NEAR EAST UNIVERSITY
INSTITUTE OF GRADUATE STUDIES
INNOVATION AND KNOWLEDGE MANAGEMENT PROGRAM

HARNESSING KNOWLEDGE MANAGEMENT FOR PROMOTING CREATIVE THINKING MANAGEMENT AND INNOVATION INTELLIGENCE DURING THE CRISIS TIME: AN EMPIRICAL STUDY IN NORTHERN IRAQ AT THE COVID 19 PANDEMİC PERIOD

GORAN YOUSIF ISMAEL

PhD THESIS

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I Goran Yousif Ismael,hereby declare that this dissertation entitled HARNESSING KNOWLEDGE MANAGEMENT FOR PROMOTING CREATIVE THINKING MANAGEMENT AND INNOVATION INTELLIGENCE DURING THE CRISIS TIME: AN EMPIRICAL STUDY IN NORTHERN IRAQ AT THE COVID 19 PANDEMİC PERIOD has been prepared myself under the guidance and supervision of '**Prof. Dr. Mustafa Sağsan** ' in partial fulfilment of the Near East University, Graduate School of Social Sciences regulations and does not to the best of my knowledge breach and Law of Copyrights and has been tested for plagiarism and a copy of the result can be found in the Thesis.

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ABSTRACT

HARNESSING KNOWLEDGE MANAGEMENT FOR PROMOTING CREATIVE THINKING MANAGEMENT AND INNOVATION INTELLIGENCE DURING THE CRISIS TIME: AN EMPIRICAL STUDY IN NORTHERN IRAQ AT THE COVID 19 PANDEMİC PERIOD

The coronavirus pandemic is a crisis of gigantic proportion. It is one that has brought the world to a stand still and requires utilization of uniques skills to tackle it. The purpose of the study was to reflect how knowledge management is used to promote creative thinking and innovation intelligence in times of crisis, in particular the COVID 19 pandemic. The study explored the relationships between these variables and was based on a descriptive and explanatory research design. İt employed the Structural Equation Modelling for data analysis. The study revealed a strong and significant relationship relationship between knowledge management and creative thinking, innovation intelligence, organizational culture crisis perception and crisis management. The relationship between creative thinking and innovation intelligence and crisis management were found to be insignificant and thus the hypotheses were rejected. İn addition, organizational culture crisis perception was found to have no mediating effect on the relationship between knowledge management and crisis management. İt had a moderating effect. Creative thinking and innovation intelligence had moderating effect on the relationship between knowledge management and crisis management. The researcher recommended that a wider population and a post crisis study be conducted in the future.

Keywords: crisis management, innovation intelligence, creative thinking, knowledge management, organizational culture crisis perception

ÖZ

KRİZ DÖNEMİNDE YARATICI DÜŞÜNCE YÖNETİMİNİN VE YENİLİK ZEKALARININ TEŞVİK EDİLMESİ İÇİN BİLGİ YÖNETİMİ KULLANIMI: KUZEY IRAK'TA COVID 19 PANDEMİ DÖNEMİNDE AMPİRİK BİR ÇALIŞMA

Koronavirüs salgını, devasa boyutlarda bir krizdir. Dünyayı ayakta tutan ve bunun üstesinden gelmek için benzersiz becerilerin kullanılmasını gerektiren bir şeydir. Çalışmanın amacı, özellikle COVID 19 salgını başta olmak üzere kriz zamanlarında yaratıcı düşünceyi ve inovasyon zekasını teşvik etmek için bilgi yönetiminin nasıl kullanıldığını yansıtmaktır. Çalışma, bu değişkenler arasındaki ilişkileri araştırdı ve tanımlayıcı ve açıklayıcı bir araştırma tasarımına dayanmaktadır. Çalışmanın veri analizi için Yapısal Eşitlik Modellemesini kullanılmıştır. Çalışma, bilgi yönetimi ile yaratıcı düşünme, inovasyon zekası, örgütsel kültür, kriz algısı ve kriz yönetimi arasında güçlü ve anlamlı bir ilişki olduğunu ortaya koymuştur. Yaratıcı düşünme ile inovasyon zekası ve kriz yönetimi arasındaki ilişki önemsiz bulunmuş ve bu nedenle hipotezler reddedilmiştir. Ayrıca bilgi yönetimi ile kriz yönetimi arasındaki ilişkide örgütsel kültür kriz algısının aracılık etkisinin olmadığı ancak hafifletici bir etkisi oldu görülmüştür. Yaratıcı düşünme ve inovasyon zekası, bilgi yönetimi ve kriz yönetimi arasındaki ilişkide ılımlı bir etkiye sahiptir. Araştırmacı, gelecekte daha geniş bir nüfusun ve kriz sonrası bir çalışmanın yapılmasını tavsiye etmiştir.

Anahtar Kelimeler :kriz yönetimi, inovasyon zekası, yaratıcı düşünme, bilgi yönetimi, örgütsel kültür kriz algısı

Table of Contents

LIST OF APPENDICES

LIST OF FIGURES

LIST OF TABLES

ABBREVIATIONS

COVID-19: corona virus disease 2019

SEM: Structural Equation Modelling

CHAPTER I

INTRODUCTION

1.1Introduction

This section serves as the introduction to the study; the framework upon which the study will be built on. The researcher explains in detail the problem statement and the need for such a research to be conducted. He also outlines the proposed model for the study and the relationships that will be observed through hypotheses testing, and the questions that need to be answered.

The world has faced many changes that have impacted dynamics of business, economies, lives and the way work is done. These have ranged from financial crises, world wars, revolutionary technological advancements and some diseases pandemic. However, the corona virus pandemic took the world by storm in 2020. It brought pretty much brought the world to a standstill. The virus had a disruptive effect and is a global crisis which has led to countries shutting down boarders and putting restrictions on business activities and changed the way people live, interact and exist. Value chains have been disrupted, trade has drastically slowed down, currencies have lost value and companies have plummeted. The demand for service industries has also been severely affected with sectors like tourism coming to a standstill. The pandemic has also presented a challenge to the health system in particular.

1.2Background of the study

The corona virus has made it clear that linear thinking alone is not enough to bring about developments in as far as tackling the pandemic and managing within it is concerned. Organizations have had to rely on creative thinking in order to find some creative solutions to allow business to be conducted amid the pandemic. They have had to navigate around the pandemic to ensure the continuity and sustainability of business. Governments have also done the same in order to bring some semblance of stability to people's lives amid the panic.

However, the pandemic has also opened doors with regard to knowledge management processes and the world has relied on this in order to create, share and apply knowledge. Organizations have had to tap into creative thinking and innovation intelligence to ensure continuity as well as implement survival strategies. It is the aim of this paper to determine how knowledge management has been utilized through creative thinking and innovation intelligence to come up with life saving strategies. It can be noted that in the past creative thinking and innovation have managed to help organizations, economies and countries at large survive different crises. The same can also be noted in the current times of corona virus.

According to Tehrani et al (2018), knowledge is one of the most essential assets that promotes competencies and enhances the decision-making process Knowledge sharing has been facilitated as digitalization efforts have increased drastically. Education has been taken online with several applications like ZOOM being utilized in conducting meetings from home and sharing knowledge on various things. Various applications and platforms have been opened in different countries in order to disseminate knowledge pertaining to safety and surviving in the pandemic.

Various experts have pointed out that the pandemic has to be tackled by thinking out of the box. This entails the integration of innovation intelligence in the study. Charnels and Khudaynazarova (2013) explained that innovation intelligence involves looking at problems from a new perspective and that requires a lot of creative thinking. It uses analytical, creative and practical

intelligence in recognizing problems, creation and evaluation of ideas, problem solving and subsequent application of the solutions (Rezapasand et al, 2016).

Furthermore, considering that critical thinking has not had much impact on the attempts to deal with the pandemic, a lot of creative thinking is needed in response to the current crisis. According to Halpern (2001), creative thinking involves a lot of finding alternative solutions to new situations and the pandemic is definitely a new situation that should prompt creative thinking. Chelmecka (2018), contends that the success of an organization is hinged on creativity as it affects the creation of solutions. Uslu (2015), pointed out to a possible relationship between organizational culture and creative thinking. The scholar explained that creative thinking was a skill that was learned and occurred when people were supported and sufficiently motivated but would be redudant if not nurtured.

1.3Rationale for the study

The COVID 19 pandemic is like no other in recent world history. This presents a new phenomenon whose impact needs to be studied and would especially be helpful for future studies. There has not been any academic study of this nature before, according to the researcher's knowledge especially with regards to the COVID 19 pandemic. This means that this is something whose surface has barely been scratched and provides ground breaking research. In addition, there is little literature related to innovation and creative thinking and no studies on the relationship that the researcher wishes to investigate, making this study a research worth looking into.

Knowledge management places a strong emphasis on the amassing of knowledge and any new event provides more material and the room to go seeking more knowledge. As a knowledge student the researcher wishes to be one of the scholars that studied this in depth. In addition, his country was severely affected therefore he has a personal interest in the results of this

study. The researcher would therefore like to study in detail how his country has responded creatively to the pandemic.

Knowledge has also become of utmost importance and it would be interesting to find out how knowledge management processes are being implemented and how organizations are adopting creative thinking and innovation intelligence in dealing with the pandemic. In addition, organizational culture has been found to determine how organizations respond to situations. The researcher therefore wishes to determine if the culture has had any effect on creative thinking and innovation intelligence and if it has any mediating effect on knowledge management processes and creative thinking and innovation intelligence.

1.4Significance of the study

This study has the potential of uncovering new contribution in relation to knowledge management in a crisis. In addition, creative thinking and innovation intelligence are areas that have not been researched deeply therefore the study has potential of contributing to the little existing literature. It will also be valuable as reference and foundation material for future studies seeing how the corona virus is a new pandemic and a phenomenon that will likely garner much interest for the foreseeable future.

The study will also be useful in policy implementation and preparedness in the business sector. The study will show how creative thinking and innovation intelligence can promote knowledge thinking and help an organization to survive amid a crisis. This information can be used to come up with important policies that enable the organization to be prepared and to be pro-active in times of turbulence.

The study is also significant with regards to the researcher’s completion of his Doctorate Degree in Knowledge and Innovation Management. Therefore, the successful completion of this research will also mean the completion and award of the researcher’s qualification.

1.5Statement of the problem

There have been numerous studies pertaining to knowledge management especially with regards to its association with innovation and creativity. However, the researcher could not find any studies that relate to knowledge management during a global crisis as well as on innovation intelligence and creative thinking. There have also been no studies to determine the role organizational culture plays related with those topics. This creates a gap that the researcher seeks to fill and potential for ground-breaking research into the role of these variables in the COVID 19 pandemic. Therefore, the study tries to fill the gap mainly between knowledge management and innovation intelligence, creative thinking especially concentrating on crisis period in Northern Iraq.

1.6Research questions

- How does knowledge management processes (knowledge creation, knowledge sharing) influence creative thinking in a crisis?
- Does knowledge management affect innovation intelligence in the Covid 19 crisis?
- Does knowledge management influence organizational culture crisis perception?
- How does knowledge management processes influence crisis management?
- Does creative thinking influence crisis management?
- Is there any relationship between innovation intelligence and crisis management in a crisis?
- Does organizational culture crisis perception have an impact on crisis management
- Does organizational culture crisis perception have a mediating role between knowledge management and crisis management?
- Does organizational culture Covid 19 perception moderate the relationship between knowledge management and crisis management

- Does creative thinking and innovation intelligence have moderating or mediating effects on the relationship between knowledge management and crisis management.

1.7Research model

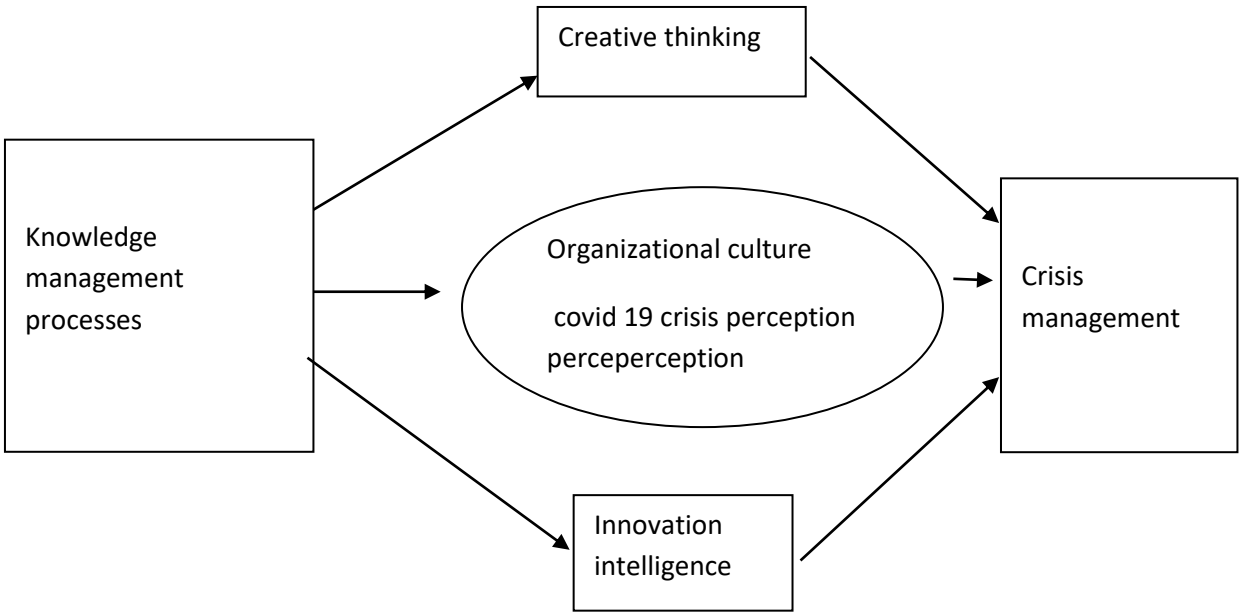


Figure 1**: Research model**

1.8Definition of terms

Creative thinking- Halpern (2001) defined creative thinking as the ability to come up with good responses to problems through the use of unique or unusual skills and or strategies.

Innovation intelligence refers to the process of solving problems by discovering and combining ideas and methods in a new way.

Knowledge management- Barun (2000) refers to knowledge management as a systematic and integrated approach for identifying, utilizing, and sharing expert experiences within the organization

Organizational culture refers to the values, expectations and norms of an organization; that guide the actions of individuals at the workplace.

CHAPTER II

Literature Review

KNOWLEDGE MANAGEMENT PROCESSES

2.1 Introduction

The chapter provides a background of the theoretical and empirical literature of knowledge management processes. It provides details on the tacit and explicit knowledge, knowledge sharing and creation. The chapter also highlights the relationship between knowledge management and other variables of the study namely creative thinking, innovation intelligence, COVID 19 crisis perception and crisis management. Lastly, it provides the empirical literature based on previous studies on the relationships between these variables.

2.2 Concept of Knowledge management

Uriate (2008) contends that information management and people management are the major elements of knowledge management. The continued digitalization and globalization process have led to demand for knowledge and its recognition as a major asset of the organization. Its demand has grown over the years as organizations seek to fully explore their potential and achieve competitive advantages in a sustainable manner (North and Kumta, 2018). The scholars pointed out that knowledge has become a major factor in meeting the needs and wants of customers by helping produce products and services that are tailor made to these needs and wants.

The need for knowledge and knowledge workers has intensified over the years. Organizations realizing how much knowledge is a great intellectual asset, are now putting emphasis on ensuring that knowledge systems are promoted in organizations (Maier, 2007). According to the scholar knowledge workers have better problem-solving abilities, are highly adaptable and bring value to the organization through individual knowledge and that which is shared amongst the personnel.

Davenport (1998) defines knowledge management as the process of identifying, evaluating storing and disseminating knowledge in order to achieve organizational goals. They also explained that it is not only about management but the creation and sharing of knowledge as well. It allows managers to utilize information and skills in decision making and problem solving. It also improves knowledge and problem solving. Knowledge management promotes diffusion of ideas which improves innovation.

Girard (2015) defines knowledge management as 'the process of creating, sharing, using and managing the knowledge and information of an organization.' Most scholars' definitions put emphasis on the capturing and effective sharing of knowledge in the organization. This was also supported by North and Kumta (2018) who pointed out that knowledge management ensured the creating, sharing and application of knowledge strategically and systematically.

Abusweilem and Abuolous (2019) explained that in this modern day, it is essential that managers of organizations should avoid traditional methods when it comes to data collection. They pointed out that it is more useful to adopt innovative intelligence in order to increase and maximize value. According to Maier (2007) the organization's ability to manage knowledge can transform it into a successful factor that facilitates flow of information through knowledge management systems.

Some scholars regard knowledge management from the perspective of human resources management, others view it from the technological point whilst other scholars view the knowledge management system as an all-encompassing system. This relationship is represented below.

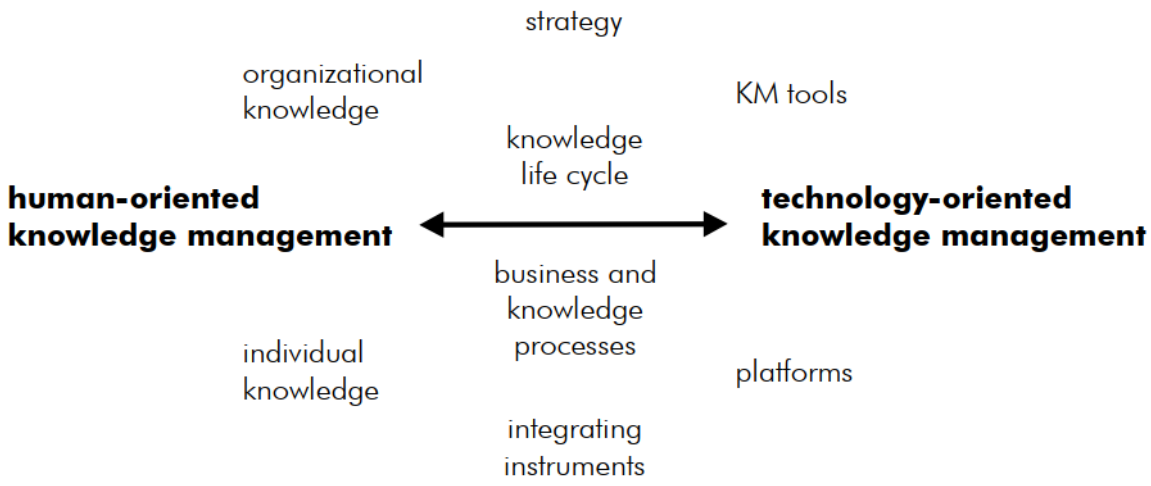


Figure2: The human vs technological KM approach

Maier (2007)

The diagram above shows that according to Maier (2007) the knowledge approaches are based on the human and technology approach and shows the tools that are employed in these approaches. The human-oriented knowledge management approach relies on individual and organizational knowledge. This knowledge is in turn utilized through the use of integrating instruments and other tools to work towards a strategy in the organization and in order to facilitate business and knowledge processes. At the same time technological-oriented knowledge management makes use of platforms where the knowledge is utilized, shared or created. The scholar contends that an integration of the human and technology perspective is more effective in promoting knowledge management to produce an intelligent organization. The knowledge life cycle consists of knowledge management tasks like creation and sharing among others.

2.3 The knowledge management cycle

The knowledge management cycle shows the transition of information to knowledge through creation, sharing and application processes. The processes entail the capturing of knowledge where it is captured and coded

so that it can be shared. Internal and external sources of knowledge are used for this purpose. The knowledge can be already in existence within the organization or from outside and is captured in repositories so that it can be utilized. Coding the knowledge simply involves the transformation of tacit knowledge into explicit knowledge that can be used.

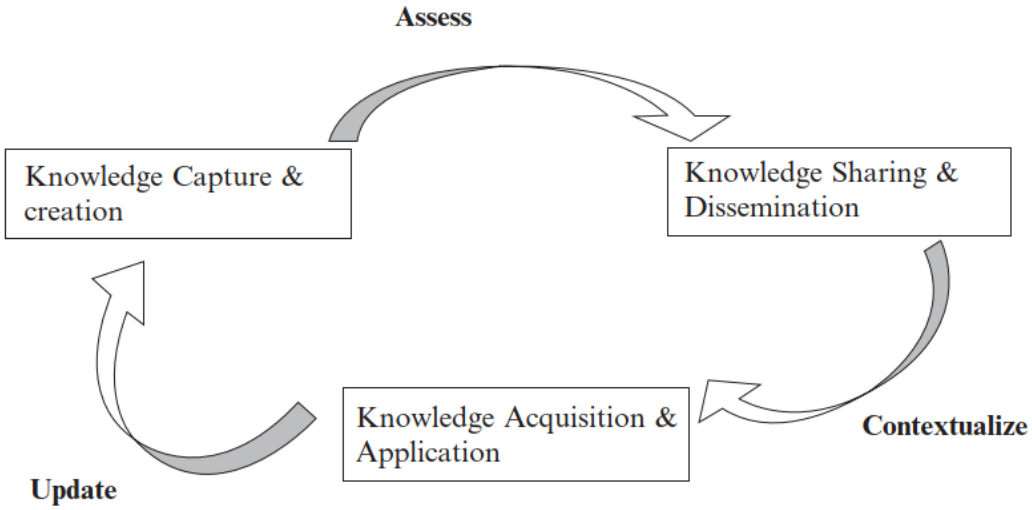


Figure 3: The knowledge cycle

(Mohapatra et al 2016)

After the knowledge is created it is then published and shared through difference accessible channels. Knowledge needs to be delivered to the right person in the right format as the needs can be different from one person to the other. The knowledge should thus be in a useable format. This enables the acquired knowledge to be applied where it is needed. However, before the knowledge is shared the recipients of the knowledge assess the worthiness of the knowledge. If it is deemed to valid then it is shared and disseminated as the need arises (Mohapatra et al, 2016). There are various tools that can be used to share the information like web-based repositories and technologies. According to Mohapatra et al (2016) the application of knowledge is the most vital part of the process which when not done properly would render all the other stages ineffective. Adaptive technologies and filtering tools are some of the tools utilized in the application of knowledge.

2.4 Knowledge creation

According to Dalkir (2008), knowledge creation involves bringing something new into existence. Knowledge creation is done through two major ways that are explicit and tacit knowledge (Arun and Kumar (2015). The explicit knowledge is that which is easily available and is recorded in various forms. Tacit knowledge on the other hand is that knowledge that is still in the mind of the individual. All this knowledge is essential in developments of new products.

Sulaiman et al (2015) explained that knowledge creation nurtures a good working environment for innovation. They also pointed out that knowledge has become vital these days as it is being used for survival of the organization. The Kianto (2008) model for competitiveness explained that examination of knowledge creation allows for strategic learning that encourages creativity in skills and acquiring competencies. Sulaiman et al (2015) also explained that learning fosters creativity and that creativity in turn is facilitated by knowledge acquisition. However, they also pointed out that for the organization to improve outcomes and processes then the knowledge has to be transformed into creativity.

The process however, is difficult to manage (Uriarte 2008). The scholar contends that the absence of the management in most cases make creation and innovation easier. This is because sometimes there are rigid rules and norms that need to be followed that will be stifling the process of knowledge creation. Absweilem and Abualoush (2019) also agreed with this notion and encouraged management of organizations to encourage their employees to regularly acquire knowledge in order to promote knowledge creation.

Other scholars like Elliot and Macpherson (2009) showed how knowledge can be created in a crisis. The scholars pointed out that there is a lot of learning after a crisis and this is observed from the creation of new policies, regulations and best practices in the organization.

2.5 Knowledge sharing

Michailova (2010) defines knowledge sharing as the provision and receiving of information of an activity, how to do something or feedback about a procedure or product. According to Wang et al 2014, knowledge sharing leads to knowledge creation, generation of ideas and problem solving. It also leads to innovation (Zhou and Li, 2012). Organizations need to strengthen knowledge sharing systems as they lead to increased competitive position and innovation (Salkhi et al, 2014).

Knowledge sharing can just happen or it can be triggered formally and supported by leaders and management so that it can be effective (Brcic and Mihelic 2015). The organization environment and culture have to promote sharing of knowledge by employees (Kovacic et al 2006). It should support knowledge sharing formally and informally. This motivates employees to discuss issues and incentives can also be out in place to encourage knowledge sharing among employees (Wang et al 2014). A culture of knowledge sharing results in people coming together and providing a platform for airing out of grievances and other issues in the organization (Memon, 2015).

2.6 Tacit knowledge

According to Sanford et al (2020), knowledge exchange is essential in times of crisis but is often hindered by the high uncertainty attached to new incidences, lack of time and resources. Information is vital to ensure preparedness and ability to effectively deal with future occurrences. Tacit knowledge refers to the knowledge that we use to direct our actions daily. Casonato and Harris (1999) refer to tacit knowledge as that knowledge within the mind of the individual that constitutes behaviour, perceptions, skills, experience, judgement and intuition among others.

It is shared through social interactions, discussions, stories and thus is hard to capture. Dampney et al (1998) defines tacit knowledge as that knowledge within individuals that is not easily expressed. According to Polanyi (1966), the pioneer of studies in tacit knowledge, it is acquired through such things like culture and instead of direct teaching. The knowledge is difficult to

articulate and transmit as it occurs unconsciously (Davenport and Prusack, 1998). Tacit knowledge can also be learnt through exposure to a community and can be a result of individual and social interactions (Puusa and Eerikainen, 2010).

According to Holst (2019) tacit knowledge can be found and promoted in communities of practice. Nonaka and Takeuchi (1995) in their prior studies expressed that tacit knowledge could be turned into explicit knowledge through social interactions. Holst (2019) argued that it could be drawn from these studies that tacit knowledge can be developed within a community of practice context and utilized for the preparedness of crises and to meet risks. The owner of the tacit knowledge is unaware of the creation of knowledge to such an extent that most times when they are asked to explain how they performed a specific task they may have to make an alternative explanation because they were not consciously aware of having created the knowledge at the time they did (Chilton and Bloodgood, 2010).

According to Badpa et al (2013) there is need to integrate tacit and explicit knowledge in times of disaster. They explained that tacit knowledge consists of beliefs that people hold over situations, their previous experiences and perceptions of what is around them. As such, how they react to a situation may rely on the depth and breadth of their tacit knowledge.

2.7 Explicit knowledge

This refers to knowledge that is written down which results from research. It can be articulated, compressed, captured and easily distributed within the organization (Olomolaiye and Egbu, 2005). It can come in the form of notes, rules, policies, facts and is publicly available and easily communicated (Stephens, 2002). It is also consciously and intentionally created and the owner is aware of it at the time (Chilton and Bloodgood, 2010). Hedesstrom and Whitley (2001) also pointed out that explicit knowledge is not affected by language and thus cannot be lost as a result of it.

2.8 Knowledge management and crisis management

According to Wang (2009), knowledge management plays an important role of mitigation in crisis management. They explained however, that it was important for the organization to understand its knowledge management needs as every organization is unique and knowledge management strategies should be tailor made accordingly. The scholar also pointed out that lessons learnt during a crisis also facilitate knowledge management in the form of new knowledge acquisition, boosting knowledge repositories and knowledge sharing.

Christensen and Ma (2020) pointed out that lack of knowledge affects crisis preparedness. They explained that the reason the corona virus became a pandemic was a result of lack of sufficient knowledge over its causes and treatments among the experts. Because of this the responses were more of experimentation. There was also no structure for information collection which led to lack of proper instructions on tracing contacts and survivors' information. Sometimes crisis response systems are essential as part of crisis preparedness. According to Murray and Jennex (2009), a crisis response system can be designed using knowledge at hand and experience from previous crises. This builds on expectations and anticipations of designers of how a situation can be. They explained that because crises are unexpected and most organizations may not have enough experience it will be to their advantage to use all the available information to them in order to manage the crisis.

According to Dorasamy et al (2013), knowledge management is vital in crisis management as it promotes the availability of timely information as well as facilitates planning. They explained that knowledge management ensures that knowledge gets to the relevant recipients at the right time. Burnell et al (2004) supported this in prior studies and explained that timely information was especially essential in times of crises and allowed the management to act quickly in response to the environmental turbulence. It also allowed them to plan adequately for such (Raup, 2019).

Hosseini et al (2019) also emphasized the role of knowledge management in crisis management and explained that it was useful in providing access to comprehensive knowledge that could be timely accessed in times of a crisis. Hadi et al (2015) added that knowledge creation and transfer during a crisis was vital for the survival of the business.

Wang and Belardo (2005) also pointed out that that in order to alleviate effects of crises; the organization should have sufficient knowledge and know where to find it. The scholars also explained that there was need for knowledge management and crisis management strategies to be aligned in order to reap the highest rewards with regards to crisis. They explained that crises in business are usually not too common in their occurrences and as a result there is usually insufficient learning and a lot of knowledge gaps. This in turn affects how organizations plan and respond to crises. In order for these gaps to be closed, and for them to effectively manage crises, organizations needed to apply different knowledge management strategies in different stages of the crises to improve organizational performance.

Hadi (2015) also pointed out that attaining the right expert knowledge in times of crisis is hard and knowledge transfer activities like trainings have to be conducted to ensure that the knowledge is disseminated. Ndlela (2012) suggested that knowledge creation, repositories and upgrading knowledge practises were key to survival of the organization in crisis management. The scholar also advocated for knowledge platforms to be established. However, Nonaka (1994) pointed out that unless the knowledge is shared it will have a low impact on the organization or in any situation. It would therefore rely on the willingness of the individual to share the knowledge as well as the prevailing culture within the organization.

This has also been echoed by Quarantelli and Dynes (1977)who pointed out that there is a gap between what is known and what is faced in a crisis and this gap needs knowledge management initiatives. Expertise from organizational members is essential to ensure crisis mitigation and knowledge creation. Yin et al (2019) also pointed out that knowledge-based systems where critical in crisis management as they helped the management

effectively deal with the crisis. This would be employed in applying technology, strategic planning and problem solving among other things.

Lee and Bui (2000), explained that in crisis management, responses to a potential situation should be established before the crisis itself happens. They explained that information relevant to the crisis should be part of the crisis strategy and any previous experiences should also be incorporated in the initiative. They explained that emphasis should be put on tacit and explicit knowledge to determine how previous crises were dealt with. Murphy and Jennex (2006) assessed knowledge management in response to the Hurricane Katrina and explained that crises usually strike without warning therefore knowledge would be vital as there is much decision making to be done in little time. A good knowledge management system would enable quick responses and proper application of knowledge to the right areas.

According to Nonaka (1994), individuals create tacit and explicit knowledge and their interaction with others ensures that this knowledge is shared. The knowledge is then internalized by the members and helps to generate more knowledge, improving efficiency of crisis management in the process. Knowledge creation and integration would then be utilized for improved crisis management (Mir et al, 2016). Jia et al (2012) also pointed out that many crisis management theories stressed the importance of knowledge dissemination in handling crises.

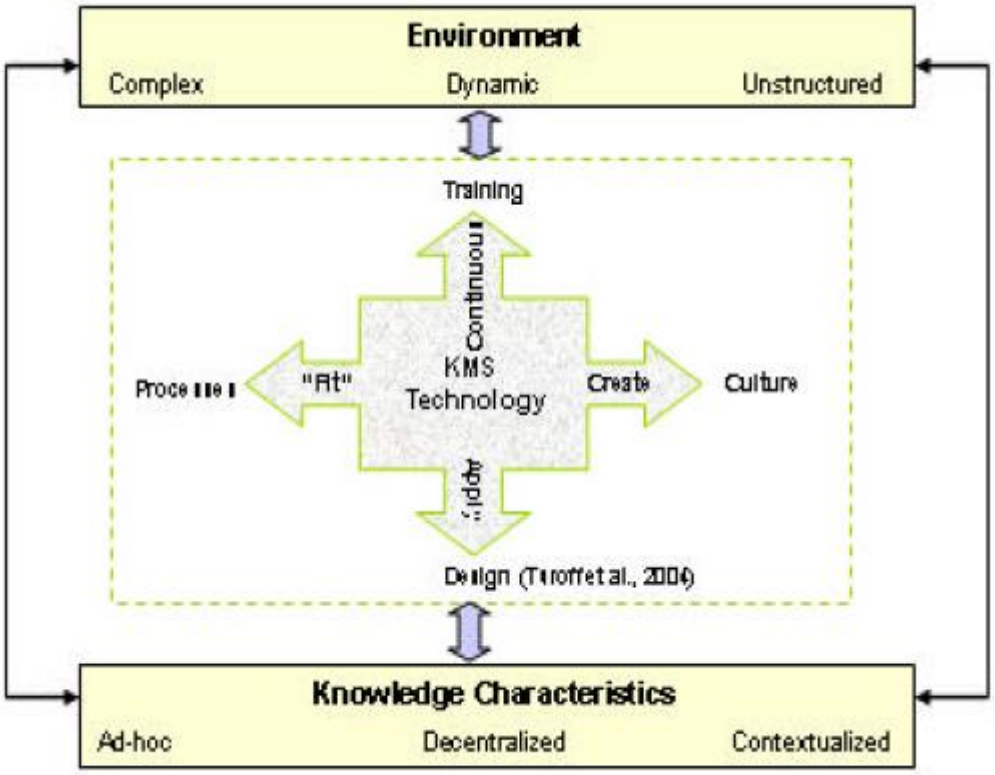


Figure 4: knowledge management-crisis management model

Dorasamy et al (2013)

Dorasamy et al (2013) explained that the crisis environment is one which is complex, unstructured and dynamic. They explained that the knowledge required in a crisis is ad hoc, decentralized and contextualized. They pointed out that most of the knowledge is tacit and thus would only be put to use when the crisis itself occurs. They also pointed out that the source of the knowledge is usually in the environment. In addition, the knowledge was contextualized and therefore every situation would need to be regarded differently (Burnell et al, 2004).

Several authors found a significant and positive relationship between knowledge management and crisis management. Boumahdi (2020) found communication channel to be a very important aspect in facilitating knowledge transfer in crisis management. Jia (2012) also found knowledge storage and creation to be vital in crisis management as well. However, different knowledge needs required different knowledge strategies (Abuzyead

and Sherif, 2017). Several scholars (Thielsch et al 2020, Aydiner et al 2020, Souza et al 2020) also explained that crisis management frameworks provided organizations with references for crisis management but the most important thing was the application of knowledge for without it crisis management would not be effective. They thus advocated for the formulation of knowledge management practices that are aimed at dealing with crises.

According to Chilton and Bloodgood (2010), the tacit and explicit characteristics of knowledge can have an impact on how the organization performs. They also pointed out that knowledge of areas in the organization which most needs tacit knowledge can help the management to match workers and tasks as well as to protect the knowledge. This was also echoed by Saura et al (2020), who explained that knowledge management provided tools that acquire data and information in large quantities. By so doing it saves time especially in times of crisis where timely information is needed to make quick informed decisions.

2.9 Knowledge management and organizational culture

According to Arun and Kumar (2015) one of the characteristics of knowledge management is that it has an impact on people and culture. They also explained that there are some cultural barriers that affect the process of knowledge management. Szczepanska (2014), also mentioned this and explained that organizational culture can promote or hinder the exchange of knowledge. Maki (2015) recommends that management should strive to come up with a knowledge management nurturing environment so as to promote knowledge creation, creativity, innovation and knowledge sharing. This notion was also supported by Kaya and Sagsan (2015) who explained that new ideas are prevented from being created and shared as a result of the absence of an environment for questioning and criticism. A weak culture promotes redundancy in employees and they do not realize their potential with regards to coming up with new ideas or innovative behavior (Shafee et al 2010).

An open culture characterized by employee participation and employee initiatives is conducive to the creation of and sharing of knowledge. A flexible

culture however, promotes pro-activeness to changes. A culture of individualism where one wants to dominate discourages knowledge transfer whilst in an organization which promotes co-operation knowledge sharing and knowledge transfer is high (Ahmady et al 2016). A learning culture which put emphasis on continuous learning is thus essential and brings success to knowledge management.

Auernhammer and Hall (2013) however pointed out that there were certain factors that needed to be in place in order for knowledge creation to take place as well as creativity and innovation. They pointed out that the organization itself should be open to the idea of change, they should encourage unusual ideas to be suggested, they should motivate their staff in intrinsic ways and the management should challenge and encourage their staff to be innovative. Auernhammer and Hall (2013) also mentioned that the staff should also be willing to experiment in order to create knowledge and should be given space in which to do this.

2.10 Researches conducted on knowledge management

Knowledge management is a popular topic and numerous studies have been conducted pertaining to it. Alyoubi et al (2018) conducted a study to determine the effect of knowledge management on organizational performance in Saudi Arabia. The sample consisted of employees in the academic library. The study used structural equation modelling and partial least squares to analyse the data. A positive and significant impact was found between the knowledge management processes and the job satisfaction and work performance. However, only knowledge sharing, retention and codification had a significant impact; knowledge acquisition and creation impact were found to be insignificant.

A similar study was conducted by Hayfa et al (2018) on knowledge management and organizational performance in Jordan. A literature review was conducted using many sources. The study revealed that knowledge management had a significant impact on organizational performance in both direct and indirect ways. The scholars advocated for the training of

management in a continuous manner to ensure that they are equipped with the relevant expertise in a dynamic world.

Rivai and Sfentarianto (2020) conducted a study to determine the impact of knowledge management capabilities in educational systems in Indonesia. The study used Structural Equation Modelling. Results revealed that the knowledge management system put in place in the educational institutions was positively and significantly related to performance.

Barisic et al (2020) conducted a study to establish the application of knowledge management in the tourism sector in Croatia. They pointed out that the tourism industry is a cut throat industry and highly dynamic which entails quick responses. Their study revealed that knowledge-based assets were crucial to the survival of the organization. The study also revealed that there was a general lack of knowledge management implementation because of the harsh external environment. Time and financial constraints were found to be key issues in affecting adoption of knowledge management processes. They advocated for knowledge management to be incorporated in the tourism industry as it presented new opportunities and survival chances in a global market as a result of innovation.

2.11 Researches on knowledge management and crisis management

Hsieh et al (2020) conducted a study to determine the implementation of knowledge management initiatives and predicting their success in the post COVID 19 pandemic era, in the hospitality industry in Taiwan. The study employed a literature review method using journals and articles that are relevant to the COVID 19 as well as the hospitality franchising. Pairwise comparisons were also used in order to determine the level of influence of the pandemic on the hospitality industry. Failure was predicted for variables and the probability of failure in innovation and transformation was found to be the greatest hence the scholars advocated for more attention in that regard.

Jennex et al (2009) conducted a study focused on knowledge management and crisis management. The study pointed out that there was need to

manage knowledge in the context of a crisis for it to be overcome. Their study revealed that knowledge management was crucial in a crisis as decision makers needed systems that provided timely knowledge which is tailor made to the situation at hand. They pointed out that knowledge management provided lessons from previous experiences which is used in the design and capture of protocols in the current situation.

Abuzyead and Sherif (2017) also conducted a study regarding implementation of knowledge management in a crisis in Palestine. The sample of the study consisted of 352 security officers who were deemed to be first responders to issues of security within their organization and were well versed with the subject. The study revealed that the employees were highly interested in knowledge management in a crisis and it was implemented to a larger extent throughout the different stages of a crisis. A significant impact was also found between knowledge management processes like knowledge diagnosis, knowledge generation and distribution on crisis management.

Wei-Tsong and Wu (2020) did a study on knowledge management through information technology in response to the COVID 19 pandemic in Taiwan. The study revealed that information technology provided knowledge management and crisis management with essential capabilities. Their study also revealed that technology-based knowledge management practices helped to provide flexibility and quick responses that allowed the organization to have a good handle on its crisis management. In addition, the scholars explained that information technology enable knowledge management provided front line workers with advanced tools that reduced their burden and pressure that they will be under. This in turn makes it easier to manage crises when the workers are in their top form.

Adel (2020) focused on the relationship between knowledge management and crisis management in Libya with regards to the COVID 19 pandemic. The study used a sample of 239 engineering employees in a survey and used the knowledge diagnosis, creation, sharing and application as the variables under knowledge management. They used variables related to

preparedness, prevention, recovery and learning with regards to crisis management. Multiple linear regression method was employed for analysis. The study found a positive and significant effect of knowledge management on crisis management. However, this was only established in detection, prevention and learning and not in the other remaining variables of crisis management.

Similar findings were found by Azadi et al (2020) in their study on knowledge management and drought crisis management in Iran. The study collected data from 384 people through a survey and stratified random sampling was employed. A positive and significant relationship was found between the variable. One notable finding was that knowledge had the greatest impact on crisis management compared to the other variables of knowledge management.

Jia et al (2011) conducted a study based on knowledge management system crisis management in the tourism industry. The scholar used literature review method to come up with a framework of how to incorporate knowledge management in crisis management. The scholars contended that knowledge management utilized various technologies that together provided a system that collected, shared and stored information throughout the organization. Their study also revealed that knowledge management systems worked as knowledge extractors, servers and managers.

Bratianu (2020) conducted a study to determine knowledge management approach in complex crises with reference to the COVID 19 pandemic in Romania. The study revealed that in order for the complex crises to be managed and understood knowledge management was a pre requisite. Their study also found that identification of knowledge gaps was also essential.

CREATIVE THINKING

2.12 History of creative thinking

Prior studies by Newell et al (1958) explained that creative thinking encompasses a range of bounderless activities but satisfying a few conditions. These are that the thinking involves novelty, is unconventional, requires intense motivation and persistance and that the problem undefined. The scholars also explained that creative thinking was a special class of problem solving that requires the afore mentioned as history has shown that great creative solutions in the past were a result of seeking to solve particular problems.

Even today there is still lack of consensus regarding the definition of creative thinking according to Kereluik et al (2013) and Adams et al (2015). However, the scholars acknowledge and emphasize that creative thinking is a 21st century. Creative thinking is linked with the concept of creativity. Creativity in itself shows novelty whether on a personal basis or applied to the whole society. Some scholars had pointed out that creativity is a moderm concept (Reckwitz, 2017; Mason 2003).

Glaveanu and Kaufman (2019) however argued that creativity is not really a modern concept but that it has always been in existence. However, it was perceived differently then and given other names. Prior studies by Ellis (1988) also pointed this out and explained that creativity in older times was termed as inspiration or attributed to divine powers. Glaveanu and Kaufman (2019) also pointed out that many historic artifacts today that people are amazed with were made in ancient times reflecting creativity hence it would not make sense for these to be ignored and not truthful to say that creativity is a modern phenomena. To such end, Glaveanu and Kaufman (2019) emphasized that creativity is embedded in how we think as a society and individually and is affected by culture as well.

According to Ramalingam et al (2020), there are a few things that set out creative thinking from creativity. They explained that creative thinking places

emphasis on creative output, can actually be taught and is more to do with being a major ingredient in an activity whereas creativity involves a diverse set of skills in an activity. According to Rhodes (1961), creativity and creative thinking are centred around what is termed the 4Ps which relate to person, process, product and press.

The following diagram reflects the creative thinking framework according to Ramlingam et al (2020).

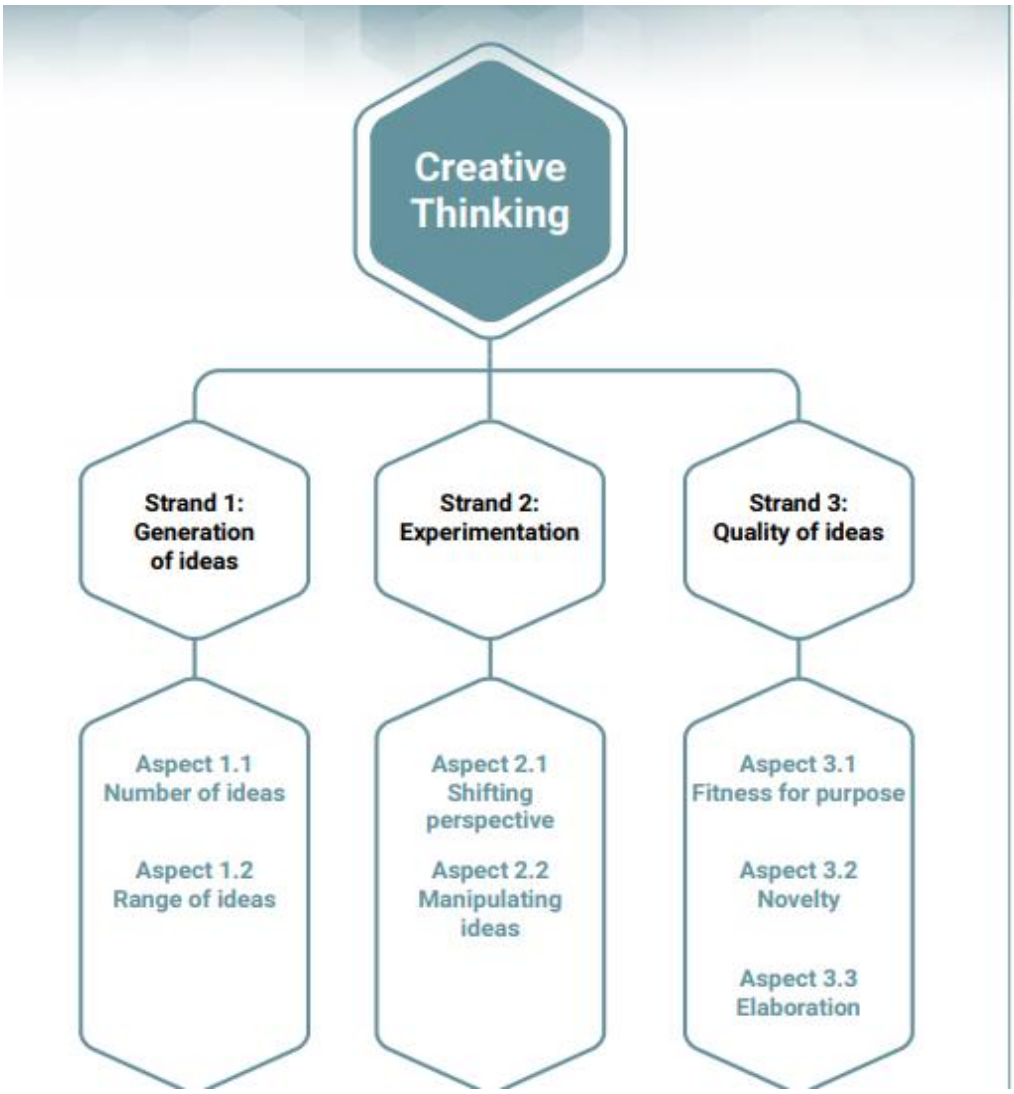


Figure 5:Creative thinking framework

Source: Ramalingam et al (2020)

The above framework shows the development of creative thinking as determined by Ramalingam et al (2020). The scholars pointed out that creative thinking happens from generation of ideas which are then explored in experimentation and ultimately the quality of these ideas determines if they are going to be unique and novel as well as whether they are suited for what they were aimed at. According to the scholars, generation of ideas can be influenced by the number and range of ideas. They explained that the higher the number of ideas the higher the likelihood that among those ideas will emerge a creative solution to a problem. Other pioneers like Torrance (1960) also pointed out the importance of a greater number of creative ideas. However, it was also pointed out that the number of ideas does not automatically translate to good quality ideas. İt was also stressed that for creative thinking to emerge the ideas presented also have to be formulated on a wider category to increase the chances of them being novel and this is what scholars like Guilford (1950) emphasized on and pointed out as divergent thinking.

According to Lassig (2013) these ideas are then explored in the process of experimentation and it is when playing around with these ideas that other new ideas also emerge. Old and new ideas are regarded from various perspectives. However, creative thinking also lacks much flexibility and creative thinkers end up thinking within certain limitations. İn order for them to come with solutions to problems, they look at the problem from a different perspective. Creative thinkers thus think of possibilities. İn that regard Lucas(2016) pointedout that creative thinkers have to be willing to consider possibilities as well as keep an open mind as well as be inclined to experiment. İn addition, the creative thinkers themselves should possess enough flexibility to enable them to manipulate the problem as well as come up with solutions within the confines of the existing limitations. A lot of manipulation of ideas is involved and results in new ideas from existing ones rather than creation of new ones from scratch more often than not (Lassig, 2013).

The last stage of the creative mind framework according to Ramalingam (2020) has to do with the quality of ideas. These should be of high quality so that they will suit the purpose they are intended for, and thus have value.

2.13 Concept of creative thinking

According to Klukken et al (1997), creativity is essential for survival given how the world is technologically advancing every time. Halpern (2001) defined creative thinking as the ability to come up with good responses to problems through the use of unique or unusual skills and or strategies. They explained that it means coming up with alternative solutions, redefinition of goals and recognition and application of critical thinking skills to new situations.

Kamplyis and Berkl (2014) define creative thinking as the characteristic that allows individuals to come up with ideas, questions and hypothetical situations on which they experiment on and evaluate to come up with final products and processes. Sternberg (2012) pointed out that for creative thinking to take place one must possess the required knowledge. The individual must therefore have sufficient working knowledge of the situation under investigation. This allows deeper thinking and promotes learning. Bacanli et al (2011) contended that creative thinking is a form of divergent thinking that that mainly uses cognitive skills. It involves the ability to see a lot of solutions or ideas to problems but using unique views.

Kampylis and Berkyl (2014) explained that cultural practises have a significant bearing on creativity. They pointed out that some cultures would place more emphasis on collective creativity such that individual creativity may not shine. It was also explained that if the individuals are not usually expected to show their creative side then they would need some guidance. This was also supported in prior studies by Amabile (1997) in their Componential Theory of Creativity that the environment influences the process of creative thinking. Turkmen and Sertkahya (2015) also explained

that social factors affect creative thinking as the environment can determine whether creative expression is encouraged or hindered.

According to Sternberg (2003), creativity entails different characteristics like individual abilities and attributes, knowledge, motivation and thinking style. The scholar explained that whilst one may have the creative thinking ability, if the environment does not support and encourage creativity then the ability is lost as the creativity will not be channelled into reality. Sternberg (2003) also explained that creative individuals are not imitators but rather are trendsetters; they do not just follow what others are doing but come up with their own novel ideas and aim to bring something new to the environment.

Sternberg (2010) also pointed out that creativity is not an inherent but a learned ability. The scholar pointed out that if creativity enhances performances if it is taught in a way that encourages and rewards it. In addition, they explained that creativity can be taught and is a result of willingness to think outside the box and to develop attitudes that support and enhance that like risk taking, resilience in the face of hindrances and problem solving. These were also in line with earlier studies by Amabile (1983) and Parkins (1984) who contended that creative thinking is about not being confined and limited but pushing out the normal standards of reasoning. They also added that creative thinking involves setting one's standards of evaluation and a lot of perseverance.

According to Krulik et al (2003), creative thinking is the highest level of the thinking process. They pointed out that the hierarchy of thinking started with the recall stage then went to the reasoning stage; where there were the basic, critical and creative thinking stages respectively. Supratman and Maedi (2013) contend that creative thinking is associated with problem solving at the highest stage of reasoning in novel ways.

Brooks et al (2016) pointed out that creative thinking is also essential in times of crises and developed a way to come up with creative solutions in times of disaster. This is reflected in the illustrations below.

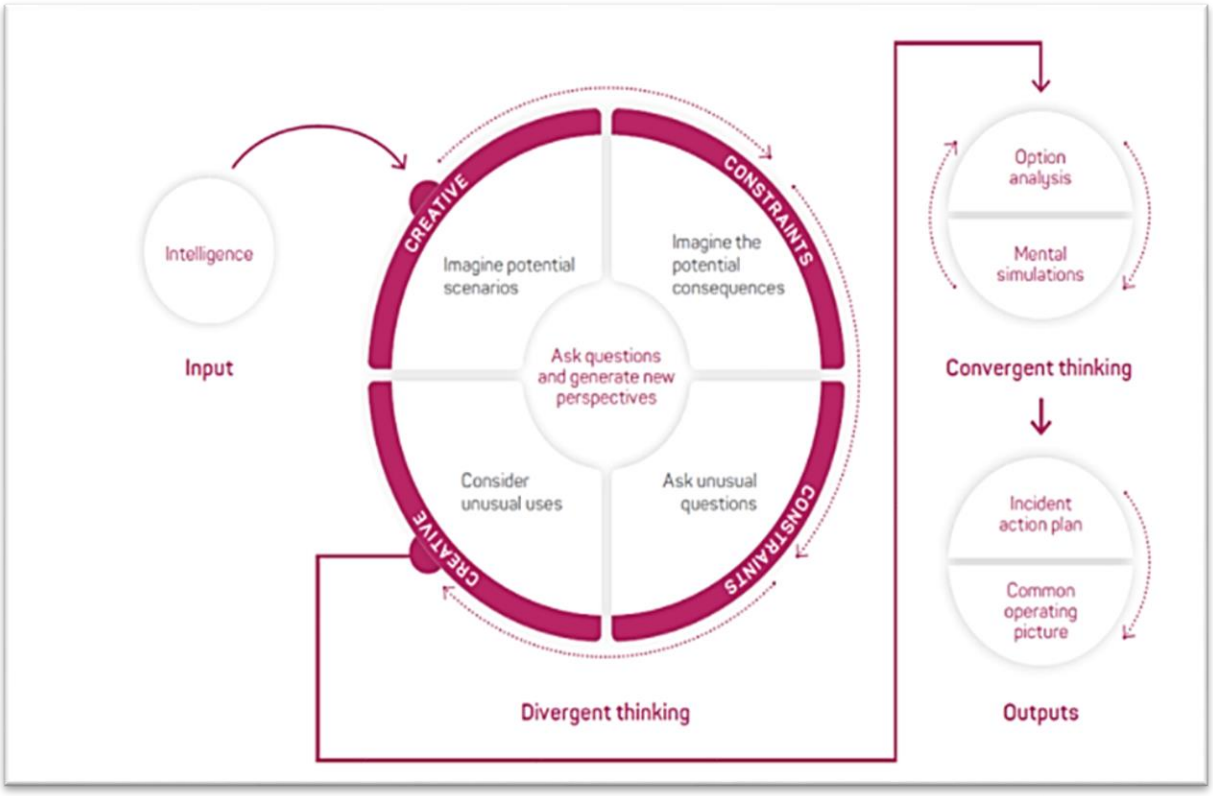


Figure 6: Creative solutions in crisis

Brooks (2019)

According to Kaufman et al (2008) creative thinking is mostly understood from the perspective of divergent thinking. They explained that this is because it relies on cognitive thought which branches out in different directions. This implies that when it comes to creative thinking, one thinks of not just a single, but multiple potential solutions.

According to Brooks et al (2019) when it comes to creative thinking measurement, for variables are usually used and these are fluency, originality, flexibility and elaboration. This was also supported in prior studies by several scholars (Haefele, 1962; Torrance, 1980, Bacanli, 2011) who put forward various features of creative thinking. These include flexibility, originality, fluidity, analysis, sensitivity to problems among others. Guilford limited the dimensions of creative thinking to four elements which are flexibility, originality, efficiency and elaboration. Flexibility entails not being rigid on only one solution to a problem whilst originality involves different

thoughts from available ones, efficiency relates to creation of varied solutions to a problem and elaboration deals with details with regards to problems.

The model above by Brooks et al (2019) reflects the application of creative thinking in times of crisis. Prior studies by Amabile et al (1996) explained that for creative thinking to take place there should be skills that are conducive for it that are creativity relevant and these are cognitive and perceptual styles as well as thinking skills. They explained that these traits would provide individuals or groups with the necessary input that allowed them to view issues and problems from a different angle as well as trigger the generation of novel ideas. Sowden et al (2015) added that creative relevant processes also needed convergent thinking which triggers divergent thinking and enhancement of creative ideas. Divergent and convergent thinking has to thus co-exist and there should be awareness of when to switch from one to the other (Amabile and Pratt 2016). In addition, once the creative thinking produces creative output, convergent thinking is employed in customizing the output to its intended purpose.

Brooks et al (2019) explained how the Torrance Tests could be used in creative thinking in a crisis and these were the basis for their model reflected in the illustration above. They explained that asking questions makes it easier for the development of an action plan and provides ideas on a common ground basis. It also puts the tasks in order and consists of activities like determining the causes and impact as well as probable solutions to the crisis. Their study also revealed that the presents of constraints or obstacles actually acts as stimuli for creative thinking. This notion was also supported by scholars like Rosso (2014) and Medeiros et al (2014). The scholars pointed out that when there is sufficient motivation, constraints actually make people become more creative. However, they also mentioned that too many constraints can have an adverse effect therefore there should be awareness and sufficient knowledge on just how much constraint is enough. Typical constraints in a crisis are bureaucratic tendencies, legalities and the chain of command (Brooks et al 2019).

2.14 Types of creativity

According to Kaufman and Beghetto, creativity has different categories and it is ideal to differentiate these so that all the differences are brought to light.

2.14.1 Big C creativity

This type of creativity is applied to radical developments. İt is therefore reserved for a select few who would have managed to change the dynamic of anything on a grand scale for example inventions that marked a change in how things are universally done. An example that easily comes to mind are mathematical solutions. These developments are thus so phenomenal that they are ground breaking. For example the work of Albert Einstein. Big C creativity is also known as high creativity and deemed to be so exclusive it is attributed to a few geniuses. This also brings another trait to it, that of being controversial most of the time. The creativity is so great that it is initially not acceptable to the rest of the society as the level of genius is beyond the comprehension of the ordinary man.

2.14.2 Pro C creativity

According to Kaufman and Beghetto (2009), this type of creativity is one that is natured and nurtured over a period of time. The learning takes place on a continual basis with the individual perfectting their art over time. They pointed out that those who are into teaching can be categorized as having Pro C creativity as they nurture their creativity over the years through education and continuous development then transfer these skills to others.

2.14.3 Little C creativity

This type of creativity can be seen in the everyday situation. İt is reflected in intelligence and novelty everyday. Notable examples can be the work of a photographer. İt can also be a results of experience as they improve their pictures over time. Little C creativity therefore involves practice and in the modern day can be gained from platforms like Youtube where individuals showcase their creativity.

2.14.4 Mini C creativity

This type of creativity is also reflected in intelligence, flexibility and novelty but in thinking. A notable example where this kind of creativity can be observed is in children. İt is the kind of creativity that can be taught by other individuals like teachers and parents. İt can also just be visible to the particular individual as reflected in their understanding of something they did not before. The individual comes up with different ways of approaching something and their finally figuring out the problem is in itself a creative act.

INNOVATION INTELLIGENCE

2.15 Innovation intelligence concept

Innovation intelligence is a concept that combines intelligence as well as innovation. According to Jennex (2019) intelligence refers to knowledge that comes from learning from a certain process that is used to support decision making and prioritization of issues through its awareness. Shujahat et al (2017) pointed out that management need knowledge of prior events, and to forecast future events and map out how they will be able to deal with these events in decision making. The business environment is rife with uncertainty and it is important that management be able to have effective decision making and manage innovation in that environment as well as to apply that knowledge in order to manage uncertainty..

Intelligence is a subject that has been studied by other scholars and in most studies, they associate it with decision making. It is most often referred to as relevant and timely knowledge that is used for decision making. According to Bjork (2012), managers should be able to manage high speed innovations in a dynamic environment.

İnnovation has also been studied extensively on its own. Kogabayev et al (2017) explained that innovation was a multifaceted concept and there is not really a universally accepted definition and lots of scholars have come up with a lot of definitions encompassing various aspects in innovation. Dadfar et al (2013) also pointed out the broadness of innovation and explained that it

usually included changes, creative ideas, opportunities and value creation among others. According to the scholar, innovation is simply a way an organization creates value by transforming opportunities into ideas that are then incorporated and applied in the organization.

Urabe (1988) defined innovation as establishment of a new idea and its incorporation into anything, a product, a service, a business. They pointed out that innovation was something that had a cumulative effect over a few years and is embedded in the operations or activities of the organization. Schumpeter (1982) is regarded as one of the pioneers of innovation theories. The scholar defined innovation as the effect of technological change and the usage of various combinations in problem solving.

Twiss (1989) pointed out that innovation was the achievement of novelty through the combination of science, technology, economics and management. The scholar also explained that this stems from the idea stage and where that idea is diffused, marketed and consumed. Drucker (1988) explained that innovation was the process of bringing social and economic change to the organization which can be reflected in new products, services, cost and other economic advantages.

Korabayev et al (2017) pointed out that there are generally three approaches that best reflect the definition or concept of innovation and these are reflected in the figure below.

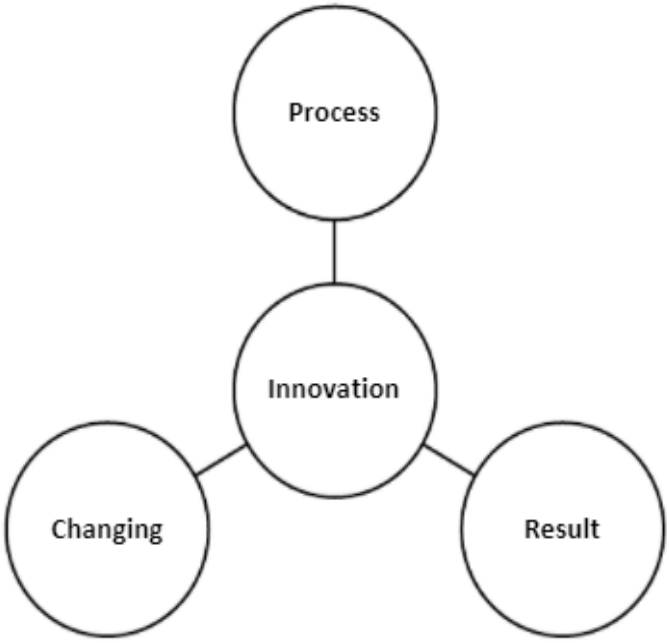


Figure 7: Approaches to innovation

Source: Kogabayev et al (2017)

Kogabayev et al (2017) explained that innovation encompasses invention, novelty and improvement are all involved in innovation and have slight differences to them. The scholars pointed out that as much as improvement leads to changes these are not on a grand scale enough to cause major impact but are slight and often within the system. Novelty on the other hand brings something totally new that was not in existence and causes a major impact or shift in dynamics. Innovation leads to major break throughs, creates a distinction between the old way of doing things and the new way. İt can also lead to change sin some aspects of the system or all of it.lastly, they pointed out that invention is concerned with providing new technical solutions to its commecialization.

Nobari (2020) conducted a study to determine the role of innovation intelligence in an uncertain environment. The study determined to provide a typology of innovation intelligence through literature review from 2005 to 2019. The study emphasized how the environment changes with advances in technology and some changes and stressed that action was needed in order for the management to fully cope and prepare for uncertainty. The study

proposed a new approach towards innovation intelligence and pointed out that innovation intelligence can occur in an ordered and unordered manner; governed by preparation or control. The organization needs to be aware of which approach to use so that they have the best way to deal with environmental uncertainty.

Kinghorn et al (2011) explained that creativity and innovation are inherent to human intelligence. Kinghorn et al (2011) also stressed that there is usually no system in place to ensure that creative skills are transferred to another individual. This is where the researcher seeks to determine if knowledge management processes have any relation to creative thinking.

Kim and Pierce (2003) explained that innovation intelligence approaches problems from unique and novel perspectives. They added that innovation intelligence results in thinking outside the box and coming up with ideas that challenge existing paradigms rather than ideas that go along with current paradigms. Chernoles and Khudaynazarova (2013) supported this notion and pointed out that innovation intelligence involved use of mental ability to come up with something new that was not into existence before. These scholars also explained that innovation intelligence comprised of analytical intelligence, creative intelligence and practical intelligence. Analytical intelligence is for problem solving and evaluation of ideas; creative intelligence is a prerequisite to recognition of problems and creation of ideas; and practical intelligence is necessary for the efficient application of the ideas.

2.16 Innovation dimensions

According to Alan (2004), innovation does not just happen in an instant; rather it entails discipline in pursuing the outcome and knowledge of the relevant objectives. Innovation intelligence thus requires a lot of observations, abstractions and insights. It challenges the capability of collaborations, fuels the imagination and curiosity and enhances questioning of things. Raviv (2002) came up with an eight-dimensional methodology for

innovative thinking consisting of various elements that they explained are essential for problem solving and these are illustrated below.

Figure 8: Innovation dimensions

Source: Raviv (2002)

According to Raviv (2002), in order to solve problems in an innovative way, an organization needs experimentation, uniqueness, dimensionality, directionality, consolidation, segmentation, modification and similarity. They explained that these qualities could be used in no particular order to provide management, leaders and relevant parties with new strategies and insights to problems. They explained that these factors combined enabled creativity and a systematic approach to problem solvers that enabled them to come up with novel solutions. In addition, it led to swifter production of ideas and the productivity of the process. The scholar also emphasized that this methodology was ideal for brainstorming.

Uniqueness constitute comparison of features to determine differences with other problems of similar nature. This is done to determine what makes the current problem unique. Solutions are applied to determine if there are

changes and if no changes occur to establish what aspect exactly did not change. Differences are magnified and unique features are used.

Dimensionality relates to exploring different dimensions of the problem from different angles. The scholar explained that this can constitute change of dimensions, upper and lower limits, simplifying the problem and generalization extrapolation and even manipulation of certain elements to determine any changes. Dimensions can be added, subtracted, duplicated or repeated until a useful solution is found.

According to Raviv (2002) directionality involved moving the problem in different directions. This can involve solving the problem indirectly. It could also involve looking at a problem of a similar nature and using the method by inverting the solution, or starting at different points in solving it.

Combination involves the combination of different elements. This includes use of many methods or even multi-purpose solutions. Segmentation is also one of the ways of combination where the object is segmented into different parts. Modification involves rearranging elements into new patterns and finding which ones work better this may also involve the elimination of certain disturbing elements from the equation and only working with the necessary parts. Substitution, replacement and regeneration are also some of the elements of modification for problem solving.

Furthermore, similarity involves the establishment of similar elements, patterns and paths. It also entails grouping of elements of a similar nature. Recollection of certain paths is also used as well as adaptation of useful methods and approaches that were used before.

Lastly, experimentation as a way to problem solving in an innovative way involves the trial and error method. Approaches are tried out to see if they work and if they do, they are adapted, if not they are discarded. If portions of the solution work then these are adopted and other elements incorporated to see if they are compatible to provide a full solution to the problem. Experimentation also involves activities like guesswork, simulation and estimations.

According to Zhong et al (2013) and Devasadan et al (2013) there are some activities that are necessary for innovation intelligence. These include effective communication in human and machine systems and in each aspect on its own or a combination; collection, integration and reconciliation of data, establishment of a decision-making structure using all the resources available, enforcing cooperation between partners without conflicts and synergies between everything mentioned. According to Nobari (2020), collaborative innovation intelligence models help with decision making in pandemics and enabling organizations to model themselves in line with the pandemic evolution and to easily recognize innovative solutions.

2.17 Types of innovation

Four major types of innovationn are common in the literature and these are product, process, technological and marketing innovation. However, some scholars also further break down these types of innovation to reflect administrative and other types of innovation.

2.17.1 Process Innovation

According to Obeng and Boachie (2018) process innovation relates to significant changes to the equipment and , tools and techniques that results in new and improved methods of production and service delivery. Yusheng and Ibrahim (2020) pointed out that these changes can be increamental and that process innovation is usually concerned with the output and product quality at reduced cost. Kogabayev et al (2017) pointed out that these kind of changes can be small but important to the product and service offered. This kind of innovation leads to growth as improvements are added (Yusheng and Ibrahim, 2020) and these can also ensure that the product or service is ahead or abreast of the competition.

2.17.2 Product innovation

This refers to additions to the product (Yusheng and Ibrahim, 2019) to improve function, quality, traits, fitness for purpose and appearance (Atalay, 2013). İmprovements to the product can also be made to certain

characteristics like its durability, its ease of use, the software used and additional functions (Yusheng and Ibrahim 2020). According to Martin et al (2017), product innovation is also used for product differentiation purposes. İt is easily one of the common ways of ensuring that what an organization is offering is different from what others are offering. This brings major advantages in achieving a competitive age, improving sales and growth.

2.17.3 Organizational innovation

This refers to changes and improvements in the way the organization is managed. This type of innovation is crucial to the company as it affects how it performs. However, it is also important that this should also be handled carefully as it has an impact on the company's social system. Because of this, when organizational innovation occurs, it is important that it be communicated to the employees. This awareness of the change makes it easier to deal with than having a new change thrust upon one as change is difficult to implement. İn addition, the management take responsibility in shaping attitude towards the change. They ensure that the employees are aware of the reasons for the change, how their roles would be changed if any occur and generally the dynamics of the new changes (Yavarzadeh et al 2015) . This prepares the employees of what is ahead as well as make them feel involved in the decision making which in turn ensures that the transition is smooth. When the change is implemented, evaluations will take place to determine if the changes are working well and if they are not, adjustment will be made. İf they are working, then the organization aims to maintain them in a sustainable manner.

2.17.4 Marketing Innovation

According to Drucker (2015), marketing innovation plays a crucial role in innovation by ensuring the success of the organization's products and services. İnnovation in marketing entails improvements in all the marketing mix elements like product, price, promotion, place and distribution. İt also covers important marketing activities that are critical to the organization's growth and success like differentiation, product utilization and so forth.

Marketing innovation is important as it is targeted at the needs, wants and preferences of the customer and ensures that products and services are tailor made to that. This thus leads to the business achieving a lot of goals like increased sales, better competitive positioning and larger market share (Yusheng and Ibrahim 2020). Marketing innovation should thus not be a once off activity but a continuous one for it to be effective.

2.18 Innovation intelligence, crisis and knowledge management

According to Aydin and Dube (2018) and Nobari (2020), intelligence plays a pivotal role in the knowledge pyramid. It is produced at all stages of the knowledge pyramid, customized to users' needs and utilized for operational and strategic decision making. Jennex (2009) pointed out that knowledge is meant for a specific purpose but the most common type of knowledge is that which is inactive and needs to be activated for it to be applicable to situations for better outcomes. The scholar pointed out that leadership needs knowledge that is tailored to specific situations in order to make effective decisions.

In line with this, Jennex (2009) explained that intelligence is brought to life when active knowledge is applied to specific situations. This implies that knowledge management is important in the creation of intelligence (Duvenage, 2013). Innovation intelligence on the other hand also means the acquisition of actionable knowledge for innovation projects (Nobari, 2020). The scholar explained that the concept of innovation intelligence is one that is formed from a combination of intelligence and innovation management. The diagram shows that innovation intelligence is applied with the aid of knowledge management for decision making. They also alluded that knowledge management has evolved over time and intelligence with it; with the environmental changes and a combination of artificial and human intelligence is vital. However, they pointed out that the application has to be in the form of contextual intelligence where the situation is accessed and the knowledge is used to develop innovation intelligence that is applied based on the context of the situation.

The diagram further shows how the innovation intelligence concept is for ordered an unordered context which determines the predictive or control. According to Gomes et al (2018), ordered concepts are those that are predictable and known from past experiences. As a result, the management can easily map a way of preparation for these uncertainties based on what happened before. In addition, there is a higher probability of problem solving using these patterns as the level of uncertainty is lower (Fierro et al, 2018).

On the other hand, unordered contexts are characterized by high levels of uncertainty which renders prediction and proactiveness difficult. As a result, the management mostly seek to be able to control the effects and thus there is a high need for knowledge to be able to shape and control the effects of the environment on the organization. In addition, in unorganized contexts the environments is dynamic and information acquired previously may be obsolete and inapplicable to the current situation. That means that intelligence in this scenario is critical (Verchiato, 2012). Organization focus is placed on the management and control through development of boundaries and experimentation, observation of trends and patterns hence a lot of learning, innovation, creativity and novelty for problem solving is involved (Sydow et al, 2013, Nobari, 2020).

The emphasis in unordered contexts is on creation of means and predicting the potential effects. To this end, the organization focuses on new innovations and forge alliances and collaborations and providing conditions in which new unpredictable patterns can emerge. This triggers the need for knowledge that would enable the organization to develop tools that and capabilities that influence the organization towards innovation to provide a semblance of order to the situation as well as deal with the innovations by stage and this is what is referred to as innovation intelligence (Nobari, 2020). Innovation intelligence in ordered contexts is thus end oriented whilst that in unordered contexts is means oriented. The diagram below shows the role of innovation intelligence in uncertainty times according to Nobari (2020).

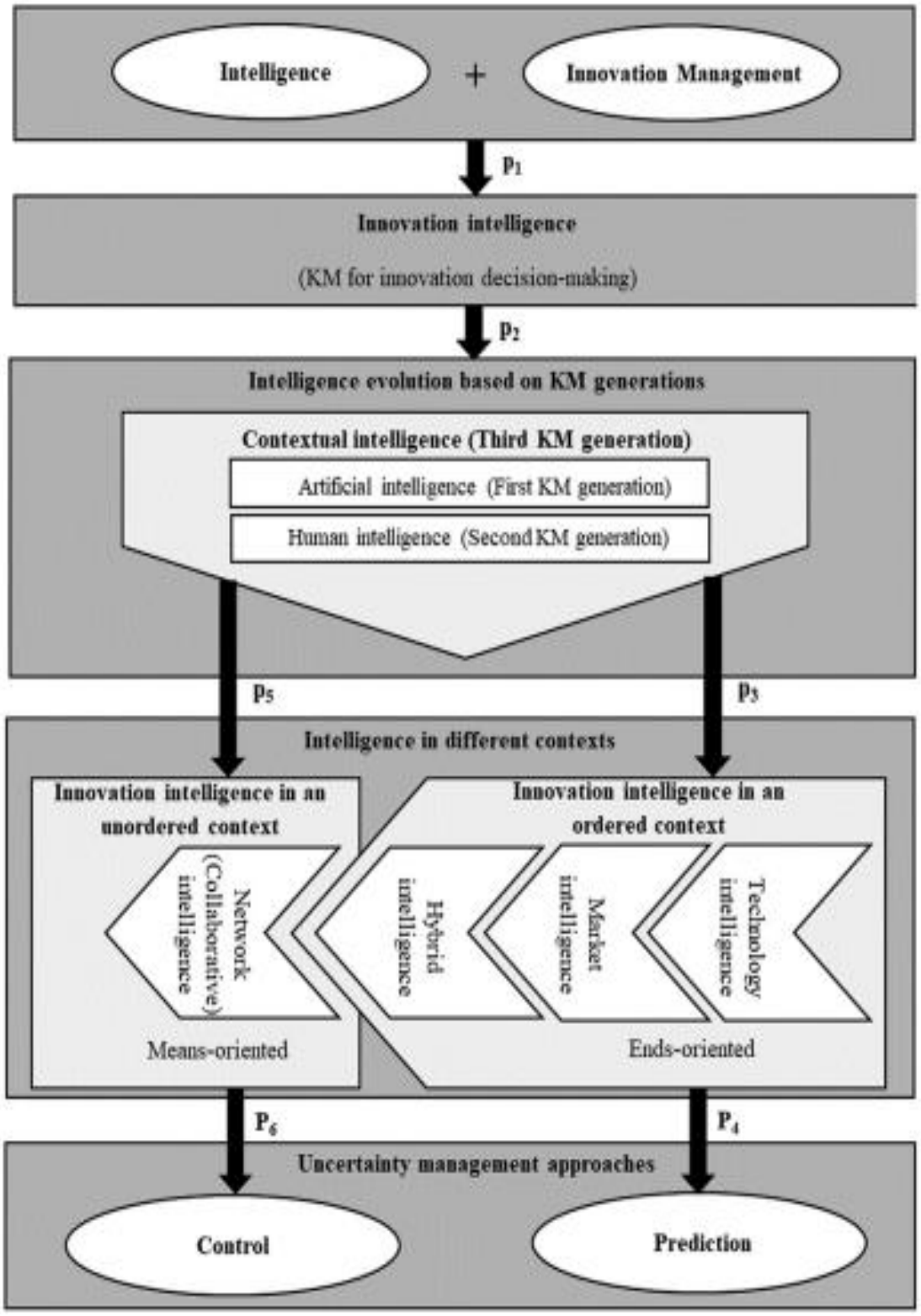


Figure 9: Innovation intelligence in uncertainty

Nobari (2020)

ORGANIZATIONAL CULTURE

2.19 Organizational culture concept

Organizational culture relates to attitude, norms and customs of an organization (Szczepanska, 2014). They explained that these develop over time and form the basis for best practices for the company. Various scholars acknowledge that organizational culture has an impact on knowledge management.

According to Lewis (1998), the concept of organizational culture is one that has garnered interest in researchers since its inception decades ago. It has been studied in relation to many work-related concepts as well as its impact on performance and other work-related outcomes. With the continued development in the external environment especially with regards to technology, organizational culture evolves and remains a relevant area of study in social sciences. Wang (2011) explained that culture is a learned and shared thing. In organizations it plays the role of setting standards for behaviour. As a result, it explains to the members of the organization what they are supposed to and not do. It gives them certain beliefs and assumptions as well as value about their work.

Tsai (2011) defined organizational culture as longstanding values and beliefs in an organization which influence the actions of the workforce. The scholar added that this also encompasses the beliefs and values of the members of the organization. This definition also resonates with that of Robbins and Coulter (2005) who defined organizational culture as mutual values, beliefs and perceptions of employees in an organization. The same definition was also supplied by Trevino and Nelson (1999) and Deal and Kennedy, (2000) and they added that organizational culture is the glue that holds the organization together, socially.

According to Serpa (2016), organizational culture refers to the reciprocal and coordinated being, thinking and behaviour of people which is evolves and is shared over time. They explained that it gives a semblance of what is expected in an organization. According to prior studies by Alversson (1989),

organizational culture is conceptualized from different perspectives like as a paradigm concept, as a result of management, a tool for organization design and as an instrument for diagnosis.

Belias and Koustelios (2015) pointed out that organizational culture acts as the differentiating factor between people of different backgrounds with regards to values and expectations. It is an indicative factor of interpersonal interactions and Ahmed et al (2012) added that organizational culture strengthens relationships between employees and uplifts organizational morale (Mirzapour et al, 2019). In addition, it increases problem solving as a result of this interaction as people will be coming together to come up with solutions leading to achievement of organizational goals. This means that a bad organizational culture can hinder collaborative efforts; and undermine organizational values (Low et al, 2015; Naqshbandi et al, 2014).

Hans (2018) drew from previous studies and contended that organizational culture is the combined intellect which is drawn from common epistemic values used by people to solve problems and coordinate between external and internal integration; embedded in systems and norms of the people and deemed to be useful and relevant enough that they are passed down to new members of the organization as a yardstick upon which thoughts, actions, attitude and behaviour is aligned. The scholar added that organizational culture is therefore for socialization and is used as a tool for knowledge sharing in an organization.

2.20 Key elements organizational culture

Jucevicius contended that organizational culture characteristics can be objective, subjective, qualitative or quantitative. The objective characteristics were explained as everything that exists out of the thought of members like the physical attributes of the company, its rituals and ceremonies. On the other hand, the subjective attributes are those that are internal in the thoughts of members like the way they think and assumptions they make over certain things. The qualitative aspect involves the culture definition, interpretation and how it is perceived. The quantitative aspect refers to the expressed opinions about the organizational culture.

According to Greenberg and Baron (2008) organizational culture sets out the organizational limits and provides an identity to the people who fosters loyalty towards common objectives and provides meaning and purpose to behaviour. According to Hans (2018) organizational culture now encompasses more than just beliefs and values and extends to survival in a dynamic environment. They explained that as a result of this, organizational culture is also now about reproduction of capabilities utilizing knowledge for survival and continuity.

Levitin (1973) contended that culture is an intangible concept from which behaviour and manners can be inferred from. They explained that it can be gleaned from written material as well as witnessed in others' behaviour which in turn also inspires or directs others behaviour or written statements. As a result, it is showcased in values, symbols, rituals as well as heroes. The author explained that symbols are visible as they can be observed in such things like a people's dressing and status symbols and since they can be imitated, symbols are superficial. In terms of heroes, it was explained that these represent highly valued or esteemed individuals within the organizations. These can be people who were responsible for certain developments and milestones within the organization or were instrumental to its success like the founders of organizations. They can also be fictitious but the role they play is the same, being role models in terms of behaviour.

Rituals represent some mannerisms that are part of the way things are done for example the way people are addressed, the way people conduct and address meetings and things pertaining to socialization of individuals. The core of culture however is composed of values. These form a spectrum upon which behaviour is built from the negative to the positive. Levitin (1973) explained that values are absorbed unconsciously or implicitly and as a result they are rarely discussed but inferred from peoples' behaviour and actions. They are therefore invisible practises.

This same concept was also expanded by Schein (1985) who stratified the organizational culture into three layers from lowest to highest. The scholar pointed out that the lowest layer consisted of assumptions about

relationships between man and his environment for example others. The second level consisted of values and norms that are used to cement or justify behaviour. The last layer was explained to consist of elements of organizational culture that are visible like organizational structure and others from which the previous two layers are consolidated.

2.21 Dimensions of organizational culture

According to Boatright et al (2012) there are six dimensions of organizational culture. These are used as a description, measurement and comparison tool across organizations as well as an instrument in dealing with cultural change. The dimensions are grouped below.

Table 2.1: Dimensions of organizational culture

Dimension	Characteristics
Process oriented vs results oriented	Process oriented cultures deal with technicalities and are characterized by bureaucratic tendencies. They tend to be associated with high levels of absenteeism and steep hierarchies. Results oriented cultures are concerned with outcomes.
Job oriented vs employee oriented	Job oriented cultures are interested in the performance of the employees whereas employee-oriented culture goes a step further into concern for the employees well-being. As a result, there is much investment in employees and there are highly educated management and a lot of young people in the organization.
Professional vs parochial	In the professional set up, the employees mainly identify with their professions and are mostly highly educated people. In contrast the parochial set up derives

	identity from the organization itself. It is thus more unionized and is associated with public ownership and smaller size.
Open vs closed systems	The systems dimension deals with the communication dynamics within the organization as well as the ease with which external members can be admitted within. Open systems are associated with a higher degree of freedom of communication hence easy expression of dialogues. They are also less formal than closed systems.
Tight vs loose control	This dimension relates to the formality of the organization which also stems from the use of technology in the organization. Industries that are technology intensive like pharmaceuticals and baking sector have a tighter control compared to others. Higher education and growth are some of the characteristics of loose systems as well as a large number of female personnel.
Pragmatic vs normative	This dimension relates to the level of flexibility with regards to interaction with the external environment. For example, law and regulation application entails a rigid culture whereas the sales aspect requires flexibility. This however also depends on ownership, whether it is private or public.

2.22 Hofstede's cultural dimensions

The dimensions of culture proposed by Hofstede are a popular tool used to determine the aspects of different cultures within organizations. The theory provides five dimensions. These will be used in the study to determine the organizational culture prevalent in the various medical institutions under study.

Figure 10: Hoftede's cultural dimensions

Hofstede (2011)

The power distance simply shows the extent to which those with lesser powers in a society accept and expect the unequal distribution of power. Individualism and collectivism highlights preference for being alone or being part of a group or network. Masculinity versus femininity shows the differences between aspirations towards heroism, assertiveness and material rewards as compared to those for care and emphasis on quality of life. The uncertainty avoidance dimension reflects extent to which one is comfortable

with the unknown. Lastly, long term versus short term orientation reflects nuances of virtue compared to absolute truth.

2.23 Organizational culture and crisis management

Tsai (2011) pointed out that organizational culture is positively associated with leadership behaviour. They pointed out that leadership has a great role to play and can influence workers actions, attitudes and behaviour as a result of their communication of organizational culture. Abo-Murad et al (2021) also added that great interaction between management and subordinates promotes a positive attitude in the subordinates and results in improved flow of information as well as fostering collaboration. It also ensures that the subordinates are enthusiastic in working towards the mission of the organization and in sync with its objectives.

A strong organizational culture is established where there is union between the management and the staff and this enhances consistency as well (Wang 2011). This also resonates with what Park (2021) pointed out. They explained that leadership role is very important in crisis management. The scholars explained that there is a lot strategic decision making in the event of a crisis and the management should be able to navigate around the problems and allocate resources in a manner that emphasizes on efficiency. As organizational crisis can be sometimes unpredictable (Lee eet al, 2020) the leaders should possess some qualities like being flexible, confident and empowering the employees to act in a certain way. Abo-Murad et al (2019) noted that organizational culture affects crisis management in stages.

Several scholars pointed out that sometimes cultural barrier can adversely affect crisis management. Denial of a crisis can prevent the organization from preventing a crisis, according to Mitroff et al (1988) and Eliott et al (2000). Idealization can also prevent the organization from successful detection of warnings of an impending crisis (Veil, 2011). It was also observed that a rigid culture can affect crisis management during a crisis. A rigid culture is often characterized by bureaucracy and top to bottom communication. This affects the flow of information as well as the circulation

of vital information (Coombs, 2014). It is imperative that the organization learns from experiences from a crisis as these lessons can be useful in the future in detecting and preventing a crisis of a similar nature.

However, when things go wrong some members of the organization may end up blaming others and this adversely affects the learning process (Elliot et al 2005; Catino, 2008, Abo-Murad 2019).Deverell and Olsson (2010) pointed out that organizations with a flexible culture are able to fully adapt and devise strategies for crisis management at a managerial and operational level. This culture was also found to be most likely to be flexible to change as well.

A case study was conducted by (Lehmann and Richter, 2016) to determine the impact of organizational culture on crisis management. They explored different companies in different countries. They pointed out organizational culture affects organizational structures and availability of information and how it is interpreted makes a difference to how the crisis is perceived by the management or the employees. They also explained that rigid and flexible organizational structures both had merits and demerits when it came to crisis management. According to them an organizational structure should reflect the severity of a crisis; if a crisis is severe then the organizational structure should be stiff. The structure would move from democracy to dictatorship with increase in crisis severity (Lavrenyuk et al, 2018). This is because a rigid structure allows for better control pertaining to decision making. A flexible one on the other hand opens more channels of communication and results in swifter decisions.

2.24 Organizational culture and creative thinking

According to Hassan et al (2019) the business environment is becoming increasingly dynamic and this prompts the need for creativity in order to be innovative in the organization. They explained that the employees' creativity is influenced by the organizational environment including the management actions. In that regard, if the leadership are transformational then creative

behaviours in employees is greatly encouraged. The leadership would be in great support of innovative ideas and encourage creativity.

Rastgoo (2017) conducted a study to determine the impact of organizational culture on creativity whilst exploring the mediating role of knowledge management on these factors in Iran. The study used a sample of 170 people selected through the stratified random sampling method. Structural Equation Modelling and Partial Least Squares were used as the methods of data analysis. The findings of the study revealed a positive and significant impact of organizational culture on the creativity of the employees as well as on the knowledge management. Knowledge management was also found to have a positive and significant impact on creativity.

Shehadeh (2016) conducted a study to determine the impact of organizational culture on creative behaviour on commercial banks in Jordan. A survey was conducted on 250 employees that were selected through random sampling. The study revealed high levels of creative behaviour in the employees as well as culture, these were revealed through elements like team work, innovation ability, change ability, problem solving, and flexibility to change. A positive and significant impact of organizational culture on creative behaviour.

2.25 Organizational culture and innovation intelligence

According Ali et al (2016) if employees align their value with the organizational culture it promotes an environment where ideas can develop and the employees are more likely to be innovative. According to Tellis et al (2009) and Sadeigh (2012) organizational culture is the strongest driver of innovation and influences the extent and degree to which innovative and creative solutions are developed. Martins and Terblach (2003) added that organizational culture impacts this relationship through a learning process where individuals learn about what is expected and its importance; as well as values reflected in the organizational structure.

Hermida et al (2019) contended that a good organizational culture promotes interrelationships between organizational members. The scholars pointed out

that an organizational culture that promotes expression helps employees top overcome their fears and fosters proactive personalities that are always willing to share and engage with others about solving problems (Kong and Li, 2018).

Innovation culture is a form of organizational culture that encourages thinking out of the box and thinking creatively in order to come up with novel ideas, perspectives and solutions. According to Adekelan (2016) innovation culture entails motivation, competencies as well as leadership attributes. Marcoulides and Heck (2013) explained that six factors are essential for an innovation culture to be established. These six factors are risk taking, creativity, responsibility, employee participation, autonomy and feedback and recognition of efforts. Szczepanska (2014) pointed out that an organization needs to have an innovation culture in order to promote things linked to innovation like innovation intelligence. Maher (2014) explained that innovation is a result of tools employed. The management should therefore find ways of enhancing capabilities of employees that are aware of creative thinking.

Maher (2014) provided a set of characteristics that make up the dimensions of innovation culture and these are shown in the diagram below.

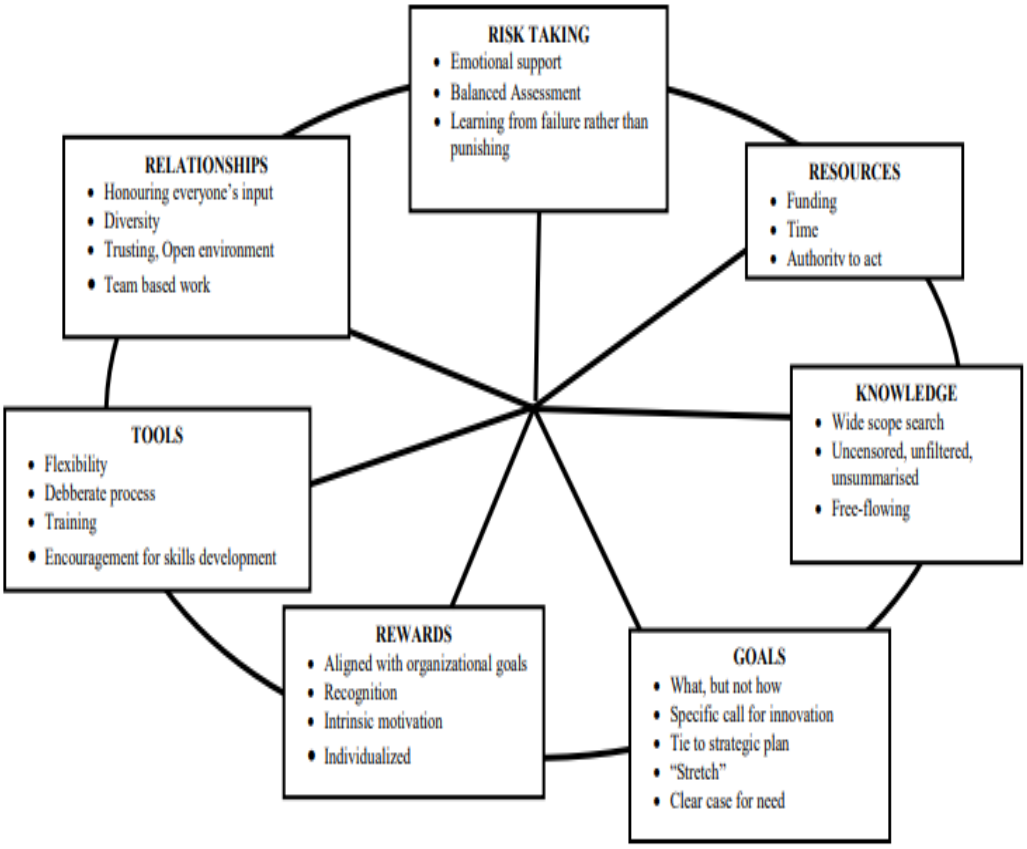


Figure 11: Dimensions of innovative culture

Maher (2014)

According to Maher (2014) the seven attributes above are what separate an innovative organization from those that are not. They explained that the management should respond to employee mistakes as learning ways. Instead of the employees being afraid of punishment if they make a mistake, the management should actually take interest in these mistakes as they can be a learning curve for the employee. The employees should also not be afraid of experimenting with new ideas. The management should be supportive and actually put some resources like financial backing at the disposal of the employees to encourage and motivate them.

In addition, Maher (2014) pointed out that the management should create an environment that is conducive for innovation. Training and research should be emphasized so that the employees can gain from new knowledge within and outside the organization. There should also be rituals and symbols that help to detect innovative behaviour in individuals and incentives for it. Tools

should be in place to improve and promote creative thinking in employees, upgrading their potential and capabilities.

Maher (2014) also pointed out that most of the time innovations are not a result of individual efforts. It is thus vital to foster relationships at the workplace so that collaborations can ensue. They explained that when there is joint effort, different opinions and perspectives are presented and this sparks innovation intelligence and creative thinking. Team work should therefore be encouraged. The management should also be receptive to ideas from the workforce and make sure there are training programs.

Marcoulides and Heck (2013) pointed out that a culture that promotes innovation results in excellence. They also explained that an innovation culture includes the establishment of a conducive climate, emphasis on knowledge management, tolerating risk and uncertainty, support groups and recognition for innovative and creative efforts among others.

CRISIS MANAGEMENT

2.26 Crisis management concept

Crisis management is a concept that stems from crisis. According to Sommer and Pearson (2011) crises refer to current or unpredictable situations which can only be overcome by innovativeness. This is because sometimes known and proven methods fail to work. According to Herman (1965) crisis refers to any unpredicted situation that affects the values of the company and presents a small window of time for decision making. Miller (2004) expounded on this and asserted that a crisis has various attributes like sudden occurrence which demands immediate or prompt reaction. It also increases in intensity and has harmful impact to the organization sometimes permanent in nature.

Rosenthal (1989) defined a crisis as a threat to the existence of a social system, its values and functions. Hart et al (2001) pointed out that a crisis is an escalating phenomenon that cannot be confined to a single area in a common border. It can also lead to other crises and result in a ripple effect of the crisis. In social studies crisis is used interchangeably with other words like disaster, emergency or catastrophe. Mikusova and Horvathorva (2019) pointed out that crises are characterized by threat, surprise factor and a limited time for decision making. Crises result in negative consequences for individuals, organizations, industries, nations and even on a global scale.

Crises also affect the sustainability of the organization (Hutchins, 2008). Sommer and Pearson (2011) explained that a crisis usually has negative consequences and can result in huge losses as well as affect the organization's ability to be a going concern. Fink (1986) pointed out that crises' situation is usually unique and the same solution may not work for every crisis; but the purpose of crisis management is to reduce the harm of the crisis to the organization.

According to Pearson and Clair (1998), crisis management refers to the organizational efforts by internal and external stakeholders to navigate and manage a crisis. They explained that crises can be unavoidable hence there was need to have strategies in place to be able to navigate the crises when they are already in existence. According to Hamildovic (2012), it is their unpredictability that warrants the need for creative solutions as these are more ideal for novel events. The scholar explained that pre-prepared solutions most often do not work for complex and unstructured crises and are thus more suited to predictable crises. Jia et al (2012) defined crisis management as a tool for avoiding emergencies, planning for impending ones, taking care of them when they happen and ensuring minimal consequences presently and in the future. Employees have to be more creative and knowledgeable during crisis times, because they are among the most important intangible assets of an organization. (Ismael,2021)

Crisis management entails making major strategic decisions in complex situations. It was also pointed out that some lessons from previous crises can be used to devise strategies that can ensure that the organization is able to circumvent that particular crisis. However, a crisis management plan should be used as a framework of good decision making rather than a guide as crises tend to be more complex. Pro-active crisis management is thus very important.

According to Bundy et al (2017), crisis management refers to the way the organization responds to potential events that can cause harm to the organization. They also stated that crisis can be observed from an internal or external point of view. They explained that the internal point of view intimates that the solutions for crisis are rooted in the leadership of the organization and focuses on the organizational structure. On the other hand, the external view seeks solutions from collaborations with other stakeholders (Mitroff 2009, Coombs 2015). Bundy and Pfarrer (2015) note that the external perspective is especially important in the prevention stage

Christensen and Ma (2016) defined crisis management as how people perceive the response of officials and those in power towards a crisis and

how they accept measures to deal with those crises. Crisis management thus encompasses all efforts required to swiftly deal with possible crisis and its effects in a systematic manner (Horri and Abdolkarrimmi, 2016). They also pointed out that a strong organizational culture should be present to help managers in exploring present crisis strategies in place as management roles alone are not enough. According to Christensen and Ma (2020), government capacity and legitimacy is also fundamental in crisis management from the preparation to the learning process and they actually reinforce each other.

Many scholars have set out conditions that are needed to ensure that crisis management is effective. Choi et al (2010) stated these as perception, empathy and empowerment. Patton (2007) pointed out that team building, social networking, co-ordination and leadership are essential elements in crisis management. This was also echoed by Bundy et al (2017) who pointed out that nurturing relationships between stakeholders is essential as well as ensuring that communication lines are open so that in times of crisis these relationships can be used for collaboration purposes.

Lehman and Richter (2016) pointed out that communication is a vital aspect in crisis management. Any form of communication internal and external should be addressed to curb rumours as these may have an adverse effect on the organization as well as reflecting a false situation of events (Coombs, 2014). Leadership was also considered an important element of crisis management. According to Karim (2016) the leadership style can have an influence on the swiftness of the management response to a crisis as well as the success of the crisis management. Flexible and creative leaders are able to respond quickly to crises as well as to find opportunities to actually increase business performance (Fragouli and Idibapo 2015). Civelek et al (2016) also contended that crisis managers are usually isolated in times of crisis. Therefore, they have to possess relevant skills that can make them think out the box and out of their comfort zone.

Most scholars contend that there are usually warning signals before a crisis actually occur. However, there are several reasons why these can be overlooked or just ignored. The signs can be weak and deemed insignificant.

The sources may also be perceived to be incredible hence the potential for the crisis is ignored and in other cases the signals may just fail to reach the concerned parties until it is too late to prevent anything. According to Mitroff (2001) organizations can be in denial and fail to acknowledge that they may be affected by a crisis and hence fail to take preventive action. Others may have the knowledge that there is an impending crisis but perceive its magnitude to be small and hence fail to take action. In addition, some organizations presume themselves to be big enough nothing can touch them. This illusion of grandiose ends up being their downfall. On the other hand, some organizations are of the mind that crises just do not happen to them and will thus ignore all the warnings. Some would compartmentalize the crises and think that it will just affect a few of their departments whilst others will intellectualize the crisis until they perceive the threat to be small.

Crisis portfolios are drafted to enable the organization to rationalize its crisis management process. The internal and external environment should both be taken into account when setting out guidelines for crisis management (Zapletova 2012). The organization should also be aware of their own vulnerabilities so that in the future they can be able to mitigate crises based on these weaknesses. Mikusova and Hovarthova (2019) pointed out that most scholar's separate crisis management into the stage before the crisis, the crisis itself and after the crisis. They pointed out that the pre-crisis stage was all about prevention and preparation, the crisis phase was about response to the crisis and the post crisis phase was about recovery, learning and revision. One of the popular models for crisis management is the Mitroff crisis management model.

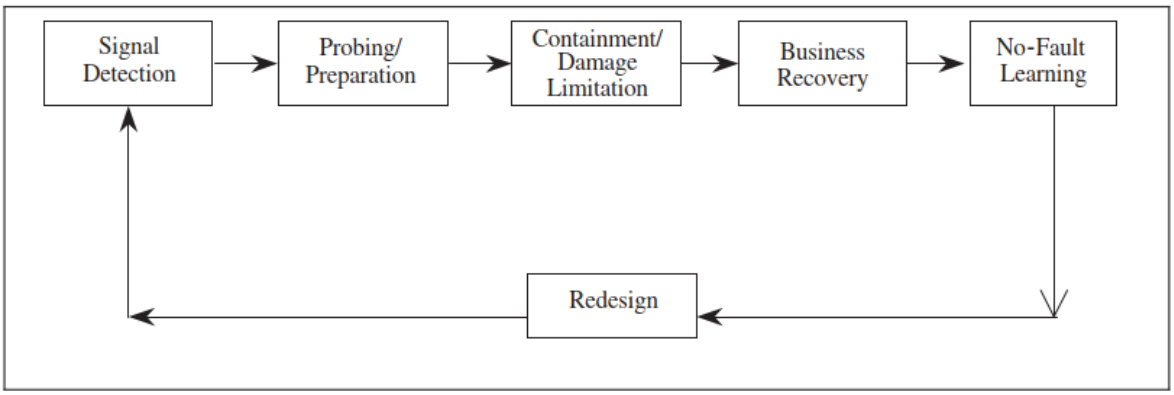


Figure 12: Mitroff's crisis management model

Mitroff (2005)

According to Mitroff (2005) crisis management can be categorized into five aspects that are signal detection, probing, containment, business recovery and no-fault learning. The signal detection stage represents detection of the existence of a crisis in the organization. Detection signals can be put in place so that they provide early warning signs to the organization of an impending crisis (Zhang and Wang 2016). The preparation stage is where the members of the organization would be looking for ways to deal with the crisis and looking at past lessons. Mikusova and Horvathova (2019) pointed out that the best way for dealing with a crisis is being able to forecast it. They explained that this entailed incorporating a risk management strategy in the organization.

A crisis plan, even though time consuming can come handy in time of the actual crisis. In some organizations, simulation is used as a crisis preparation tool. It involves anticipating what a crisis would be like and enacting the situation along with some potential solutions. This method can help the employees and the management to know what to expect and how to act in such circumstances if they ever arise (Papalova 2015).

Mikusova and Horvathova (2019) also pointed out that creativity and innovation were necessary in crisis management for the team to be able to think creatively and come up with novel and unique solutions to the crisis. The containment or damage limitation stage follows after the occurrence of the crises. The recovery stage is where the business will be trying to get back to where they were before the crisis hit them. It also seeks to empower management with opportunities in case of events as lack of this may result in the business falling prey to the same crisis in the future.

The management identifies ways that can enable them to survive as well as to serve its customers in the aftermath of the crisis. The learning stage allows the organization to integrate the lessons learnt from the crisis in its strategies and framework. It also enables the management to add to their knowledge repositories and use the knowledge to improve their capabilities (Wang and

Belardo, 2005). This then leads to the redesigning of the said framework to incorporate these lessons. In addition, evaluation of the crisis by the management would help them to quickly identify such a crisis if it ever comes up again (Mikusova and Harthanova 2019). Wand and Berlado (2005) explained that it is at the first three stages that knowledge should be used; taking into account the fact that harnessing essential knowledge may take time.

According to Mikusova and Harthanova (2019) there are several elements involved in an effective crisis management. These are definition of the crisis, strategy, conditions, crisis profile and processes. According to them these factors represent a synergy in crisis management and they are reflected in the illustration below.

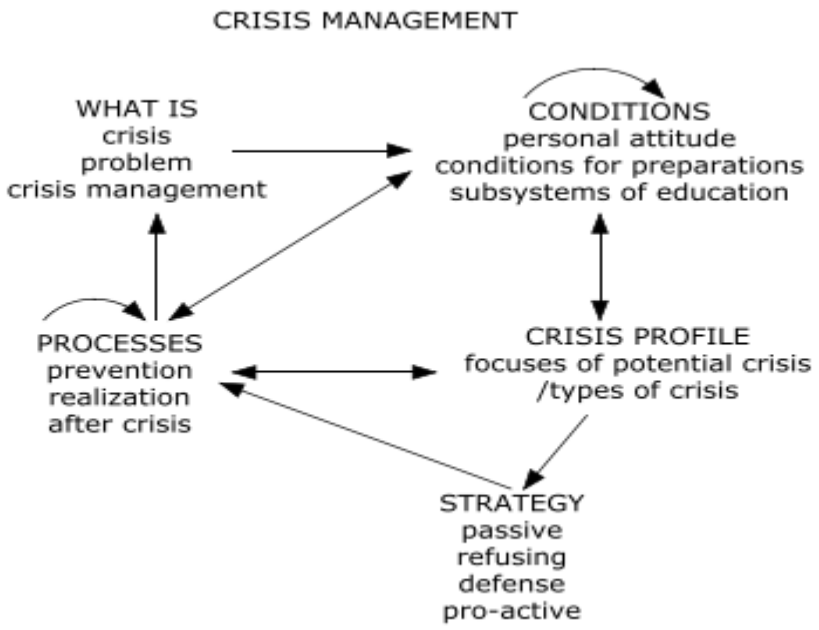


Figure 13: Network in crisis management formation

Source: Mikusova and Harthanova (2019)

The above illustration provides the mind map of crisis management according to Mikusova and Harthanova (2019). They explained that the basic stage of crisis management consists of definitions of a crisis according to the management. This sets out what should and should not be considered a crisis versus a problem. They pointed out that crises are on a larger scale

with low probability and high impact and problems are on a lower scale and can be easily overcame. However, they also pointed out that what entails either would be at the discretion of the organization as what is a problem to one company may be categorized as a crisis in another and vice versa. Defining a crisis would also ensure that everyone involved holds the same perspective regarding the matter thus clarifying it.

The scholars further explained that there are conditions that should be in place in the crisis preparation stage and these are usually related to personal attributes especially those of the management as they hold the key to the crisis response. If the management is unwilling to respond to the crisis then it renders the crisis management process ineffective. Knowledge and expertise are required massively at this stage as well as determining if there are any skills that are missing. If they are then further training can be provided so that the crisis management team possesses all the relevant and up to date skills to deal with the crisis. There should also be enough support for the idea from top management.

The crisis profile serves to dissect the potential crisis providing cause and effect. It also identifies the potential sources of the crises so that the crisis management team is aware of potential areas that the crisis is likely to stem from. The crisis profile also identifies the typology of the crisis assessing the likelihood of its occurrence and the timing. This evaluation helps to determine the extent of the organization’s vulnerability to the crisis (Noratikah et al 2017). Internal and external analyses are conducted in order to come up with this vital information.

It is the type of crisis that determines the strategy that would be implemented in dealing with it. The aim of the crisis strategy can be to mitigate the crisis negative consequences, change the perception held and to transform its characteristics (Coombs and Hollady 2012). According to Mikusova and Harthanova (2019) the crisis processes are prevention, self-realization during crisis and activities in the aftermath of the crisis. Methods to prevent the crisis would depend on the focus of the organization and would involve acquisition of necessary resources to avoid the crisis. Risk management strategies

would also be incorporated to determine the anticipated risks and projected impact. The organizational culture also comes into play in the prevention of crises as it sets the tone for responses. Since the crisis management team comprises of experts from various fields in and out of the organization there is higher chances of creative solutions being put forward.

The realization of the crisis management simply constitutes everything being put forward in the case of a crisis. However, Mikusova and Harvathova (2019) pointed out that sometimes because of the unpredictability of crises the crisis management may fail to be implemented because of timing. They pointed out that for crisis management to be effective there should be sufficient resources in place as well as tools and relevant methodologies.

After the crisis, the management does an audit to determine what was successful and what went wrong, as well as reasons behind these. Usually crises result in changes within the organization and these are implemented. If there is need for processes like restructuring then these are implemented. the management also evaluates its response to the crises and establishes what elements of the organizational system were affected and what they could have done better. It also involves assessing if the current crisis could trigger another and how future crises should be mitigated. This is why the aftermath of the crisis is particularly important as it provides a wealth of knowledge which can be used in the future. It also serves to identify any gaps and vulnerabilities of the organization.

The aftermath of the crisis also involves the organization smoothing relations if any were damaged during the crisis. There may be need to provide reassurance to stakeholders and to restore the company to its former glory with regards to reputation and credibility if these were affected. This is also essential even during the crisis which is why the organization should provide updates to the relevant stakeholders. Stakeholders in particular need to know how the crisis affect them and their stake in the organization, what the company will be doing about it and any potential changes that will be likely to occur.

2.27 Crisis perception

A crisis according to Coombs (2007) is actually a perception of threatening circumstances to the organization's well-being and stressed that crisis perception is a key element of a crisis. Pelrose (2000) stated that crisis perception has an impact on the crisis management. Crisis perception is vital as it may affect a lot of things including the well-being of people (Ding et al, 2020). The scholars found a positive relationship between affective and cognitive risk perception and depression as well as mental health in general. They advocated that in times of crisis, perceptions be highly regarded as they can have grave consequences. Kye (2020) supported this and pointed out that the crisis perceptions were also important as they affected the extent to which people supported public policies. They explained that prevention and control measures would be easier to put in place if the people are going to respond positively towards them hence the crisis perception importance. Prior studies by Wester (2009) also explained that the cause of the crisis can also affect how the actual crisis is perceived by different people even though the impact may be the same.

According to Marynissen et al (2013) perceptions are complex and people attribute meanings to them that they deem necessary using the knowledge that they have and some previous experiences as well. Prior studies by Weick's sense making theory (Weick, 1969, 1988) explained that if the crisis is perceived as making less sense then the chances of it escalating get high. What is done about the situation also feeds into the perception. Even at organizational level perception of a crisis would be different across different organizations (Coombs et al, 2016). Anne (2013) explained that this could be a result of each person having their own identities and different perceptions, even culture comes into play.

Some scholars have noted that individuals create a reality for themselves with regards to an existing crisis and this may also lead to differences in strategy between the management (Smart and Vertinsky, 1984; Kiesller and Sproull, 1982; Pieters and Eeckman, 2015). Since these differences in perception can affect the crisis management of an organization, it is essential

that the organization create an environment that facilitates knowledge sharing between experts (Snoijers et al, 2018; Zerfass et al, 2017). Some management feel comfortable and do not react fast to crises because they perceive that their position within the industry will see them through any difficulty (Penrose, 2000).

Ow et al (2020) conducted studies on the perception and communication risk of COVID-19 pandemic in Singapore hospitals. The scholars conducted a survey on 1154 hospital employees to determine their perception of the pandemic and the dynamics of communication in their workplaces. The study revealed that most of the respondents understood the risks they faced and that the hospitals made it clear what its response was to the pandemic. They pointed out that the regular hospital updates helped to make them feel safe as well as provided timely and relevant information to them.

In a study of a similar nature in China by He et al (2020), 476 residents were asked about their perceptions towards the COVID pandemic. A high risk towards the pandemic was observed and it was affected by demographic characteristics. The media was also found to play a major role in increasing and decreasing perceptions through the information disbursed among the community and the health workers.

2.28 Covid 19 theoretical and empirical perspectives

The following section relates to lessons learnt from several countries in their response to the Covid 19 and the Lipsky theory that hoghlights the work and challenges of the frontline workers, which this study is based on.

2.28.1 Lipsky street level bureaucracy theory

According to Lipsky (1980), street level bureaucrats are the frontline workers in government agencies like nurses, doctors, educators and policemen. They have direct and frequent interactions with other citizens and have power to exercise own discretions and judgements in these interactions and are considered experts in their respective fields. According to Lipsky (1980), the

actions of the street level bureaucrats reflect the decisions and policies made by the government. Lipsky (1980) also pointed out that street level bureaucrats faced a lot of challenges in their line of work like increased demand for their services, insufficient resources, conflict with organization expectations, inability to choose service assignments and performance measurement.

The street level bureaucracy theory explains that front line workers often face the problem of not having enough resources or manpower to efficiently carry out their tasks. Even their lack of experience can sometimes be attributed to this reason. Their work is on demand most of the time and the government sees to it that they try to match the supply to the demand of the market. Sometimes however, frontline workers also face vague organizational expectations which may be difficult to implement. In addition, they usually work with people who do not have any options regarding the service they are seeing to.

Street level bureaucrats' behaviour depends on the nature of their work and they use routines and simplifications to decrease the complications of their jobs and to manage them well. Sometimes they have to ration their services, applying them selectively to their clients and withholding some privileges to some. They may also attach costs to them and control their clients in a way to effectively manage workloads.

2.28.2 COVID 19 empirical responses: Country best practices

Different countries implemented various practices across the globe in response to the COVID 19 pandemic. The pandemic was referred to as a crisis of great proponents. countries response to the pandemic are a great source of empirical literature pertaining to how creative thinking, innovation intelligence, knowledge management, culture and crisis perception are incorporated in crisis management. As the pandemic was still ongoing at the time of writing the crisis management phases that are highly emphasized are the pre-crisis stage and the process during the crisis even though learning is still taking place.

Some countries managed to contain the spread of the virus to such an extent that all normal day to day activities resumed, though under strict watch. Countries like Taiwan, China and Cuba managed so well that they provided some of their medical personnel to other countries. Some countries went and are still in lockdown. The virus also developed several mutations and forced countries to constantly go into lock downs and lift restrictions. This section thus shows how different countries that were leading with the best practices at the time of writing implemented crisis management.

Singapore had less that o.1% (The Times, 2020) casualty rate as they embarked on an aggressive stance on COVID 19. The country did identification documents scanning at supermarkets and a meticulous contact tracing system. The country had also been with SARS virus previously hence their quick response and vigilance to the Covid 19 pandemic. The country also availed huge amounts of funds which enabled it to deal with the pandemic better even though they had dangers of the virus spreading in the overcrowded migrant housings. In addition, technological solutions were of tremendous service in contact tracing. The country provided daily updates on the Ministry of health website and had applications that those under quarantine could use to confirm their location. They also designed a robot that was deployed to spread the message about social distancing in public places like parks (Meijer et al, 2020). Telemedicine was also employed to help limit physical visits to the hospital. A national digital system for check-ins was established for people visiting public places like malls. A tracing application was also established and the country is further exploring the idea of wearable tracking devices to enhance the tracing system.

Another country that was commended for its Covid 19 management is South Korea. The country developed their own Covid 19 test kits and put them to use, exporting many in the process. The country also dealt with MERS epidemic a few years before and used this experience in the Covid 19 management. South Korea also implemented an aggressive tracking system and their people were also much willing to embrace the system. According to Meijer et al (2020), South Korea is technologically advanced and 95% of its population own smartphones. They also use these and credit cards for things

like transportation. Covid 19 applications were made that enhanced the tracking system and showed places that the individual would have visited. The government also utilized the use of technology to send messages. The government also adopted a transparent stance with regards to information and critical information like where Covid patients were housed was on platforms open to the public.

New Zealand promptly shut down their borders and instituted high-level lockdown when they had their first case of corona virus. They employed technology in a message delivery system where individuals were notified of the steps they were to take to protect themselves.

It also helped that they put preventive measures in place when the virus was considered a global threat. The same was done by Senegal who promptly imposed a curfew and limited travels in and within the country. They also employed mobile testing laboratories that improved the testing. Previously, Senegal had dealt with the ebola virus and experience from dealing with this virus was also employed in dealing with the Covid 19 pandemic. Australia also handled the crisis well and engaged their scientists who helped a great deal in coming up with effective treatments.

Canada employed the use of a centralized simulation for systems-based learning in its preparation for COVID 19 (Dube et al, 2020). The country embarked on a just in time approach educational system to educate citizens about the pandemic. They established a simulation system called e-SIM standing for educate, simulate, innovate, motivate; which they used to collect data from frontline workers across Alberta, Canada. This was then used to come up with and improve a COVID 19 curriculum and to disseminate lessons on a large scale. Simulation improves workflows and system testing as well as improves responses. According to Lavelle et al (2019) simulation reduces the risk of the spread of the pandemic to health care providers. It also reduces errors that may affect the patient's safety as a result of the health care provider being exhausted and burnout as is often prevalent in times of pandemics when the workers are working under pressure (Adams and Walls, 2020). In Quebec, Canada an efficient governance system

characterized by collaboration from different ministries and sectors looking into the COVID 19 research was set up to co-ordinate COVID 19 responses. A few years back the country had also battled the SARS and this experienced helped them in fighting COVID 19 as well. The country also established an anonymous contact tracing app which uses codes and Bluetooth signals to provide information about who an individual comes in contact with and the time. An individual would also upload their information which would be anonymous if they tested positive and it also send alerts to the contacts.

Rwanda is also one of the countries that have been successful in managing the COVID 19 crisis. The country with the help of the UNDP accelerator lab deployed anti epidemic robots that helped ease the load for the frontline workers by detecting COVID 19 cases and patient testing among other support activities (UN Innovation network, 2020).

In China the We Doctor medical platform was utilized to provide virtual sessions in connection with other countries where there Chinese frontline experts disseminated COVID19 response information to others. China fully utilized its technology capabilities in the management of COVID 19. They employed a system of e governance which was also made possible by already existing governance set up. China used the We Chat app where each apartment had a group where people would report their activities like places they had visited and daily temperature. COVID platforms where also integrated with the already existing WeChat groups where updates about the virus and mental health hotlines. The QR code is also shown in public places to gain access to facilities like public transport, restaurants and parks.

Italy also employed collaborations where universities, research centres, the government and other institutions were called upon to collaborate into manufacture of devices for the detection, diagnosis and monitoring of the COVID 19 virus. They also launched a mapping activity to ensure that research efforts are not duplicated

Turkey is also had remarkable COVID 19 innovative responses. The country developed an app that was used to monitor the presence of infected people,

their level of illness and their location. QR code permits for intercity travel were also employed. The Ministry of health as well as several universities and the government all provided timely information related to the COVID 19 updates and statuses. They also had questions and answer sessions to provide more knowledge to the public.

Iceland is one of the countries that also had remarkable response to the corona virus with only 10 deaths recorded. The country embarked on a free and nationwide testing and aggressive contact tracing program, isolating those infected. They thus managed to control the situation when the few cases were detected and opened their public facilities within a month of the first case detection, avoiding a total lockdown. Denmark was also one of the first European countries to institute lockdown and managed to deal with the virus successfully. They also engaged medical students and retired doctors to boost their frontline workforce. Centralization of hospitals also allowed for quick responses.

Belgium used speaking drones to spread the messages about the virus and social distancing in public places. It was also forbidden to\ live in places like caravans and the government used heat seeking drones to flush out any people who did not abide by these rules. Video surveillance was also used to make sure that people were adhering to the rules and also to check especially in busy places (Van Bruckel, 2020).

The Netherlands also remarkably fought the virus. They had drones that were manned by the police to ensure that people were complying with the rules set. A corona application and dashboard were established to provide more information on the virus and other relevant statistics. A live stream was also conducted where the public could ask any questions which went a long way in dispelling fears in the masses and more understanding of how to take precautions (Meijer, 2020).

Saudi Arabia managed the virus through quick action. They banned travel to their religious sites and all areas where people congregated. Mosques were also closed thus reducing the spread of the virus. The government maximized the use of social media and conducted aggressive campaigns

educating people about the virus and emphasizing the need for social distancing, staying at home and wearing of masks which disseminated the information on a wide scale given that the Saudi Arabians are heavy users of social media.

The UAE was also another success story despite being faced by other challenges at the time the corona virus struck. The country exercised strict social distancing policies going to the extent of banning public prayers and celebrations. They also had a widespread disinfection cleaning campaign. Aggressive surveillance system was put in place to ensure that the people were respecting and adhering to the set policies including heavy fines on those who shared medical information about the virus on social media. Violations were thus kept at a minimum and the country managed to contain the spread of the virus. Greece also managed to contain the virus through a quick response to the pandemic, putting the country in lockdown as soon as the first case was recorded and procuring beds and more frontline workers.

Ireland also utilized technological innovations in response to the COVID 19 pandemic. The country set up a lot of testing centres. They gave feedback on results electronically to reduce the number of patients at the actual centres. Electronic prescribing was also finally introduced. Google and Apple linked contact tracing applications were introduced though they did not have much success when they were initially launched. There was also technology to determine if an individual had been in contact of less than two metres with another for a considerable time. Telemedicine also took off with consultations being done online between the patients and the medical experts.

Germany responded aggressively to the pandemic with testing for the virus conducted on a very large scale. A lot of input from medical experts was also utilized in policy making. The government also developed a platform where people from various backgrounds could collaborate to come up with some technological and innovative solutions. They also used an application that provided important information pertaining to the virus (Mergel, 2020).

According to Bremmer (2020) in Taiwan the government acted diligently to stop the spread of the virus. After shutting down their borders, they

conducted contact tracing and used Sim tracking to ensure those under quarantine were observing the rules. Sanitizers and temperature checks were diligently used in public places like supermarkets.

2.28.3 Northern Iraq responses and how it can improve

The Northern Iraq strived to be proactive in its management of the corona virus. They drew experience from other difficulties and crises that plagued the region for the past wars like wars and insurgence of political rebels. They also set up operation centres before any cases were detected and instituted curfews right before major celebrations and festivities had taken place across the region. Daily press conferences were also held to provide updates and vital information to the public and in a bid to ensure transparency. Quick quarantine and isolation were also employed. However, Aziz (2020) pointed out that testing was not widespread. The country can therefore draw lessons from other countries that have conducted aggressive testing and contact tracing system to ensure that cases are detected and spread of the virus is curbed.

The country also has to improve communications systems to ensure that even those in refugee camps receive the information. Research efforts can also be conducted and collaborations across the research institutions and education centres. The country can also look into manufacturing their own equipment like COVID 19 test kits as the country does not have sufficient health resources to deal with too much pressure. In addition, they have also been noted to lack vital equipment like protective clothing and sterilizing equipment which is essential to protect the frontline workers.

Technological innovations also need to be incorporated in the crisis management plan to ensure that the country keeps ahead of the virus. It would be essential when the lockdown is lifted to ensure adherence and compliance to the rules. It will also help in monitoring the situation to detect safer places and when there is high risk of the disease spreading.

Northern Iraq is also having increased cases of domestic violence and there is a lack of adequate communication between the victims in safe housing and

the authorities. Lessons can be drawn from countries like that have managed to develop a hotline that is always open for victims of domestic violence.

2.28.4 Empirical literature

Several studies have already been conducted pertaining to the COVID pandemic but most of these are in relation to the medical field. Ali and Alaharbi (2020) conducted a study on the COVID 19 disease on its management, treatment and social impact. They explored deep into how the disease is spread, its origin, treatment strategies and advanced methods of prevention and management.

Bell and Talbot (2020) explored the impact of the pandemic on people with eating disorders in the United Kingdom. The study revealed that the majority of the participants were negatively affected by the lockdown as it disrupted their eating schedules and also brought more stress which resulted in them seeking comfort in food. Jaguga and Kwobah (2020) also conducted an almost similar study but basing their study on the effects of the pandemic on mental health in Kenya. The study revealed no plan on a national level that was meant to deal with occurring mental health issues in Kenyan nationals and that a mental health plan was necessary.

Another study which focused on a specific group of people was conducted by Marcus et al (2020) in South Africa on Covid 19 response to protect homeless people. The study revealed how a temporary shelter was created in a stadium to house the homeless people. Health care workers were further trained in order to deal with the large number of people in the shelter. They city and community workers disseminated the information and through word of mouth the homeless people came to the stadium. Clinical teams were also dispatched to help those who were dealing with opioid dependency and were suffering from withdrawal symptoms.

Under a similar theme, Si et al (2020) studied the psychological impact of the COVID 19 pandemic on medical care workers in China. The study revealed that the workers had a load of pressure and work and a lot of psychological symptoms were detected and very intense in the workers. It was also most

likely in future there would be high levels of PTSD disorders. The study also uncovered a lot of stigmatization attached to those workers who would have contracted the COVID 19 and suggested that support was critical to reduce psychological disorders among the workers.

Yezli and Khan (2020), focused on Saudi Arabia and studied effects of social distancing as a means of prevention of the spread of the Covid 19 virus. They pointed out that life in Saudi Arabia is characterized by huge social gatherings especially religious ones. In addition, the country has a thriving tourism industry which further promotes the outdoor life. In response to the fight against the virus the Kingdom of Saudi Arabia suspended all social gatherings and banned religious gatherings. Yezli and Khan (2020) pointed out that the success of these measures would depend on the continued compliance by the citizens and other reinforcing measures.

Dube et al (2020) explored the use of simulation for systems-based learning to enhance COVID 19 preparedness in the frontline health care workers in Canada. They pointed out that simulation-based learning is meant to ensure that workers are well prepared and equipped for when disaster strikes. Their study revealed that the simulations-based learning in Canada provided walk through sessions that helped the health care workers know what they would be getting into and enabled them to perform their tasks during the actual COVID 19 crisis. The study also revealed how collaboration between different organizations endured a quick response to the virus and managed to mitigate what would have been a huge number of fatalities had they not acted promptly. The study also pointed out that communication was mainly between the organizations involved and information was not disseminated to the homeless masses which increased their anxiety.

A study by Monitor Deloitte (2020) focused on the impact of the COVID 19 on consumer behaviour in Germany. They assessed things like whether the demand for international products will decrease whilst consumers are using more local products; whether they would increase in home consumption and digitalization would be the most used strategy for selling. Surveys and interviews on 2000 participants were conducted to determine these insights

comparing them with behaviour before and during the lockdown. The study revealed that the restrictions imposed as a result of the virus changed consumer habits across almost all the segments but most of them would be temporary and go back to normal when restrictions are eased. In some cases, it would also provide opportunities that consumers never explored before especially local content. Income was found to have a moderating effect on consumption and low-income households did not register much change as they already had more indoor than outdoor consumption and used public transportation rather than private and also tended to consume local purchases more.

The KEA Report (2020) explored the impact of the COVID 19 crisis on the cultural and creative sector in Europe. The report revealed that the crisis had disrupted industries and especially the cultural and creative sector. They explained that the cultural and creative sector emphasized sociality and bringing communities together but this was severely affected by the pandemic. A lot of cultural and heritage sites were closed with UNESCO (2020) reporting a closure of half of the world's heritage sites at the beginning of June 2020. The report also pointed out that the closure of trade fairs also represented a huge loss to artists. Music, film and performing arts all suffered huge losses in countries like France, Germany where the industries are huge and the workers were also severely affected.

Salvatore et al (2020) conducted a literature review study to determine the role of knowledge management in pandemics. According to Salvatore et al (2020) knowledge management plays a crucial role in disaster management and especially pandemics. They pointed out that knowledge management helped enhance decisions over life and death scenarios. They also stated that pandemics are of a global scale and as such, knowledge management in pandemics transcend over boundaries and should be co-ordinated to ensure preparedness. They also pointed out that because pandemics can take place for a very long time; this allows knowledge management processes like knowledge creation, sharing and collection.

Knowledge is utilized by health personnel in preparedness and recoveries from pandemics and also relies on knowledge channels used. Modelling and simulation were key to knowledge creation in pandemics. The quality of knowledge possessed by individuals was also found to be of great importance to mitigation strategies of pandemics and individuals' willingness to comply to set regulations. Lastly their study also revealed that there was a lack of literature relate to explicit research on pandemic management. The study was limited to published papers in recognized journals and ignored books and reports.

Haleem et al (2020) assessed the impact of COVID 19 on daily life and pointed out that the virus affected daily life and businesses. They pointed out that restrictions resulted in increased stress, disruption of social events, closure of facilities and travels. It also resulted in the decrease in manufacturing production, supply chains and cash flows. It also resulted in increased workloads for frontline workers like doctors and nurses which also led to them being overworked.

Brodeur et al (2020) also assessed the economic impact of COVID 19 virus. They pointed out that most of these effects would depend on the restrictions placed and how long they lasted. They would also depend on the adherence to social distancing which would determine the spread of the virus. The scholars also stated there would be an increase in mental health issues.

Chakraborty and Mairty (2020) conducted a study to determine the impact of the Covid 19 virus on migration and effects on society and the environment. The study revealed that production has gone low and countries even the most powerful ones are facing the risk of inflation and high unemployment. They also pointed out that since some of these pandemics are originating from the forests just like the corona virus; it is imperative that animal habitats be respected as deforestation leads to these animals seeking refuge in human habitats. In addition, they also supported the advice by scientists to ban trade on wildlife.

CHAPTER III

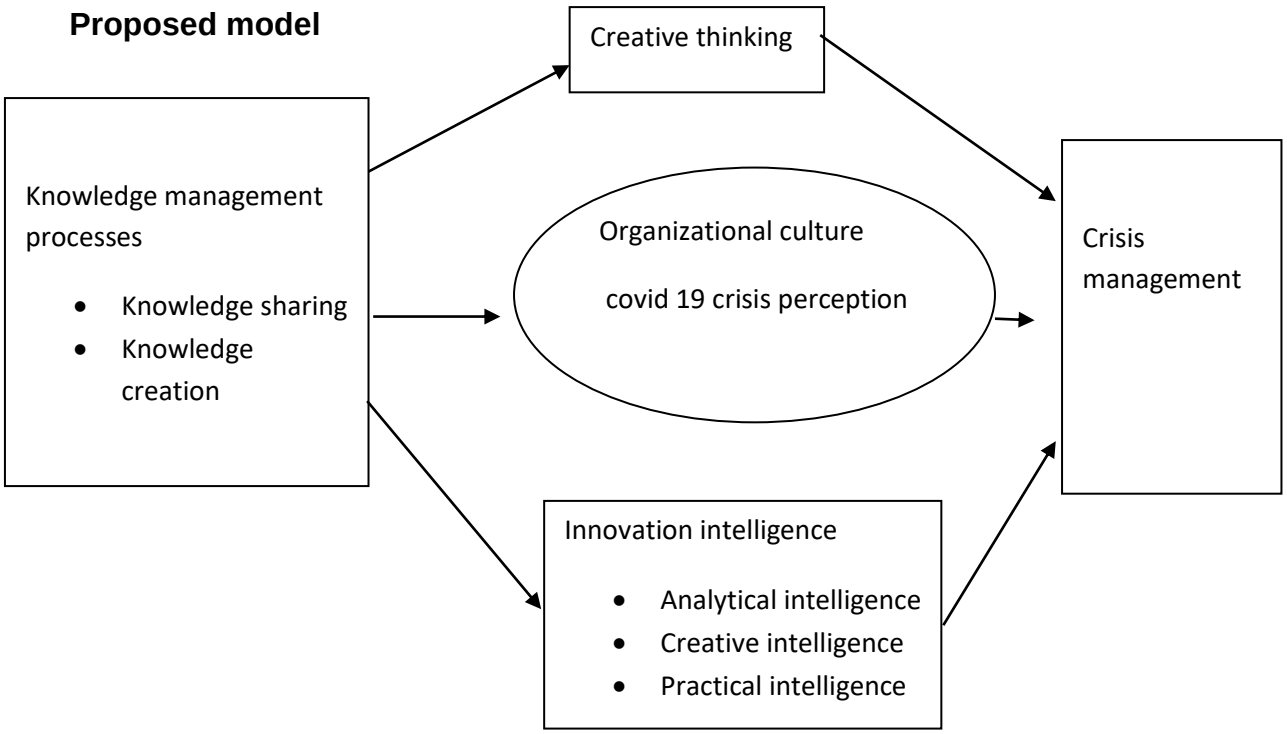
RESEARCH METHODOLOGY

3.1 Introduction

This section highlights the steps that the researcher took with regards to the collection of data, determining the participants for the study and the underlying principle the study is based on. It also highlights the type of data the researcher collected and the methods, how the research instrument was determined and how it was measured and ethical considerations that were implemented throughout the whole process.

3.2 Research model and hypothesis

Proposed model



3.2.1 Hypotheses

H1 Knowledge management processes have a significant impact on Innovation intelligence.

H2 Knowledge management processes have a significant influence on organizational culture COVID 19 crisis perception.

H3 knowledge management has a positive impact on creative thinking.

H4 Creative thinking has a positive, significant impact on crisis management

H5 Organizational culture COVID 19 crisis perception has a significant impact on crisis management

H6 Innovation intelligence has a positive significant impact on crisis management.

H7(a) Creative thinking moderates the relationship between knowledge management processes and crisis management.

H7(b) Innovative intelligence moderates the relationship between knowledge management processes and crisis management.

H8(a) Creative thinking mediates the relationship between knowledge management processes and crisis management.

H8(b) Innovative intelligence mediates the relationship between knowledge management processes and crisis management.

H8(c) Organizational culture_ covid 19 crisis intelligence mediates the relationship between knowledge management processes and crisis management.

3.3 Research design and approach

A research design depicts the plan of seeking answers to the research question(s) (Saunders et al, 2009). According to Cooper (2014) a good research design should be clear as well as well articulated. The study was

based on a combination of descriptive research design as well as explanatory design. A descriptive research design serves to provide accurate representations of events and provides answers to the bare facts.

However, in most cases there is need to also know why the events are the way they are, to go deeper and gain more understanding. Conclusions need to be drawn from the events this entails the study to provide explanations hence this study was also be explanatory in nature as it seeks to satisfy all the above. An explanatory research design provides the causal relationship between the variables. The study was therefore be a combination of descriptive and explanatory research sometimes referred to as a descripto-explanatory research design. According to Creswell (2016) use of a combination of research designs enriches the content of research hence its selection by the researcher.

3.4 Research Approach

The study was on a deductive approach. According to Stockemer (2019) a deductive approach starts with a theory or theories. These assist the researcher in the formulation of research questions and hypothesis which is the next step after establishing the theories. The hypotheses are then analysed and tested and it is upon this that new theories may emerge at the end of the study through research gaps and provide contribution to literature. A deductive approach also requires the researcher to be an independent observer of the events, not a part of the research and does not involve any manipulation of circumstances to suit the narrative.

In addition, it employs a quantitative approach as a result of the higher number of respondents involved. A quantitative approach is suitable when there is a higher number of respondents and where numerical values are being used (Stockemmer 2019). The researcher also chose this approach as it is verifiable and results can be replicated and is the most appropriate for determining statistical relationships.

The study was guided by the positivism research paradigm. According to Saunders et al, (2009), provides an independent, objective and external view of the variables where data and facts are observed by the researcher without them being involved in the results. It is a lso a very structured philosophy which is how the current study was organized.

3.5 Sampling and sample

The population represents the whole entirety of people the researcher is seeking information on. However, it is impossible to conduct such a study hence the researcher chooses a target population which is used to generalize results on the whole population. The population for this study was workers affected by the COVID 19 pandemic. The target population for this study was the frontline workers in the health sector. These were chosen as they are the people most exposed to the deadly disease as they work on infected patients on a daily basis and some are in most contact with possible patients.

The health sector has been the most affected and most involved in this pandemic. When all the world was shut down they were doing the most work, working day and night to treat patients, reduce infections and so forth. Most of the frontline workers are in the health sector and it is where most of the innovations and developments are focused on. All these reasons are why the researcher chose to focus on the health sector and not any other. In addition, health sector is still the pioneer sector during the pandemic which is related the topic of the research.

A sample is needed to determine the number of people that will participate in the study and represent others. The researcher conducted the study on a sample of 400 front line workers. The sample size was selected according to the guide by Israel (1992) which provided numbers to be sampled according to different populations. Populations above 100000 were given samples of 400 on a 95% confidence interval.

It is necessary to choose a sampling technique that determines how the research is going to come up with the participants for the study. The researcher employed a convenience sampling method after determining the groups of frontline workers. The sampling technique was chosen as in this pandemic most workers were busy with their jobs and mostly tired; hence any frontline worker who was available and willing to participate was selected.

3.6 Data collection procedures

A survey research was employed in the collection of data for the study. This involves a systematic collection of data in an organized manner (Stockemer, 2019). The method is appropriate when the researcher intends to study a large group whereupon a sample can be derived to represent the whole population. The researcher collected primary data from the respondents; which has the advantage of being original as it is straight from the source and is specific to what is being studied.

Secondary data was in the form of theoretical and empirical literature from previous scholars and will be collected from academic journals, textbooks and the internet as well. Most of the sources were from journal publications as these are more credible sources as they are subjected to peer reviews. This was dvaluable in the formulation of literature gaps and enabled the researcher to come up with sound hypothesis. It was also valuable when the researcher needed to draw comparisons with the findings of the study. The research was also cross sectional in nature which means it was only conducted once for a certain purpose to draw the image of a specific situation at a particular point in time.

3.7 Research instrument

The researcher made use of questionnaires in the data collection process. Since the study was quantitative in nature, a questionnaire was chosen as the research instrument of choice as it allows responses to be measured in a

quantitative manner. The researcher employed questionnaires from different scholars chosen on the basis of relevance and adapt them to suit the current study. A Likert scale was employed to measure responses. This is a scale that is ideal for measuring attitudes and provide a range of responses from strongly disagree to strongly agree, with the neutral response professing indifference or neither agreement nor disagreement.

3.8 Questionnaire

The researcher employed questionnaires as the research instrument for the study. A questionnaire is a research instrument that consists of a list of questions that the recipient is intended to answer. These are structured in parts in relation to the variables of the study and based on a scale. The researcher used a structured questionnaire with only close ended questions. The closed questions are intended to ensure that the research does not end up overlapping into irrelevant material.

The questionnaire was divided into sections according to the variables. The first part was aimed at providing a brief background of the respondents. This established a few demographic characteristics like gender, age, education, work experience and the type of hospital the respondents worked in. The second section was focused on the independent and dependent variables.

The independent variables of the study were knowledge management processes, creative thinking, innovation intelligence, organizational culture and COVID 19 perception. The dependent variable was crisis management. The measurements were based on a five-point Likert scale which consisted of ranges depicting level of truthfulness from strongly disagree to strongly agree on a range of 1 to 5 respectively. The level neutral was used to represent neither agreement nor disagreement to the given statements.

3.8.1 Tacit knowledge management

The researcher used the tacit and explicit knowledge as the variable items for knowledge management as these are the two types of knowledge. The first

part thus focuses on tacit knowledge and the other part focuses on the conversion of tacit knowledge to explicit knowledge.

3.8.2 Organizational culture

This section focused on the way people behave in the organization. It mostly focused on assessing the knowledge culture in the organization. The questions thus sought opinions relating to the knowledge sharing culture and knowledge management. The questions were adopted and adapted from Abdullah et al (2015).

3.8.3 Creative thinking

Creative thinking was based on the creative skills of the workforce, assessing their use of logic, gut feeling and so forth. The creative thinking variables were adopted from Pringle and Snowden (2017). They were measured on a five-point Likert scale.

3.8.4 Innovation intelligence

Innovation intelligence was measured using the three-dimensional aspects of innovative intelligence which are analytical, creative and practical intelligence. These were adapted from Chernoles and Khudaynazarova (2013). However, because there are some differences between their study and this study, the researcher modified and adapted the measurement items in line with the variables, aims and propositions of his study.

3.8.5 COVID 19 perception

The researcher assessed the perceptions that the workforce held towards different things about the hospitals' response to the COVID 19 pandemic in their organization. This is with regards to their preparedness, communication, provision of relevant equipment, disclosures and so forth. The research items were adopted and adapted from Lazarus et al (2020) and Hager et al (2019).

3.9 Crisis management

Crisis management was the dependent variable of the study. The researcher sought to establish the level of crisis management of the hospitals. The items highlighted on the hospitals prediction and dealing with the crisis. Since the COVID 19 pandemic is still an ongoing pandemic at the time of writing of this study, the researcher only focused on the preparation and response phase of crisis management. The questions for crisis management were adopted from the study by Azadian et al (2014).

3.10 Data analysis procedures

The researcher analysed the data using various statistical tests. He determined the reliability of the data using the Cronbach Alpha and validity tests using the construct reliability and Forknell-Lacker. The heterotrait-monotrait ratio was used to check similarities between items in the variables. Structural Equation Modelling (SEM) was used to determine relationships between the variables with Path analysis being used for this purpose to indicate the direction of the relationships.

3.11 Ethical Considerations

Ethical procedures are to be observed in conducting a research. The researcher sought permission from all the relevant authorities before undertaking the study. Permission was sought from the university board, the Near East University Ethical Committee who determined if the researcher should undertake the study. The researcher was granted permission, and went on to seek the same from the management of the organization (s), in which they sought to conduct the study.

Lastly, permission was sought from the respondents themselves so that they participate in the study of their own volition. All the relevant information was provided to them so that they were aware of how their information would be used and the conditions, if any. The researcher assured the anonymity of respondents by not including their names in the research and informed them their information will only be used for academic purposes. The researcher

also made it clear that there would be no monetary gain from their participation and their information would be kept safely in the researcher's personal safe whose access was to the researcher only.

Information participation sheets were distributed to the respondents to provide them with background information to the study. In addition, consent sheets were distributed so that the respondents would confirm their willingness to participate in the study as well as furnished with what their participation entailed.

3.12 Conclusion

This chapter provided the methodology to the study. The study was based on a descriptive and explanatory research design on a positivist paradigm. It used the deductive and quantitative approach. The study employed the questionnaire as a research instrument. This was delivered to 400 frontline workers selected using the convenience sampling. The research items in the questionnaire were adopted and adapted from other scholars. Ethical considerations were observed throughout the whole process of the study.

CHAPTER V

DATA ANALYSIS AND PRESENTATION

4.1 Introduction

This chapter focused on the analysis of the data collected. The researcher conducted various searches relevant to the study like the test for reliability and validity of the data; tests to determine which of the independent variables affected the dependent variable the most, and the model fitness. The researcher also conducted tests to determine the relationship between the independent and dependent variables.

The study draws insights from 400 responses equally distributed between 3 public hospitals and 5 private hospitals in Iraq. Such were composed of 214 male employees and 186 female employees and 44.8% of the employees were between the age group of 26-30 years, 18.8% between 31-35 years, 13.5% between 36-40 years, 12% between 18-25 years and 11% 40 years and above. 39.8% of the employees had bachelor's degrees, 32.3% had diplomas, 17.5% were master degrees, 6.3% had PHD certificates, and 4.3% had post and above PHD qualifications. 146 employees had 7-9 years of experience and 46 employees had the least amount of experience of 1-3 years.150 employees had 4-6years of experience. With that, 58 employees had 9 years and above of experience.

4.2 Factor analysis

Factor analysis was conducted to determine which factors strongly influenced the variables Crisis management (CM), Innovation intelligence (II), Knowledge management processes (KMP), and Organizational culture_ COVID-19 crisis perception (OCC19CP). 3 CM, 4 CT, 5 KMP and 6 OCC19CP variable elements were established to be having strong influences on the respective variables in question. That is, their factor loadings were above the standard 0.70 neeed to warrant a variable element as having a

strong influence on a major variable (Peterson, 2000). The results are depicted in table 7.1.

After having determined the required variable elements of influence, the study proceeded to examine the Construct reliability and validity of the established variables. The variables creative thinking, crisis management, knowledge management and Organizational culture_ COVID-19 crisis perception had high internal consistencies of 0.802, 0.810, 0.935 and 0.838 respectively (see Table 7.2). However, innovative intelligence had a relatively lower internal consistency of 0.613 and this was relatively sufficient to warrant reliable explanations of the influence of innovative intelligence on the other variables (Bentler, 2009).

Table 4.1: Explanatory Factor analysis results

	CT	CM	II	KMP	OCC19CP
CM2		0.866			
CM4		0.754			
CM6		0.932			
COVID1					0.746
COVID3					0.708
COVID4					0.769
COVID6					0.71
COVID8					0.762
COVID9					0.731
CT10	0.795				
CT7	0.809				
CT8	0.772				

CT9	0.786				
LL11			0.905		
LL3			0.782		
TKM1				0.909	
TKM2				0.854	
TKM3				0.908	
TKM4				0.905	
TKM5				0.88	

CM= Crisis management; II= Innovation intelligence, KMP Knowledge management processes; OCC19CP= Organizational culture_ covid 19 crisis perception

Confirmatory Factor Analysis (CFA) tests were conducted to ascertain results. Table 7.1 provides an overview of fit indices for different factor solutions within CFA. Initial observations made using Table 7.2 reveal that has an acceptable goodness of fit as noted by the Chi-square value of 84.65 that is significant at 0.01 level (Ullman & Bentler, 2003).

Table 4.2: Confirmatory Factor analysis results

χ 2 /df	**GFI**	**CFI**	**NFI**	**IFI**	**TLI**
84.65 (0.000)	0.922	0.908	0.918	0.931	0.812

Furthermore, the Goodness of Fit Index (GFI), Comparative Fit Index (CFI), Non-normed Fit Index (NFI), Incremental Fit Index (IFI) and Tucker Lewis index (TLI) exceed the required 0.90 cutoff (Byrne, 1994). This depicts that the estimated SEM is fit to provide suggestions concerning harnessing knowledge management for promoting creative thinking management and innovation intelligence during the crisis time at the Covid 19 pandemic period.

Table 4.3: Construct reliability and validity tests

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Creative thinking	0.802	0.810	0.870	0.625
Crisis management	0.810	0.824	0.889	0.729
Innovative intelligence	0.613	0.673	0.833	0.715
Knowledge management	0.935	0.937	0.951	0.795
OCC19_CP	0.838	0.865	0.878	0.795

Table 7.2 results show that the creative thinking, crisis management, knowledge management and Organizational culture_ COVID-19 crisis perception' rho_A values were above 0.80. This implied that they had high construct validity. Innovative intelligence had a low construct validity of 0.673. However, all the variables had the desired composite reliability (CR>0.80) and AVE values were above 0.60. This entails that all the variables had high discriminant validity (Zaiţ & Bertea, 2011). This was further supported by the Fornell-Larcker criterion results which proved that all the variables had the acceptable discriminant validity required to warrant the results as valid to explain the harnessing of knowledge management to promote creative thinking and innovation intelligence in times of crisis during COVID 19 pandemic. This is because the diagonal values are greater that column and row values (Ab Hamid, Sami & Sidek, 2017).

Table 4.4: Fornell-Larcker criterion

	CT	CM	II	KMP	OCCC19_CP
Creative thinking	0.791				
Crisis management	-0.115	0.854			
Innovation intelligence	0.472	-0.055	0.846		
Knowledge management processes	0.344	-0.018	0.756	0.892	
OCC_ C 19 CP	0.666	-0.107	0.76	0.626	0.738

4.5 Model fit

No discrepancies were observed between the saturated and estimated models as noted by the SRMR values which were below 0.8. As defined by Dijkstra and Henseler (2015), d_ULS (i.e., the squared Euclidean distance) and d_G (i.e., the geodesic distance) represent two different ways to compute this discrepancy. Both d_ULS and d_G were insignificant at 0.05 while the upper bound of the confidence interval was larger than the original value of the exact d_ULS and d_G fit criteria and thus, indicating that the model has a “good fit” Chi-square values were significant and the NFI values were above 0.70 (Dijkstra & Henseler, 2015). This indicates that the model was fit for fulfilling this study’s intended purpose of explaining the harnessing of knowledge management to promote creative thinking and innovation intelligence in times of crisis during COVID 19 pandemic.

Table 4.5: Model fit

	Saturated Model	Estimated Model
SRMR	0.077	0.129

d_ULS	1.249	3.491
d_G	0.482	0.678
Chi-Square	1081.685	1335.256
NFI	0.788	0.738

4.4 Path analysis

One of this study' prime aim was to answer the question how does knowledge management processes (knowledge creation, knowledge sharing) influence creative thinking and innovation intelligence in a crisis. This was accomplished using path analysis results established from the computed SEM results which were done with the aid of SmartPLS. The results depict that improvements in knowledge management trigger a significant increase in hospital employees' creative thinking abilities by 0.393.

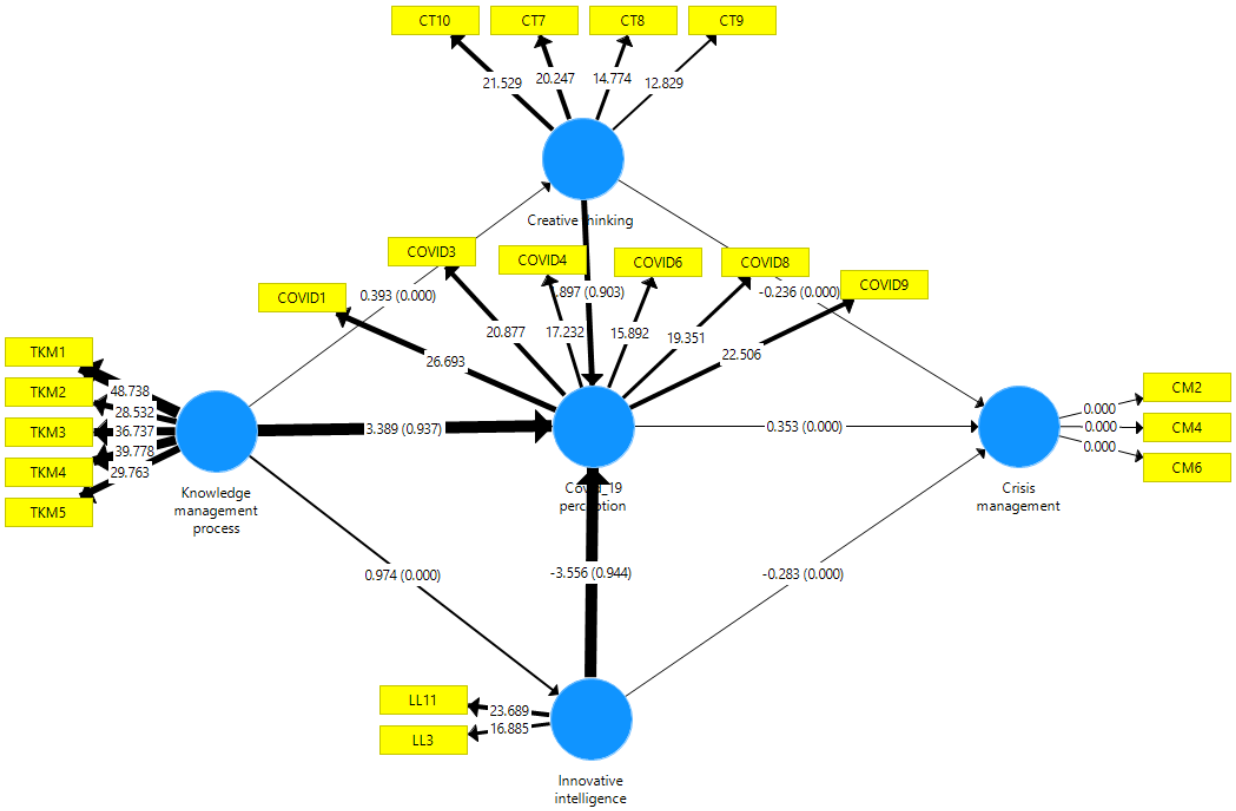


Figure 11: Path analysis

Figure 11 results exhibits that knowledge management has significant positive effects on innovation intelligence in the COVID19 crisis. This is because a unit increase in knowledge management results in a significant increase in innovation intelligence by 0.974.

The study also placed emphasis towards determining if knowledge management processes influence organizational culture COVID 19 crisis perception. Table 7.6 results confirm that knowledge management processes have an insignificant but positive influence on organizational culture COVID 19 crisis perceptions.This is because a unit improvement in knowledge management processes improves organizational culture COVID 19 crisis perceptions by 3.389

The results also show that creative thinking has insignificant adverse effects on crisis management of -0.236. This most likely implies that sometimes creative thinking may affect crisis management negatively. However, it is worth noting that this relationship is insignificant therefore the occurrence of such may be a rarity. In addition, changes in organizational culture COVID 19 crisis perceptions were noted to be having significant positive effects on crisis management. This is shown in the diagram and implies that an improvement in a unit organizational culture COVID 19 perceptions result in an improvement of crisis management of 0.353.

However, the results contradict with the idea that improvements in innovative intelligence have a positive effect on crisis management as shown by the result of -0.283. This is because innovative intelligence causes employees to think outside the box and come up with ideas that challenge existing paradigms Table 7.6 provides a summary of the regression analysis results that were computed as part of the SEM approach. The obtained R-square values were relatively high above 0.70 and thus indicating that the model variables have relatively high explanatory power.

Table 4.6: Summary of the regression analysis results

Variable	Estimate	P.value	R-square
KMP-->II	0.974	0.000	0.786
KMP-->COVID-19	3.389	0.987	0.714
KMP-->CT	0.393	0.000	0.722
CT-->CM	-0.236	0.000	0.708
COVID-19-->CM	0.353	0.000	0.824
II-->CM	-0.283	0.000	0.745

KMP: *Knowledge management process;* ***II:*** *innovation intelligence;* ***CT:*** *Creative thinking;* ***CM:*** *Crisis management.*

4.7 Moderating effects

SEM was used to determine the moderating effects of creative thinking and innovative intelligence. Table 7.7 depicts that both creative thinking and innovative intelligence moderate the relationship between knowledge management processes and crisis management. Related studies had not established and verified this connection (Brooks et al (2016; Turkmen & Sertkahya, 2015). This study has addressed such concerns by examining the moderating effects in the context of hospitals in Erbil. Both null hypotheses of no moderating effects were rejected at 5% resulting in the assertion that creative thinking moderates the relationship between knowledge management processes and crisis management. Additionally, this entails that innovative intelligence moderates the relationship between knowledge management processes and crisis management. That is, creative thinking and innovative intelligence enhance both the direction and or strength of the relation between knowledge management processes and crisis management (Gomes et al., 2018).

Table 4.7: Moderating effects

	Hypotheses	Coeff.	P Values
$H_{7(a)}$	Creative thinking moderates the relationship between knowledge management processes and crisis management	0.620	0.000
$H_{7(b)}$	Innovative intelligence moderates the relationship between knowledge management processes and crisis management	0.748	0.000

4.5 Mediating effects

All the hypotheses suggesting that knowledge management has indirect significant effects on crisis management through creative thinking (-0.026), innovation intelligence (0.043) and Organizational culture_ covid 19 crisis perception (-0.062). This is because all the p-values were insignificant at 0.05 level. Therefore, this leads to the conclusion that organizational culture COVID 19 perceptions and innovation intelligence do not mediate the relationship between knowledge management and crisis management. Such also infers that Covid 19 perceptions have insignificant negative moderating effects on the relationship between knowledge management and crisis management.

Table 4.8: Mediating effects

	Hypotheses	Coeff.	T Stat	P Values
$H_{8(a)}$	Creative thinking mediates the relationship between knowledge management processes and	-0.026	0.811	0.417

	crisis management.			
$H_{8(b)}$	Innovative intelligence mediates the relationship between knowledge management processes and crisis management.	0.043	0.548	0.584
$H_{8(c)}$	Organizational culture_ covid 19 crisis intelligence mediates the relationship between knowledge management processes and crisis management.	-0.062	0.857	0.392

The indirect effects results suggest that novel approaches capable of addressing the adverse effects of Covi-19 can be effectively addressed by integrating creative thinking (Turkmen & Sertkahya, 2015), innovative intelligence (Gomes et al., 2018), and organizational culture Covid 19 crisis perception (Hager et al., 2019; Lazarus et al., 2020) strategies. Additionally, the study has managed to address the highlighted research issues and provide significant evidence linking together knowledge management processes, creative thinking and organizational culture Covid 19 crisis perception with crisis management. Such is instrumental in devising practical methods capable of effecting handling crises and challenges posed by Covid 19 and related problems.

4.6 Summary

The chapter focused on the quantitative analysis of the obtained data from the study. Several tests were done like the construct validity, Fornell Lacker, and Cronbach Alpha under the factor analysis and the variables were found to have high internal consistencies, reliability and validity. The study found several relationships between the variables. A positive and significant relationship was found between knowledge management and creative thinking, innovation intelligence, organizational culture crisis perception and crisis management. A negative and insignificant relationship was found between creative thinking and crisis management whilst a positive one was found between innovation intelligence and crisis management. Organizational culture crisis perception, creative thinking and innovation

intelligence were found to have no mediating role in the relationship between knowledge management and crisis management. However, they were all found to have a moderating role in the said relationship. The hypotheses between the variables were thus accepted and rejected accordingly.

CHAPTER VI

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This is the concluding chapter to the whole study. It provides an in-depth analysis of the findings and highlights the major theoretical and empirical findings. It also compares the obtained results and the theoretical literature noting the similarities or differences. It is from these that contribution to sciences are established. The study also provides the conclusions and limitations of the study and recommendations for future studies based on them.

5.2 Key theoretical findings

Knowledge is one of the most essential assets that promotes competencies and enhances the decision-making process. Creative thinking involves a lot of finding alternative solutions to new situations and the pandemic is definitely a new situation that should prompt creative thinking. Success of an organization is hinged on creativity as it affects the creation of solutions. The need for knowledge and knowledge workers has intensified over the years. the organization's ability to manage knowledge can transform it into a successful factor that facilitates flow of information through knowledge management systems.

For the organization to improve outcomes and processes then the knowledge has to be transformed into creativity. The process however, is difficult to manage. There is a lot of learning after a crisis and this is observed from the creation of new policies, regulations and best practices in the organization. The organization environment and culture have to promote sharing of knowledge by employees. knowledge exchange is essential in times of crisis but is often hindered by the high uncertainty attached to new incidences, lack

of time and resources. Information is vital to ensure preparedness and ability to effectively deal with future occurrences

knowledge exchange is essential in times of crisis to ensure preparedness and ability to effectively deal with future occurrences. Knowledge management is useful in providing access to comprehensive knowledge that could be timely accessed in times of a crisis However, there is need to integrate tacit and explicit knowledge in times of disaster. The lessons learnt during a crisis also facilitate knowledge management in the form of new knowledge acquisition, boosting knowledge repositories and knowledge sharing. there is a gap between what is known and what is faced in a crisis and this gap needs knowledge management initiatives

Many crisis management theories stressed the importance of knowledge dissemination in handling crises. The source of the knowledge in a crisis is usually in the environment and there is a significant and positive relationship between knowledge management and crisis management

One of the characteristics of knowledge management is that it has an impact on people and culture. new ideas are prevented from being created and shared as a result of the absence of an environment for questioning and criticism. A weak culture promotes redundancy and a flexible culture however, promotes pro-activeness to changes.

intelligence is brought to life when active knowledge is applied to specific situations. innovation intelligence is applied with the aid of knowledge management for decision making. Creative thinking relates to creation of alternative solutions, redefinition of goals and recognition and application of critical thinking skills to new situations. the environment influences the process of creative thinking. creative thinking is about not being confined and limited but pushing out the normal standards of reasoning. creativity and innovation were necessary in crisis management for the team to be able to think creatively and come up with novel and unique solutions to the crisis

Organizational culture is positively associated with leadership behaviour. sometimes cultural barrier can adversely affect crisis management. The

employees' creativity is influenced by the organizational environment including the management actions. an innovation culture includes the establishment of a conducive climate, emphasis on knowledge management, tolerating risk and uncertainty, support groups and recognition for innovative and creative efforts among others. In addition, studies also revealed positive and significant impact of organizational culture on the creativity of the employees as well as on the knowledge management. Organizational culture was also noted as the strongest driver of innovation.

Crisis management refers to attempts to solve unpredicted predicaments that have an adverse effect on the well-being of the organization before or after the predicaments would have occurred. It requires nimbleness on the management side that can allow them to make swift decisions. It also requires management with the right attitude and characteristics that can be emulated by the employees in a crisis. It also enables them to be pro-active and have a plan of action in case of a crisis. In addition, crisis perception plays a great part in crisis management. It determines the level of response to the crisis and the acceptance of crisis management initiatives. The stages of crisis management are usually divided into three phases that are before the crisis, during the crisis and after the crisis. Responses and crisis management techniques depend on these phases and in all the phases knowledge management, organizational culture and crisis perception play an important role in harnessing creative thinking and innovation intelligence to curb, mitigate or learn from the crisis.

5.3 Key Empirical findings

In reference to the demographic characteristics, there were more males than females and more than 50% of the employees were above the age of 30. Most of the respondents possessed a Bachelor's degree or a diploma. Less than 25% had a graduate or post graduate degree. The respondents were an experienced workforce with over 75% of them having more than 3 years of experience in their professions.

A strong influence of above 70% was determined in the independent variables in their level of influence on crisis management. The research

instrument had high internal consistencies of above 0.60 with most of the variables having above 0.80 in the Factor Analysis. Reliability tests showed Cronbach Alpha levels of above 80% for all variables except for innovation intelligence which was 60%, a still acceptable range which was also supported by the higher than 80% composite reliability in all the variables. The variables had a high discriminant variability as well and thus could explain the harnessing of knowledge to promote creative thinking and innovation intelligence during a crisis. This was also further supported by the above 80% chi square values which indicated that the model explained the afore mentioned relationship.

Table 5.1 Hypotheses discussion

Hypothesis	Explanation	Result
H1	Knowledge management processes have a significant impact on Innovation intelligence.	Accepted
H2	Knowledge management processes have a significant influence on organizational culture COVID 19 crisis perception.	Rejected
H3	Knowledge management has a positive impact on creative thinking.	Accepted
H4	Knowledge management has a positive and significant impact on crisis management.	Accepted
H5	Organizational culture COVID 19 crisis perception has a significant impact on crisis management.	Accepted
H6	H6 Innovation intelligence has a positive significant impact on crisis management.	Accepted
H7	Creative thinking moderates the relationship between knowledge management processes and crisis management.	Accepted
H7b	Innovative intelligence moderates the relationship between knowledge management	Accepted

	processes and crisis management.	
H8a	Creative thinking mediates the relationship between knowledge management processes and crisis management.	Rejected
H8b	Innovative intelligence mediates the relationship between knowledge management processes and crisis management.	Rejected
H8c	Organizational culture Covid 19 crisis intelligence mediates the relationship between knowledge management processes and crisis management.	Rejected

The path analysis determined the relationships between the variables that were meant to also test the hypotheses. A positive and significant relationship was found between knowledge management and creative thinking. This is supported by similar findings established by Bacanli (2011) suggesting that knowledge management fosters flexibility, originality, efficiency and elaboration which are the key elements to developing and promoting creative thinking among hospital employees.

An even stronger and significant relationship was found between knowledge management and innovation intelligence. Such aligns with Kim and Pierce's (2003) suggestions highlighting that knowledge management aids in approaching problems in unique and novel perspectives. However, a negative relationship was found between creative thinking and crisis management. This is possibly because creative thinking also generates bad ideas and can destroy good ideas which are pivotal to acceptable crisis management as noted by Snoijers et al, (2018). This notion was also supported by Zerfass et al. (2017) state that creative thinking can create an atmosphere that is not conducive for encouraging knowledge sharing between experts and therefore, hindering crisis management.

A positive and insignificant relationship was found between knowledge management and organizational culture crisis perceptions. This was in line

with a study by Marynissen et al. (2013) which suggested that knowledge management causes a positive change in employees' perceptions and the attributing of meanings to them that they deem necessary using the knowledge they have and some previous experiences to deal with the COVID 19 pandemic.

In addition, a positive and significant relationship was found between organizational culture COVID 19 perceptions and crisis management. Such is possibly as a result of the emotional, psychological and financial pressure imposed by the COVID 19 pandemic which hinders employees' ability to respond, manage and deal with the COVID 19 crisis. Zerfass et al. (2017) reiterated that an organization's ability to respond, manage and deal with crisis is adversely affected when employees are emotionally and psychologically incapable of handling a crisis like the COVID 19 pandemic.

Surprisingly and in contrast to much of the literature, the results revealed a negative relationship between innovation intelligence and crisis management. This is in contrast to studies by Chernoles and Khudaynazarova (2013) who pointed out that innovation intelligence involves use of mental ability to come up with something new that was not into existence before. This is exactly what is needed to deal with the challenges posed by the COVID 19 pandemic.

In terms of moderating and mediating effects, the study revealed that creative thinking and innovation intelligence had moderating effects on the relationship between knowledge management and crisis management. Even though creative thinking and innovation intelligence showed a negative effect on crisis management, they positively and significantly affect knowledge management therefore their effect on knowledge management are such that they can change the dynamics of the relationship between knowledge management and crisis management. Organizational culture COVID perceptions had a negative but insignificant moderating effect on the relationship between the independent and dependent variable. However, there was no mediating relationship of organizational culture COVID 19 and innovation intelligence on knowledge and crisis management.

The tests on the indirect effects of the other independent variables on knowledge management showed that they do not have a mediating effect. This implies that knowledge management itself has a direct relationship with crisis management. This further emphasizes on the tests to determine the relationship between the two which the theoretical and empirical literature all proved to be positive and significant. Some of the hypotheses were accepted and some of them were rejected.

5.4 Conclusions

The study revealed interesting components about harnessing knowledge management through creative thinking and innovation intelligence in times of a crisis. The study revealed that knowledge management is of vital importance in the managing of a crisis. Creative thinking and innovation intelligence proved to be valuable tools in knowledge management by helping come out with novel ideas and thinking out the box. However, the study also showed that creative thinking and innovation intelligence can have a negative impact on crisis management. This is something worth taking into account when the management encourage creative thinking and innovation intelligence. As other studies pointed out these two variables may create an environment which promotes individualism and discourage the sharing of knowledge amongst the employees.

It is also worth noting that the actions of the leadership and the organizational values and norms have a significant impact on crisis perception which in turn affects crisis management. The tenets of crisis management therefore should also be reflected in the organizational values and the norms of the organization. Characteristics like flexibility and proactiveness can go a long way in ensuring that the organization can swiftly respond to crisis. These traits should therefore be nurtured both in employees and the management. It is easier to impress something upon the workers if it is already embedded in their values.

Knowledge management plays a critical role in crisis management. The study showed that knowledge management processes like knowledge sharing and knowledge creation are used to generate ideas, make use of ideas, collect and build repositories that can be utilized in future and so forth. However, with tacit knowledge being hard to share, there should be incentives and motivation to encourage the tacit knowledge to be turned into explicit knowledge.

The link between knowledge management and crisis management also shows that knowledge repositories come in handy in times of crisis where they are used to provide information and references to past events. This implies that whenever a crisis occurs that impacts the organization, meticulous records of these events and how they were dealt with as well as lessons from them should be kept. Constant reviews can also come in handy in evaluation of the past events. Crisis plans should also be utilized; even though crisis is unpredictable and sometimes no known patterns are revealed; they can still provide a starting point.

This study managed to fill the gap in the literature. The literature has no studies focusing on the relationships between the variables included in this study. As a result all the material pertaining to that as highlighted by the results of this study is new material to the literature.

5.5 Policy Implications

The results of this study showed and emphasized the importance of harnessing knowledge management in managing crisis through creative thinking and innovation intelligence. As a result, the researcher recommends that the health ministry in Northern Iraq take a page out of the measures that have been put in place by other countries to tackle the pandemic. In addition, comprehensive knowledge systems should be encouraged in hospitals and all the health institutions as this is important in providing a database that can be used as reference in crisis and even day to day work. In addition, because creativity and innovation intelligence were found to have negative impact on

crisis management, it is important that collaborations be fostered in order to eliminate the incidence of employees competing for the merit that they were the ones that brought the creative or innovative idea which may be detrimental to managing a crisis. However, both these variables had a positive impact on knowledge management and thus should be embedded in the knowledge management systems of the organizations. The leaders should promote and nurture creative thinking and innovation intelligence to ensure that the organization comes up with a superior knowledge management system.

5.6 Limitations

It is important that when a study is conducted, the researcher outline their limitations as it is from these that future studies can seek to fill gaps. The study was based only on front line workers in one city. In addition, only the quantitative analysis method was used in this study. The researcher used crisis management as the dependent variable. However, because the COVID 19 pandemic is still ongoing at the time of writing, it means the last stage of crisis management which is the aftermath of a crisis is not recorded or dealt with in this study.

5.7 Recommendations for future studies

As things change every few years in the world of social studies, it is necessary to have new studies time and again to determine and make note of ongoing changes to phenomena. Future studies can focus on more than one city for their studies. They can also utilize the qualitative method of data analysis or better yet employ a mixed approach so as to get more in-depth information. In addition, at some point when the pandemic is over future studies can fully incorporate the aspect of crisis management in its entirety in the study.

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LIST OF APPENDICES

APPENDIX I: RESEARCH QUESTIONNAIRE

Dear Respondent

I am a PHD student studying Innovation and Knowledge Management at Near East University, Northern Cyprus. As part of the requirements of my study I am conducting research entitled “Harnessing knowledge management to promote creative thinking and innovation intelligence in times of crisis: a comparative study during Covid 19 pandemic”. This questionnaire is an important survey to assess your opinions about issues surrounding the COVID 19 pandemic perception and management, tacit and explicit knowledge, knowledge culture, creative thinking and innovation intelligence. I would appreciate it if you could be part of my study. Please note that all the information would be treated with utmost confidence and used for academic purposes only. No monetary benefits will be gained from participating in this study. Your participation is voluntary and you can discontinue responding at any given point if you so wish. By virtue of filling in this questionnaire you give your consent to be part of this study. Please read each question carefully and respond honestly.

Thank you

Goran Yousif Ismael

SECTION A

Demographic characteristics

1. Gender

Male ☐ female ☐

2. Age

18-25 ☐ 31-35 ☐ 26-30 ☐ 36-40 ☐ 40+ ☐

Education

High school ☐ diploma ☐ degree ☐ graduate ☐ postgraduate ☐

3. Work Experience

1-3yrs ☐ ☐ 4-6 ☐ 6-9 ☐ 10-14 ☐ 15+

5. Type of hospital

Public ☐ private ☐

SECTION B: VARIABLES

Tacit knowledge measurement

Please take a moment to complete the following form and return it to us. Your input is extremely valuable and will be appreciated. Data from this survey will be used to evaluate the services we provide to you. Thank you for your assistance. Please answer (X) according to the following key:

SA=Strongly Agree A = Agree N = Neutral D = Disagree SD = Strongly Disagree

	SD	D	N	A	SA
6. There is a participative goal setting, measurement and feedback for tacit knowledge					
7. The individuals committed to continual improvement of the tacit knowledge					
8. There is a constant flow\ generation of new tacit knowledge within the organizational context.					
9. The tacit knowledge assets committed for ongoing training and development.					
10. The tacit knowledge assets are evaluated continually					
11. There are specific variables to measure the tacit knowledge in the UNITEN (i.e. Qualification level).					

12. The current tacit knowledge measurements help to determine the medical personnel' roles and responsibilities in the university.					

Tacit Knowledge conversion to explicit knowledge

	SD	D	N	A	SA
13. In our organization, the knowledge of individual is recorded in a structured way, so that others in the organization may be benefited from it.					
14. In our organization the tacit knowledge is converted to standard format					
15. In our organization the knowledge is catalogued for easy retrieval to support the employees' knowledge.					
16. Our organization has processes for integrating knowledge from different resources to support the employee's					
knowledge.					
17. In our organization the knowledge is organized in a useful way to support the employees' knowledge.					
18. Our organization has processes for replacing outdated knowledge.					
19. Our organization has process for filtering (i.e. exciting out only the most useful knowledge).					

Knowledge culture

	SD	D	N	A	SA
20. Recording and sharing knowledge is a routine for all medical personnel					
21. Change is accepted as part of working life					
22. All medical personnel are co-operative and helpful when asked for some information or advice					
23. Knowledge sharing seen as strength and knowledge hoarding as a weakness					
24. There is good intra-team communication and sharing of knowledge					

25. Good knowledge management behaviour like sharing, reusing knowledge is actively promoted on a day-to-day basis.					
26. Bad knowledge management behaviour is actively discouraged.					
27. Individuals are visibly rewarded for knowledge sharing and reuse.					
28. All medical personnel at all levels in the university participate in some kind of a community or communities of practice.					

Creative thinking

	SD	D	N	A	SA
29. While working on a task, I often engage in focused in-depth thought during some phases and more intuitive thinking during others					
30. When working on a task, I like to think both in depth about the details and drift out of focus and let my mind wander (e.g. looking out of the window)					
31. I am good at tasks that require both logic and going with my gut feelings					
32. It seems I go through different phases of thinking through a task and accomplishing it from start to finish					
33. I rely on both careful reasoning and on my intuitive impressions					
34. I rely on both my intuition and logic when making important decisions					
35. I find that at times while working on a task, I think or describe things using analogies or metaphors and at other times I don't use these and take a more realityoriented view					
36. I am good at both figuring things out logically and going with my instincts when deciding on a course of action					
37. I find that I work best on certain problems when I am in a logical mind-set and best on others when my mind-set is less logical (e.g. more infused with emotions, unusual imagery, metaphors etc.)					
38. While working on a task, I go through phases where I do a lot of thinking and other phases where I just sit back and muse over things/take a back seat					

Innovation intelligence

	1	2	3	4	5
Analytical intelligence					
39. I often find it easy to solve problems related to my work position.					
40. I often find it easy to solve problems related to other work positions.					
41. I rely on both my intuition and logic to evaluate the quality of ideas provided by other employees.					
42. I can easily search for the most expedient ways to overcome problems.					
Creative intelligence					
43. I have an ability to see the connections hidden from other people.					
44. I rely on both my intuition and logic to arrive at the correct formulation of problems					
45. I rely on both my intuition and logic to generate productive ideas.					
Practical intelligence					
46. I find it easy to implement innovative ideas at my work place.					
47. I efficiently use practical intelligence ideas in my daily life					
48. I can transform theory into practice and abstract ideas into tangible results.					
49. I can identify ideas with a feasible potential to solve problems.					

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COVID 19 perception

	SD	D	N	A	SA
50. The hospital communicated clearly to ensure that everyone had the information they needed to protect themselves and others from COVID-19, regardless of socioeconomic level, migrant status, ethnicity or language					
51. I trusted the hospital's reports on the spread of the epidemic and the statistics on the number of COVID19 cases and deaths.					
52. The hospital had a strong pandemic preparedness team that included public health and medical experts to manage our national response to the COVID-19 epidemic.					

53. The hospital provided front line workers with access to free, reliable COVID-19 testing if they had symptoms					
54. The hospital made sure we always had full access to the healthcare services we needed during the epidemic					
55. The hospital provided special protections to vulnerable groups at higher risk such as the elderly, the poor, migrants, prisoners and the homeless during the COVID-19 epidemic					
56. The hospital made sure that frontline workers had the personal protective equipment they needed to protect them from COVID-19 at all times.					
57. The hospital provided mental health services to help front line employees suffering from loneliness, depression and anxiety caused by the COVID-19 epidemic.					
58. The hospital cooperated with other countries and international partners such as the World Health Organization (WHO) to fight the COVID-19 pandemic					

Crisis Management

	SD	D	N	A	SA
59. Management were able to identify and predict probable difficulties with the Covid crisis					
60. Management were successful in setting up and developing a COVID 19 crisis committee in executing periodical manouevres and training staff about COVID 19					
61. Management were successful in efficiently planning actions and providing physicians preparedness in the crisis					
62. Management proceeded to automating complex routines/acts					
63. Management paid attention to similar occurences and events in other hospitals in local, national and international levels and use their ideas in time s of COVID 19					
64. Management evaluates personnel safety instructions in responding to the crisis					

65. Information about the crisis is shared by the management to the front line workers					

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ETHICS COMMITEE APPROVAL

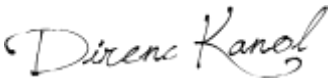
11.11.2020

Dear Goran Yousif Ismael

Your application titled **"Harnessing knowledge management to promote creative thinking and innovation intelligence in times of crisis: a comparative study during Covid 19 pandemic"** with the application number YDÜ/SB/2020/820 has been evaluated by the Scientific Research Ethics Committee and granted approval. You can start your research on the condition that you will abide by the information provided in your application form.

Assoc. Prof. Dr. Direnç Kanol

Rapporteur of the Scientific Research Ethics Committee



Note: If you need to provide an official letter to an institution with the signature of the Head of NEU Scientific Research Ethics Committee, please apply to the secretariat of the ethics committee by showing this document.

HARNESSING KNOWLEDGE MANAGEMENT...

ORİJİNALLİK RAPORU

%11	%9	%2	%1
BENZERLİK ENDEKSİ	İNTERNET KAYNAKLARI	YAYINLAR	ÖĞRENCİ ÖDEVLERİ

BİRİNCİL KAYNAKLAR

1	revistaclinicapsicologica.com İnternet Kaynağı	%8
2	Li-Ren Yang, Jieh-Haur Chen, Hsiao-Wen Wang. "Assessing impacts of information technology on project success through knowledge management practice", Automation in Construction, 2012 Yayın	<%1
3	Afzal Munnaza, Afzal Umair. "Effect of knowledge management practices (KMPs) and the moderating role of interpersonal trust (IPT) on firms performance (FP): A study in software industry of Pakistan", African Journal of Business Management, 2014 Yayın	<%1
4	"Handbook on Knowledge Management 1", Springer Science and Business Media LLC, 2004 Yayın	<%1
5	www.mdpi.com İnternet Kaynağı	<%1