Male	58	32	21 Jan. 18 0900 hrs.	40	Fn 2 office	English	Bahraini
Marketing	Mktg 1-1 – Oliver	Male	58	33	23 Jan. 18 1230 hrs.	40	Mktg 1 office	English	Bahraini
	Mktg 2-1 – George	Male	57	33	25 Jan. 18 1300 hrs.	45	Mktg 2 office	English	British

Appendix D: Details of Second Wave of Interviews

	Who	Gender	Age	Years of experience	Date/ Time	Duration (mins.)	Venue	Interview language	Ethnicity
Operation	Ops 1-1 – Bob	Male	58	35	26 Aug. 18 1130 hrs.	65	Ops1 office	English	Bahraini
	Ops 2-2 – Jay	Male	53	22	28 Aug. 18 1200 hrs.	70	Ops2 office	English	Bahraini
	Ops 3 – Patrick	Male	56	37	29 Aug. 18 1400 hrs.	75	Ops3 office	English	Bahraini
	Ops 4 – Tom	Male	50	20	30 Aug. 18 1230 hrs.	60	Ops4 office	English	Bahraini
Maintenance	Mtnce 1-2 – Tim	Male	55	30	12 Aug. 18 1300 hrs.	55	Mtnce 1 office	English	Bahraini
	Mtnce 2-2 – Martin	Male	58	33	13 Aug. 18 1120 hrs.	65	Mtnce 2 office	English	Bahraini
	Mtnce 3 – David	Male	50	12	14 Aug. 18 1500 hrs.	58	Mtnce 3 office	English	Bahraini
	Mtnce 4 – Justin	Male	45	17	15 Aug. 18 1230 hrs.	65	Mtnce 4 office	English	Bahraini
Finance	Fn 1-1 – Noah	Male	57	33	08 Sept. 18 1000 hrs.	60	Fn 1 office	English	Bahraini
	Fn 2 -2– Jacob	Male	58	32	09 Sept. 18 1230 hrs.	55	Fn 2 office	English	Bahraini
	Fn 3 – William	Male	48	24	10 Sept. 18 1530 hrs.	55	Fn 3 office	English	Bahraini
	Fn 4 – Henry	Male	55	30	12 Sept. 18 1030 hrs.	55	Fn 4 office	English	Bahraini
Marketing	Mktg 1-2 – Oliver	Male	58	33	15 Sept. 18 0900 hrs.	60	Mktg 1 office	English	Bahraini
	Mktg 2-2 – George	Male	57	33	16 Sept. 18 1200 hrs.	60	Mktg 2 office	English	Bahraini
	Mktg 3 – Debbie	Female	49	22	17 Sept. 18 1000 hrs.	60	Mktg 3 office	English	Bahraini
	Mktg 4 – Jack	Male	58	33	18 Sept. 18 0930 hrs.	55	Mktg 4 office	English	Bahraini

Appendix E: Interview Protocol for the Second Wave of Interviews

INTERVIEW PROTOCOL (2nd wave of interviews, vr.02)

Sensemaking in dynamic environments: Managerial practices in oil and gas sector in Bahrain

Details	Interviewee: ___________________ Date: ___________ Time: __________ Venue: __________ Approx. duration: _______minutes
Establish a rapport	Introduction - I am interested to know about the process of sensemaking, sensegiving and sensebreaking in team (comprised of middle managers) context. Purpose of the interview - To get to know some of your experience of sensemaking, sensegiving and sensebreaking as a manager. Address ethical issues - Confidentiality issues. - Can stop anytime in the interview. - The interview will be transcribed and sent to you for your approval. - The interview will be audio recorded.
Topics to cover	1. Could you explain what your organisation does and your role? [Probe: do you do anything outside your substantive role duties, corporate tasks, provide expertise] 2. Tell me about how you make decisions in general. [probes: solo, teams, team composition] 3. In what circumstances do you and your peers need to make decisions collectively? [Probes: business unit level, departmental level] 4. As a manager, in what circumstances do you feel most empowered and able to act or influence other team members to think or act? [Probes: the approach of a team player attempting to bring a sense he/she created forward to others]. 5. How do you get the information that helps you make decisions? [Probes: as a team of managers]

	6. What strategy(ies) do you adopt in challenging the method(s) of getting the information that helps you make decisions? 7. What sources of information do you trust the most? [Probes: web pages, individual colleagues, in-house publications, policy documents, discussion groups, team meetings] Why? [Probes: accuracy vs. plausibility, language used, source] 8. How do you use the information to better understand the situation before you make decisions? 9. What are the factors that may influence the way you use and/or interrupt the information? [Probes: challenging peers' approach] 10. How do you question the assumptions of a focal person [in the team] who believes that others hold undesirable views of reality? [Probes: presenting alternative practices, incorporating new knowledge into existing understandings]
Ending the interviews	Thank you very much for taking the time to talk to me today. If you have any questions about this research, please feel free to contact me at any time. I will be in contact with you as soon as I have the transcripts for you to review.

Appendix F: Documents Reviewed

#	Name of document	Main intended audience	No. pages	Date issued
1.	Hospital operation	Healthcare middle management personnel	10	16 Nov. 17
2.	Alarm philosophy	Operation specialists (I.e. middle managers)	34	12 June 16
3.	Procurement planning	Procurement officers and superintendent	16	16 Oct. 17
4.	Consent policy	Healthcare middle management personnel	42	24 Sept. 18
5.	Environment management system manual	Senior and middle managers	47	11 Nov. 17
6.	Projects development and execution	Senior and middle managers	22	20 July 17
7.	Risk-based inspection and application	Middle managers	6	09 Oct. 18
8.	Hydrocarbon, flammable and toxic material leak protocol decision flowchart for Shift Supervisors	Shift supervisor (i.e. middle managers)	2	06 Aug. 18
9.	Operational environment, health, safety, security, efficiency and reliability management	Senior and middle managers	44	20 Nov. 16
10.	Handling management and departmental reports, meetings and other operational administrative functions	Middle managers	10	30 Nov. 16
11.	COVID-19 suspect case at work procedure	Middle managers	9	20 April 2020
12.	COVID-19 International travel and quarantine guidelines	Middle managers	2	13 June 2020

Appendix G: Ethic Committee Approval

From: Ethics;
To: Simon Kelly;
Cc: Ismail Husain;
Fri. 10/2/2015 1:00 PM

Dear Simon and Ismail

Ethics Checklist: EC2142

Your ethics checklist has now been reviewed by the Chair of the Research Ethics Panel.

I am pleased to inform you that the Chair has confirmed approval of this study, with no further ethical scrutiny required.

NOTE – Approval is for this study only. Should there be any changes to your research, you must stop your research and submit your changes to ethics@bradford.ac.uk for consideration.

Once your amendments have been reviewed and you are given approval for your changes, only then must you recommence your study.

Failure to follow this will render your approval inapplicable and withdrawn.

Please add a sentence onto any material you share with participants confirming that ethics approval has been granted by the Chair of the Humanities, Social and Health Sciences Research Ethics Panel at the University of Bradford on 2nd October 2015.

Best Wishes
Omar

Omar Ali
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For NHS Ethics, REC and IRAS queries, please email nhs-ethics@bradord.ac.uk

Appendix H: Participants Consent Form

UNIVERSITY OF BRADFORD
MAKING KNOWLEDGE WORK

Sensemaking in dynamic environments: Managerial practices in the Oil & Gas sector in Bahrain

Research Participant Information Sheet

This research project is set out to investigate how teams make, give and break sense of situations/events and influence others to ultimately make decisions. The context for fieldwork and data collection is the oil & gas sector in the Kingdom of Bahrain.

The project uses a qualitative methodology - including semi-structured interviews, overt non-participant observations and documents reviews. By analysing personal accounts of teams working in the oil & gas sector, the research asks how teams (comprised of middle managers) make sense of situations/events and influence others to ultimately make decisions. It also asks how sensebreaking is used to influence the sensegiving process by teams in technical and non-technical business units.

All materials collected as part of this research are treated as confidential and anonymised, with any references to specific people or organizations removed. All participants will receive a summary of findings.

Should you have any further questions, please do not hesitate to contact the researcher on the information below.

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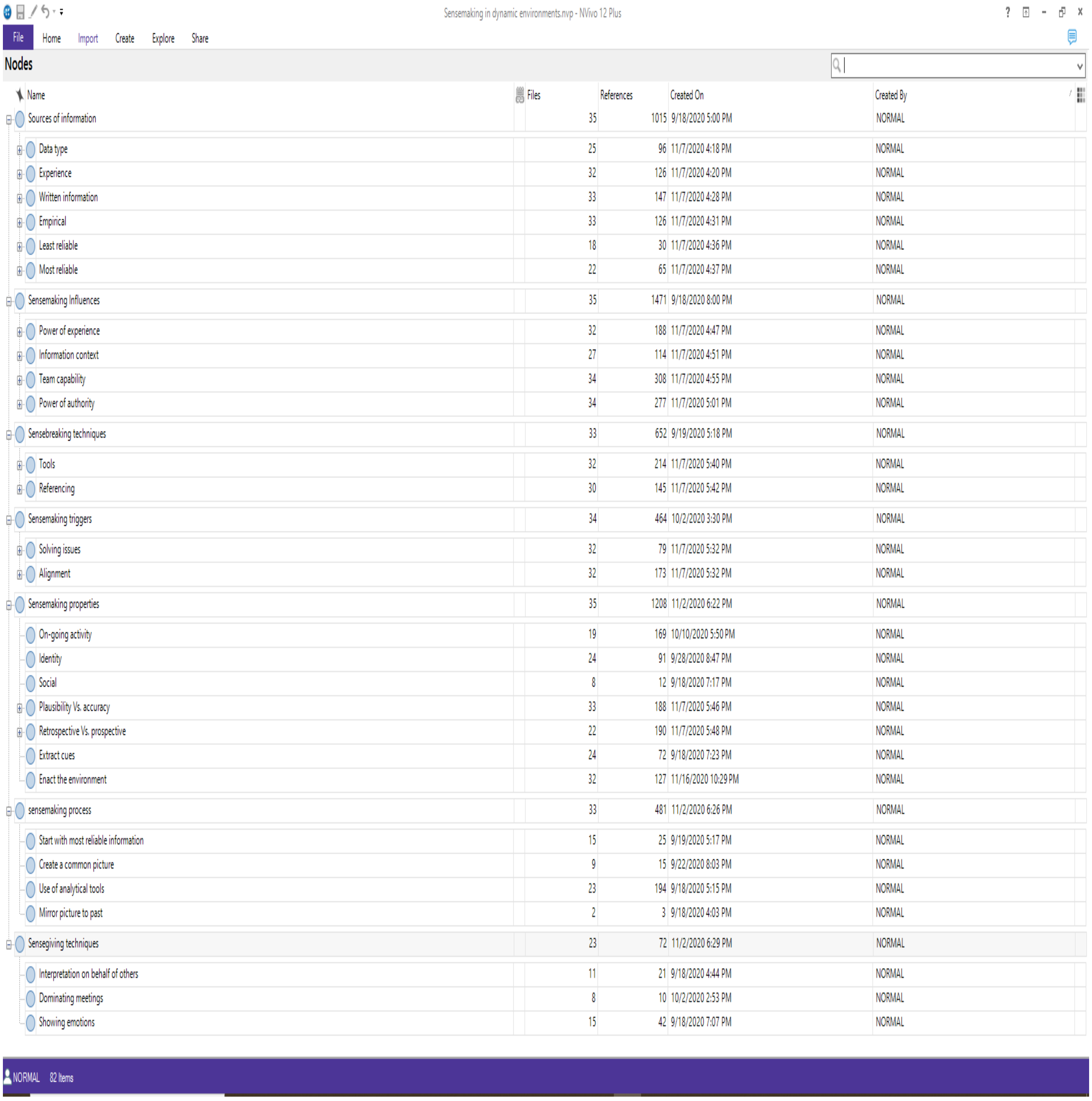
Appendix I: NVivo Screen Shot



Sensemaking in dynamic environments.nvp - NVivo 12 Plus

File Home Import Create Explore Share

Nodes

Name	Files	References	Created On	Created By
Sources of information	35	1015	9/18/2020 5:00 PM	NORMAL
Data type	25	96	11/7/2020 4:18 PM	NORMAL
Experience	32	126	11/7/2020 4:20 PM	NORMAL
Written information	33	147	11/7/2020 4:28 PM	NORMAL
Empirical	33	126	11/7/2020 4:31 PM	NORMAL
Least reliable	18	30	11/7/2020 4:36 PM	NORMAL
Most reliable	22	65	11/7/2020 4:37 PM	NORMAL
Sensemaking Influences	35	1471	9/18/2020 8:00 PM	NORMAL
Power of experience	32	188	11/7/2020 4:47 PM	NORMAL
Information context	27	114	11/7/2020 4:51 PM	NORMAL
Team capability	34	308	11/7/2020 4:55 PM	NORMAL
Power of authority	34	277	11/7/2020 5:01 PM	NORMAL
Sensebreaking techniques	33	652	9/19/2020 5:18 PM	NORMAL
Tools	32	214	11/7/2020 5:40 PM	NORMAL
Referencing	30	145	11/7/2020 5:42 PM	NORMAL
Sensemaking triggers	34	464	10/2/2020 3:30 PM	NORMAL
Solving issues	32	79	11/7/2020 5:32 PM	NORMAL
Alignment	32	173	11/7/2020 5:32 PM	NORMAL
Sensemaking properties	35	1208	11/2/2020 6:22 PM	NORMAL
On-going activity	19	169	10/10/2020 5:50 PM	NORMAL
Identity	24	91	9/28/2020 8:47 PM	NORMAL
Social	8	12	9/18/2020 7:17 PM	NORMAL
Plausibility Vs. accuracy	33	188	11/7/2020 5:46 PM	NORMAL
Retrospective Vs. prospective	22	190	11/7/2020 5:48 PM	NORMAL
Extract cues	24	72	9/18/2020 7:23 PM	NORMAL
Enact the environment	32	127	11/16/2020 10:29 PM	NORMAL
sensemaking process	33	481	11/2/2020 6:26 PM	NORMAL
Start with most reliable information	15	25	9/19/2020 5:17 PM	NORMAL
Create a common picture	9	15	9/22/2020 8:03 PM	NORMAL
Use of analytical tools	23	194	9/18/2020 5:15 PM	NORMAL
Mirror picture to past	2	3	9/18/2020 4:03 PM	NORMAL
Sensegiving techniques	23	72	11/2/2020 6:29 PM	NORMAL
Interpretation on behalf of others	11	21	9/18/2020 4:44 PM	NORMAL
Dominating meetings	8	10	10/2/2020 2:53 PM	NORMAL
Showing emotions	15	42	9/18/2020 7:07 PM	NORMAL

NORMAL 82 Items