A CRITICAL EVALUATION OF KNOWLEDGE TRANSFER MANAGEMENT IN IMPROVING ORGANISATIONAL EFFECTIVENESS IN MNCs

Case study: Dow Agrosciences

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ABSTRACT

This thesis would be trivial if it did not aim to assist organisations to continuously improve their activities and sustain long-term profitability in today’s competitive market. It reports the development of a knowledge transfer model within MNCs with the major focus on knowledge flow within international Lean and Six Sigma teams. The model highlights the inhibitory and facilitatory factors in knowledge transfer processes.

To remain among the leaders in the market, firms must continuously strive for better performance. This often implies the best management practices such as continuous improvement processes. Lean and Six Sigma are two well-known approaches which are strategically important for businesses. The adoption and deployment of both Lean and Six Sigma, however, cannot be successful without a robust knowledge management structure, especially when deployed in an international dimension where subsidiaries and HQ constantly interact to maintain a high performance level.

For many decades, efforts to develop knowledge management in multinationals have been important. Some of the well-know authors in this field are Davenport and Prusak, Szulanski, Minbaeva, Gupta and Govindarajan, and Holden. Although there have been many attempts to understand the phenomenon of knowledge management in multinationals, there are limited studies reported in the literature regarding knowledge transfer in international Lean and Six Sigma teams within MNCs in the broad triad of developed, underdeveloped and developing countries. Moreover, a number of knowledge transfer models have been proposed and described in many other research studies, but none is fully adaptable to the context of these international teams because of their lack of specificity to this particular field of practice. In fact, besides working within an international team, Lean and Six Sigma project leaders in MNCs are often seen as internal consultants, providing their services to two different categories of individuals: people with basic Lean and Six Sigma knowledge and those with no Lean and Six Sigma knowledge. Hence there is a need for a strong communication system to maintain good information flow and understanding in such international firms.
This research thus investigated the existing phenomenon of knowledge transfer in Lean and Six Sigma teams within MNCs through a single case study carried out in four main regions Asia (Malaysia), Europe (France, Germany, the UK), Latin America (Argentina, Brazil) and the USA. It emphasised evaluating and comparing how (1) Lean and Six Sigma knowledge was developed, transferred and implemented in these different units, and (2) how the team members interacted together in order to successfully deploy Lean and Six Sigma projects internationally. This enabled the researcher to identify and understand the difficulties behind the success of knowledge transfer effectiveness in such teams.

This study was conducted in three phases. In the preliminary phase, the literature review enabled the researcher to identify the gaps and establish the conceptual framework that helped the presentation of the phenomenon. Definitions of knowledge and knowledge management are put forward to highlight the characteristics of these concepts and to show how a good understanding of the complexity of ‘knowledge’ itself can improve knowledge absorption. An evaluation of the development of Lean and Six Sigma methodologies in MNCs was conducted.

Secondly, the framework guided the researcher through interviews with Lean and Six Sigma experts and document analysis which resulted in a selection of frameworks. Finally, the resulting insights from the data analysis using expert knowledge, understanding, interpretation and experience enabled the refinement and validation of the proposed conceptual framework. A final model was then recommended to help Lean and Six Sigma project leaders and managers to effectively communicate and internalise, implement and innovate knowledge within their area of practice.

This model contributes to knowledge in the area of international business, management practices and knowledge management within MNCs by incorporating new factors that affect knowledge transfer processes. To begin with, it suggests ensuring a balance between subsidiary autonomy and HQ–subsidiary networking for effective communication flow while investing more time in developing trust and understanding culture since cross-cultural differences appeared also to be seen as a positive asset for organisations, offering new opportunities for learning new ways of doing things and thus leading to innovation. Secondly, it proposes reinforcing the relationship base (common interest, individual commitment, trust, credibility and respect) in teams for better
interaction, decision-making and change management. Thirdly, it emphasises training for knowledge development and internalisation, mentoring and coaching, and IT compatibility for ‘knowledge leveraging’. Knowledge transmission channels such as IT compatibility systems and mentoring and coaching enabled non-duplication of a piece of knowledge in the sense that it minimises the reinvention of knowledge that already exists elsewhere in the network.

This thesis provides a constructive basis for further research within the field of both knowledge management and continuous improvement methodologies (Lean and Six Sigma) within MNCs and the researcher’s goal is to expand its analytical generalisation. Although DAS was specifically using Lean and Six Sigma as continuous improvement methodologies, the company was the most appropriate case for this study as it has shown remarkable results in the deployment of continuous improvement methodologies (Lean Six Sigma). This success is mainly due to their capacity in improving organisational effectiveness by expanding knowledge transfer within their MNC through networking in international teams and geographically dispersed units. Besides, they have a strong organisational culture which they try to align with other unit’s cultures. Other MNCs using continuous improvement teams can thus draw on this example to improve their organisational effectiveness.
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<th>Abbreviation</th>
<th>Meaning</th>
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<tr>
<td>BB</td>
<td>Black Belt</td>
</tr>
<tr>
<td>CMC</td>
<td>Corporate Manager Committee</td>
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<tr>
<td>CSFs</td>
<td>Critical success factors</td>
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<tr>
<td>DFSS</td>
<td>Design For Six Sigma</td>
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<tr>
<td>DMAIC</td>
<td>Define Measure Analyse Improve Control</td>
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<tr>
<td>EU</td>
<td>Europe</td>
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<td>GB</td>
<td>Green Belt Project Leader</td>
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<td>HQ</td>
<td>Headquarters</td>
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<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
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<td>LA</td>
<td>Latin America</td>
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<tr>
<td>MBB</td>
<td>Master Black Belt</td>
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<tr>
<td>M&amp;E</td>
<td>Manufacturing and engineering</td>
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<td>MNCs</td>
<td>Multinational Corporations</td>
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<td>M&amp;S</td>
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<td>KM</td>
<td>Knowledge Management</td>
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<td>KT</td>
<td>Knowledge Transfer</td>
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<td>LSS</td>
<td>Lean and Six Sigma</td>
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<tr>
<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>R&amp;D</td>
<td>Research and Development</td>
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<tr>
<td>SME</td>
<td>Subject Matter Experts</td>
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<tr>
<td>SS</td>
<td>Six Sigma</td>
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<tr>
<td>US</td>
<td>United States of America</td>
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<tr>
<td>VSM</td>
<td>Value Stream Mapping</td>
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<td>WIP</td>
<td>Work In Process</td>
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CHAPTER 1 INTRODUCTION

This chapter gives an overview of the research. In the first section the background and the importance of this study are introduced. In the second, the research problem is identified. In the third, the research aims, questions and objectives are described. In the fourth, the scope of the research is presented. A description of the case study and the structure of the thesis are outlined in the fifth and final section.

1.1 Background

In recent years, economic activity has increased and globalisation has developed significantly, with multinational companies (MNCs) being the key drivers of globalisation, since they promote increased economic interdependence among national markets (Rugman and Verbeke, 2004). While globalisation offers the possibility of considerably increased economic growth rates, at the same time, it can expose organisations and economies to new and potentially threatening challenges. Companies, eager to become more competitive, frequently rush into expanding their activities abroad without fully realising what this requires in terms of optimising international business strategies, knowledge management and management practices in every unit of their organisation. In developing countries in particular, where the industrialisation process has its foundations in MNCs, a dynamic globalisation implies a profound change in the models of operations management adopted by every organisation, particularly MNCs, which are the main drivers of that process (Fleury, 1999). In other words, investing in new markets will also involve rethinking management practices, using better ways of transferring knowledge and implementing continuous improvement methodologies such as Lean and Six Sigma (two concepts which will be discussed in Chapter 2) across units. Besides this, the influence of the psychic distance (geographical distance, cultural differences, language, time differences etc.) between subsidiaries should not be underestimated. This research therefore focuses on 3 key elements: continuous improvement teams, MNCs and the notion of knowledge management together with the various knowledge terms.
Generally seen as consultants, Lean and Six Sigma projects leaders are often called to deal with colleagues with no or basic Lean and Six Sigma knowledge, where the need to manage knowledge transfer in order to achieve a successful deployment. This management may be even more complex when it is been executed in big international entities such as MNCs as they are subjected to the psychic distance. It is imperative for the researcher to determine a working definition of knowledge management for this study. Knowledge management is a broad concept that has been discussed by various researchers who have given countless definitions. For the purpose of this study, however, the researcher’s working definition is a combination of the following key elements, highlighted by the knowledge management gurus Eyler (2001), Miller (2002), Drucker (1969), Pedersen and Larsen (2001) and Wilson (2002):

*Knowledge management is a discipline that promotes an integrated approach to the creation, capture, organisation, access, and use of an enterprise’s information assets. These assets include structured databases, textual information such as policy and procedure documents, and most importantly, the tacit knowledge and expertise resident*
in the heads of individual employees (Eyler, 2001). Knowledge is then the uniquely human capability of making meaning from information and ideally in relationships with other human beings (Miller, 2002), it is between two ears, and only between two ears (Drucker, 1969), within a network and each player in the network acquires specific knowledge from other players for decision support (Pedersen and Larsen, 2001). The learning process determines how individuals and organisations create, acquire, interpret, transfer, and retain knowledge (Wilson, 2002).

Based on these definitions, the researcher will ascertain her research scope and will gradually monitor the progress of this study throughout the research journey.

Michailova and Minbaeva (2012, p. 59) note that ‘the MNC’s very existence is closely related to its ability to take advantage of differences in knowledge and expertise around the world in terms of exploiting existing repositories of knowledge and combining them to create new knowledge.’ In fact, effective knowledge transfer is vital for those big firms (McGuinness, Demirbag and Bandara, 2013). There is an agreement that knowledge transfer is complex and intrinsically problematic, either across firms (Easterby-Smith, Lyles and Tsang, 2008), within regional clusters in a specific geographic location (Tallman, Jenkins and Pinch, 2004) or between subsidiaries within an MNC (Szulanski, 1996). Becoming international is, therefore, not as easy as it might appear. In fact, it is a difficult task that involves a number of interdependent technologies, cultures, routines, individuals and resources linked together. For corporations operating in the broad triad of developed, developing and underdeveloped countries, this is even more challenging. Consider this observation made by Haghirian (2011): in units that are more geographically distant from their parent companies, and which therefore, in most cases, have a high level of cultural differences, the problem of knowledge transfer is the key challenge in communicating sometimes even the simplest of messages. He notes that: ‘Individuals managing knowledge may lack the skills or qualifications to properly process the knowledge they receive. They may not use and apply the knowledge in a way the sender intended, or they may interpret it individually and reuse and apply it in a completely new way’ (Haghirian, 2011, p. xvi). This might be really critical for the organisation. Interestingly, no matter how much effort these international firms put into knowledge management, individuals do not transmit, absorb and use more than half of the knowledge available internally (Bullinger, Worner and Prieto, 1998).
1.2 Problem statement

As globalisation continues, speed in sharing knowledge and information globally becomes a major issue (Haghirian, 2011). MNCs have used different approaches such as Six Sigma, Lean, TQM, Balanced Scorecard etc., to measure, improve and compare the performance of their different units. Bhuiyan and Bagel (2005) define continuous improvement methodologies as a culture of sustained improvement targeting the elimination of waste in all systems and processes of an organisation. It involves everyone working together as a team to make improvements without necessarily making huge capital investments. While Lean is a methodology which was innovated by Toyota, with the aim of increasing production efficiency by cutting non added-value activities in a process (Ohno, 1988; Womack and Jones, 1996), Six Sigma is a discipline that derived from Motorola, the goal being to continuously reduce variations in a process by identifying defects and implementing solutions to reduce cost and improve quality (Linderman et al., 2003). There are some reasons why continuous improvement methodologies such as Lean and Six Sigma may fail within an organisation. Deployments of Lean and Six Sigma could partly be unsuccessful because of key knowledge management concepts. They note that this methodology involves individuals working together and hence sharing information and knowledge. Lean and Six Sigma teams especially are generally structured within a department, a unit and more importantly internationally, thus they might not share the same context and can be separated by psychic distance.

Making personal knowledge available to others is a central activity of the MNCs. It is a continuous process that takes place at all levels of the organisation as a whole (Nanaka, 1998). In fact, effective knowledge transfer is more multifaceted than we may think. It is not only the movement of useful knowledge from one location to another. The fact is, as intangible as knowledge can be, its transfer should assist with collaborative problem solving between people, directly or indirectly, supported by networks and tools (Riege, 2007). Knowledge is then an important asset in organisations, as for many decades it has often been considered as power (Ordonez de Pablos, 2004), especially that tacit knowledge which is embedded in its owner’s personal experience and thus can be associated with intellectual ownership (further discussions on different types of knowledge will follow in Chapter 2). However, the transfer of knowledge
between subsidiaries and people can create important learning benefits and competitive advantages for MNCs.

The use of these continuous improvement methods often reveals surprising performance differences when comparing the subsidiaries, indicating the need to improve internal and external knowledge utilisation and transfer within MNCs. The internal knowledge transfer presents even more obstacles in the process as it is often subject to confidentiality and legal complications. MNCs can innovate knowledge in one area and exploit it in other areas, which imply frequent transmission of knowledge by MNCs. Thus, to maintain their competitive advantage, MNCs depend mainly on their ability to ease and control inter-unit transfer of knowledge (Lee and Wu, 2010). The big question of this research resides on how knowledge is effectively transferred in Lean and Six Sigma teams within such huge entities among the broad triad of developed, developing and underdeveloped countries. The fact that international organisations subsist principally thanks to their superior capacity in markets to engage in internal knowledge transfer does not in any way imply that knowledge is actually effectively and efficiently transferred on a routine basis (Gupta and Govindarajan, 2000). The knowledge transfer process is vital for MNCs but can present a serious threat for their success when there is no efficient flow. A structured management of the knowledge transfer process requires an understanding of the factors that affect knowledge transfer and their interactions, and also the operational constraints that limit their improvement. There is, therefore, a need to identify and understand those factors that could facilitate or inhibit an excellent knowledge transfer process in Lean and Six Sigma teams within MNCs.

According to Li and Hsieh (2009) knowledge transferred within an MNC is even more complex when transferred within a domestic context. In fact, a unit’s capability to transfer knowledge internally is essential for its aptitude to build competitive advantage through the acquisition of scarce internal knowledge. Thus an organisation’s distinctive competencies may be difficult for other companies to duplicate; its best practices could be difficult to replicate internally (Szulanski, 1996). The fact is, organisations vary in their information and knowledge and when these distinctions are economically interesting, they have continuous consequences on performance. Hence the main difficulty is the transfer and reproduction of these capabilities (Kogut and Zander, 1992). Yet experience shows that transferring capabilities within an
international firm is far from easy (Szulanski, 1996) due to barriers such as expertise identification, cultural differences, organisational distance, confidentiality and many others. Knowledge management has become a critical competitive weapon. Lee and Wu (2010) agree with Szulanski (1996) and urge that the ability to transfer knowledge internally is one of the main competitive advantages of MNCs. MNCs can be innovative and come up with new ideas. However, the transfer of knowledge across units is still one of the biggest challenges for them, even though globalisation has created local knowledge with potential for utilisation elsewhere, and information technology has given individuals increasingly differentiated knowledge (Lee and Wu, 2010). Developing strategies for better utilisation and transfer of knowledge within a firm’s network, especially in Lean and Six Sigma teams, is the key element of this research.

1.3 Research aims, questions and objectives

1.3.1 Aims

The motive behind this research is to fill the gap in the area of knowledge management within international Lean and Six Sigma teams with particular reference to knowledge transfer between foreign subsidiaries and HQ of the MNCs. This study seeks to examine the transfer of Lean and Six Sigma know-how and the knowledge transfer process in continuous improvement methodologies teams (Lean and Six Sigma) within multinationals, in order to identify the factors that inhibit or facilitate knowledge transfer in such teams within such large international entities.

In current research – discussed in depth in Part I in the literature review which follows – there is no indication of the existence of a knowledge transfer framework in multinationals with particular interest in Lean and Six Sigma teams operating in the broad geographical context of developing, developed and underdeveloped countries, and the transfer of continuous improvement methodologies know-how itself in such a context. To fill this gap, this study aims to develop a model of knowledge transfer within MNCs that highlights the inhibitors and the facilitators of the knowledge transfer processes, with the major focus on knowledge flow in international Lean and Six Sigma teams. The practical importance of understanding these factors will help senior and middle managers in MNCs using Lean and Six Sigma disciplines to devise
strategies to address their knowledge transfer problems. This framework will be used as groundwork to generate propositions which will be subsequently verified through the analysis of semi-structured interviews and documentation.

1.3.2 Research questions

The researcher is looking at:

- Lean and Six Sigma know-how flow between HQ and subsidiaries;
- Knowledge flow between Lean and Six Sigma teams members within MNCs.

The researcher devised the following research questions:

RQ1: How are the internalisation, the implementation and the innovation processes of Lean and Six Sigma know-how conducted between the HQ and the subsidiaries? Does it differ from one unit to another?

RQ2: What influences the communication flow in inter-unit relationships?

RQ3: Is the knowledge transfer process between two different cultures less successful than knowledge transfer within one culture or similar cultures?

RQ4: What are the challenges faced by the HQ and the subsidiaries during knowledge transfer processes within the international teams among the broad triad of developed, developing and underdeveloped countries?

RQ5: What are the inhibitor and facilitator factors of knowledge transfer processes within MNCs?

In order to address these research questions, five objectives have been established.
1.3.3 Objectives

To:

1. Critically review the existing literature on the characteristics of knowledge transfer, Lean and Six Sigma know-how transfer and the relationship between the subsidiaries and the parent company within MNCs.

2. Describe and explain the importance of the knowledge transfer process between HQ and subsidiaries located in different environments.

3. Analyse, evaluate and compare Lean and Six Sigma know-how internalisation, implementation and innovation within the MNC.

4. Identify the challenges faced by both subsidiaries and HQ during the knowledge transfer process and classify the facilitators and inhibitors of a successful Lean and Six Sigma know-how transfer within MNCs.

5. Develop a framework of a successful flow of Lean and Six Sigma know-how transfer within MNCs.

1.4 Scope of the research

This research focused on a review of continuous improvement methodologies, specifically Lean and Six Sigma know-how transfer and knowledge transfer in the respective teams within MNCs. The literature will then include a description of that knowledge concept with key practices of the internalisation, implementation and innovation in different subsidiaries of MNCs. Lean and especially Six Sigma originated as western concepts; many western MNCs are beginning to internalise that knowledge in their foreign subsidiaries. There are two main streams here: Lean and Six Sigma team members have to generate innovative solutions to eliminate defects, solve problems and improve organisational performance. It is therefore important to understand not only the implications of psychic distance on the effectiveness of these methodologies during the implementation process, but also to understand and evaluate the knowledge transfer management
process in the teams across different units across the world (HQ and subsidiaries). Thus, by identifying the inhibiting and facilitating factors of this process, the researcher intends to develop a model of the knowledge transfer process in Lean and Six Sigma teams in MNCs. The researcher developed this model using a single MNC with multiple subsidiaries in different geographic areas and consisting of a variety of cultures and associated components as a case study (Welch and Welch, 2006).

The scope and focus of this research is as follows:

- Knowledge transfer internalisation, implementation and innovation. It is crucial to understand how Lean and Six Sigma know-how is shared within the MNC and its effect on knowledge transfer effectiveness and thus organisational performance. In this study, Lean or Six Sigma know-how characteristics are described. The internalisation process of this particular know-how is evaluated in order to understand the impact on knowledge transfer effectiveness.

- Secondly, because the members in the teams have to devise solutions and ideas to eliminate defects in their processes, they have to discuss the problems and thus share information with both Lean and Six Sigma experts and non-experts. It is therefore important to identify the different types of knowledge involved in Lean or Six Sigma teams and how best they implement and create knowledge. Again, the researcher looks at the knowledge flow and how the types of knowledge are converted in the process of sharing.

- As well as in a communication process, in a knowledge transfer process there is a source, a recipient and the message (information/knowledge) leaving from the source to get to the recipient using transmission channels. The literature highlights four groups of determinants: (1) the characteristics of knowledge; (2) the characteristics of knowledge senders (disseminative capacity); (3) the characteristics of knowledge receivers (absorptive capacity); and (4) the characteristics of the relationships between senders and receivers. A thorough understanding of how knowledge is sent, perceived and interpreted by both the sender and the receiver unit is important. Therefore it is necessary to understand and describe all those characteristics above.
Furthermore the researcher plans to analyse the impact of cultural and organisational distances on knowledge transfer in Lean and Six Sigma teams within MNCs.

Thus, by identifying the inhibiting and facilitating factors of knowledge transfer within MNCs, the researcher intends to develop a model of a successful flow of knowledge in the particular context of continuous improvement methodologies teams in multinationals. It is intended that this model will support senior managers (Champions and Master Black Belts) in developing strategies on how best to tackle knowledge sharing, maximise Lean and Six Sigma deployment and overcome any resistance to change in the firm.

1.5 Description of the case study and structure of the thesis

1.5.1 Description of the case study

The case study here is a single MNC. The researcher will generate an intensive examination of this case in relation to which a theoretical analysis will be engaged. To illustrate the propositions of this research, one MNC was chosen as the case study. The selection of that case was not arbitrary. Dow AgroSciences’s Lean and Six Sigma deployment focuses on improving organisational effectiveness and the knowledge management strategy lies in expanding Lean and Six Sigma know-how within the organisation and the effective use of tools and resources available for successful knowledge sharing in teams. Moreover, the company has a strong organisational culture that it aims to align with different cultures globally, by leveraging learning through adaptation of the parent company’s expertise to foreign subsidiaries. This makes it a most appropriate case, as it will enable the researcher to identify some strategies that other firms may not be able to provide (Siggelkow, 2007).

1.5.2 Structure of the thesis

This thesis is divided into seven chapters as follow:
Chapter 1 provides an overview of the research. It introduces the reader to the background, scope and problem statement; to the aims, research questions and objectives; and finally to a description of the case study.

Part I reviews the literature on knowledge transfer processes. This includes:
- Chapter 2 – Lean and Six Sigma know-how deployment and the type of knowledge involved in teams;
- Chapter 3 – knowledge transfer process components in Lean and Six Sigma teams within MNCs;
- Chapter 4 – MNC’s conceptualisation and the impact of inter-unit relationships on knowledge transfer process in Lean and Six Sigma teams.

Part II covers the research methodology, the findings and discussion consisting of the following:
- Chapter 5 is a presentation of the first framework of knowledge transfer in Lean and Six Sigma teams in MNCs and the generated propositions. The aim is to provide the theoretical background of this study.
- Chapter 6 describes the research design and the methodology adopted in order to achieve the aims and objectives. The philosophical assumption is discussed and justifies the chosen research approach as well as the data collection method and the data analysis method using Nvivo 10. The background of and general information on the case study company are provided.
- Chapter 7 reports the findings and discussions of the qualitative data analysis and refines and validates the framework employing expert critical comments.

Chapter 8 summarises the research and the contribution to the field of knowledge transfer. Some limitations are addressed as well as some suggestions for further research.
A Critical Evaluation of Knowledge Transfer Management in Improving Organisational Effectiveness within MNCs

Chapter 1 Introduction

Part I

Chapter 2: Lean and Six Sigma Know-how Deployment and the Different Knowledge Variations Involved in Teams’ Communications

Chapter 3 MNC’s Conceptualisation and Knowledge Transfer Process Components in Lean and Six Sigma Teams within MNCs

Chapter 4 Inter-unit Relationship in Knowledge Transfer Process in Lean and Six Sigma Teams within MNCs Operating in the Triad and the Influence of Psychic Distance

Part II

Chapter 5 Model of Knowledge Transfer in Lean and Six Sigma Teams within MNCs and the Generated Propositions

Chapter 6 Research Methodology

Chapter 7 Findings and Discussions

Chapter 8 Conclusion, Limitations, and Managerial Contributions
A Critical Evaluation of Knowledge Transfer Management in Improving Organisational Effectiveness within MNCs

PART I LITERATURE REVIEW

Part I

Chapter 2: Lean and Six Sigma Know-how Deployment and the Different Knowledge Variations Involved in Teams’ Communications

Chapter 3 MNC’s Conceptualisation and Knowledge Transfer Process Components in Lean and Six Sigma Teams within MNCs

Chapter 4 Inter-unit Relationship in Knowledge Transfer Process in Lean and Six Sigma Teams within MNCs Operating in the Triad and the Influence of Psychic Distance
CHAPTER 2 LEAN AND SIX SIGMA KNOW-HOW DEPLOYMENT AND THE DIFFERENT KNOWLEDGE VARIATIONS INVOLVED IN TEAM’S COMMUNICATIONS

2.1 Introduction

This chapter reviews the relevant literature which analyses and describes Lean and Six Sigma know-how and the types of knowledge involved in Lean and Six Sigma teams.

Knowledge has often been referred to as power, characterising any owner of knowledge in a powerful position. Nowadays in the world of business where globalisation increases competition, knowledge has become indeed an essential strength. Organisational knowledge is therefore not only the one true sustainable source of competitive advantage, but also an asset for survival for an organisation. This was confirmed by Ordonez de Pablos (2004) who describes it as a “source of long-term competitive advantage, due to its characteristics: causal ambiguity, social complexity, organisational path dependence, time compression diseconomies and idiosyncratic value” (Ordonez de Pablos, 2004, p. 105). There is therefore a need for international firms to come out with strategies on how best to share these intangible resources that add so much value to products and services. Indeed a smart and successful organisation will be that one which continuously makes efficient and effective management of knowledge which its individual workers possess. Any employee, even at the lowest hierarchy of an organisation, has got with him the intellectual baggage that the firm requires and represents for it a unique patrimony. This has been confirmed by Davenport and Prusak (1998) who urge that organisational and individual knowledge is at the centre of how the organisation operates. Further, they explain that knowledge itself is worthy of attention as it reveals to organisations how to do things and how they may improve the way they do them, even though the knowledge movement will without doubt show some obstacles. The discipline of knowledge management is a robust set of management processes; it is the planning, motivating, and controlling of people that enables the good use of knowledge to create and add value to the organisation.
In this part of the study, the author emphasises first on Lean and Six Sigma know-how methodologies and their implementation process, the basis of knowledge and the types of knowledge involved in the transfer process and finally, the internalisation process of knowledge in Lean and Six Sigma teams.

### 2.2 Lean and Six Sigma Know-how: myths and realities

For many decades organisations have been striving between achieving policies outcomes and customer satisfaction. Some organisations have embraced a wide range of process improvement methodologies to achieve continuous improvement and thus operational excellence. However the benefits are showing less than expected. Why is this phenomenon happening? Most studies have been done in the field of quality improvement processes built on the work of ‘gurus’ such as Deming, Ohno, Shingo, Shewhart and Taylor in the manufacturing organisations such as Motorola, Toyota and General Electric. Recently, with today’s increasingly competitive market there have been efforts to promote Lean and Six Sigma. Organisations are trying to respond and adapt quickly to the needs of their different customers. Today’s customers have different requirements, tastes, and desires, and they expect a higher quality of products or services and also expect to have more effective access to these products and services. To fight for their business excellence organisations will not hesitate to turn to statistical techniques for quality control and continuous improvement. However to be applied efficiently, methodologies such as Lean and Six Sigma must not only focus on quality improvement but should also be integrated in the management system which must direct the overall quality improvement of an organisation (Montgomery, 2010). So Lean and Six Sigma deployment demands a mix of people and processes. So is it truly achievable? And at an international dimension? The difference in management styles and so many other obstacles may result in a failure of some deployments, it is thus imperative to also recognise the social aspect while focusing on improving the level of performance (Moosa & Sajid, 2010).

Many authors have discussed the strengths, weaknesses, opportunities and threats of these methodologies. Some of them see these strategies as standardised with good computers packages compatibility for analysis. For Professor S.K. Neogy (in Antony, 2012) it combines the right
people, right tools and the right projects for its success. However, although advanced
technologies and systems greatly enhance the use and analysis of data, the internalisation of Lean
and Six Sigma culture in corporations demands a change of mindset for employees and therefore
the top management and stakeholders must be committed in long term and set a clear vision for
the business (Antony, 2012).

Beside the fact that they can be applicable in all kind of industries and processes, one of the
biggest differences in Lean and Six Sigma deployment between underdeveloped and developed
countries may lie on the use of systematic approach in any action they take. According to Moosa
& Sajid, (2010, p. 748), “The concept of ‘systems’ is practically very weak in most of the
underdeveloped countries. Application of systems approach in a country is what makes her a
developed country. We commonly observe violation of systems as a way of life in
underdeveloped or developing countries. This difference usually strikes people from
underdeveloped countries when they visit developed countries, where usually ‘systems’ are a
way of life. Systems are mainly the routines being followed by people in general; where
reminders are not required and the honesty of commitment is never questioned.” However, Six
Sigma for instance is a systematic quantitative approach which takes its roots in mathematics
and statistics. Hence to achieve successful development and deployment in any organisation it
will not only require people to be trained on how to use their skills and resources systematically
on selected activities but also to develop their readiness to change.

Although Lean and Six Sigma have shown their efficacity in many companies, it has been
criticised by others as a ‘management fad’ or as a ‘fashion’ that attract companies with great
excitement who will stop to adopt it over a brief period of time when the benefits they hoped for
will fail to materialise (Swinney, 2010). Nowadays, for most companies, time is a rare resource;
they do not have time to wait for Six Sigma initiatives to materialise. If it takes too long, to
realise the tangible benefits, they will hold on to the initiative (Maneesh, et al., 2008). On the
contrary, Raje, (2009) suggest that Lean and Six Sigma can only be successful if sustained over a
long period of time. As continuous improvement methodologies, it takes time for the initiatives
to grow, to mature, and to realise tangible benefits. Another myth of Six Sigma is that it is
considered as a methodology that is too statistical which focuses on the use of tools and
techniques while ignoring the human factor. Some industries are reluctant to adopt it because it
requires tangibles facts, and believe it is adapted only to manufacturing companies. However, Six Sigma is not only about statistics, rather, it is based on ‘statistical thinking’ which provides the practitioner with “a philosophy of action and learning based on process, variation and data” (Maneesh, et al., 2008, p. 882). Others see it as not-cost effective because it demands huge investment on infrastructures and training with meagre return investment (Senapati, 2004), though, Lee-Mortimer, (2006), believe that it is a ‘weapon’ for business successes and performance improvement which assist organisations to deliver customer value, profitability and huge cost savings. It has been more than 20 years since the innovation of Six Sigma in Motorola, and for Montgomery, (2005) it makes no doubt that “Six Sigma has been very successful—perhaps the most successful business improvement strategy of the last 50 years”. (see Section 2.2.3.2 Critical success factors for Lean and Six Sigma implementation).

2.2.1 Theoretical principles of Lean

Lean is a continuous improvement methodology, commonly used in manufacturing that seeks to improve speed by continuous elimination of non-added value activities from a process in order to improve its efficiency. Lean methodology was innovated in Toyota Production System by Taiichi Ohno. Initially, Ohno (1988) stressed the fact that there is a connection between performance improvement and waste removal by affirming that: “the most important objective of the Toyota system has been to increase production efficiency by consistently and thoroughly eliminating waste.” The elimination of waste was clearly identified as one of the key factors for the production and supply chain management. In fact, Lean principal aim is the identification of the ‘waste’ and or ‘activities with no added values’ from the customer’s perspective. Interestingly, Womack and Jones (1996) support this proposition when they urge that Lean is a manufacturing practice whose goal is the creation of value for the end customer, and thus has to constantly target and eliminate waste. Working from the customer point of view who is the end user of a product or service, value is described as ‘any action or process that a customer would be willing to pay for’. Simply, the philosophy aim is to generate that value for the customer while minimising waste. They further stress the fact that the methodology presents the benefit to improve quality while reducing cost and saving time (Womack and Jones 1996).
Going along with Womack and Jones (1996)’s view, McCarron (2006) will argue that Lean discipline also emphasises on systems delivering the exact product that the customer requested while investing less resources and eliminating wastes. The target in Lean is then to try to eliminate or to reduce these wastes with the help of tools specially associated with the methodology. It is necessary to understand that ‘waste’ here means all the activities which the customer does not wish to pay for and which bring no additional added value to the product or to the service. In fact Lean helps to improve a system by promoting managerial interest in information flow processes, mainly where information flows without restraint and where blockage may occur. This allows organisations to concentrate their improvement techniques on those critical parts which will then advance the whole process and avoid unexpected changes. In any organisation adopting Lean, the main idea is to maximise customer value, at the same time as minimising waste. In other words, Lean aims for generating more value for customers with less investment. When Lean is implemented in a process, the organisation priority is to focus on the understanding of the voice of the customer and the different processes involved to constantly enhancing it. The final objective is to offer the exact product or service to the client through a faultless process which presents zero waste. To accomplish this, there must be some critical foundations. Womack and Jones (2003) argue that if organisations think Lean, it enables them to “specify value, line up value-creating actions in the best sequence, conduct these activities without interruption whenever someone requests them, and perform them more and more effectively.” From this statement they classify five distinct Lean’s principles and emphasise that any firm adopting Lean will resolve issues by applying these principles: value, value stream, flow, pull and perfection. Also the organisation must have a good understanding of the waste and value in its work environment.

The concept of Lean is quite simple, in that the firm must be strongly engaged on the most effective mean to generate value for their customers. As discussed by McCarron (2006), “an organisation using Lean will approach this challenge by: applying 5 basic Lean principles; focusing on understanding waste and value in its work and; training staff who perform and manage the work to act as improvement teams to bring about change”. Womack and Jones, (1996) presented the five Lean principles and goals.
2.2.1.1 Value

Value is a significant preliminary point for Lean discipline. Hence, it is important to identify customers and indicate value. Womack and Jones, (1996) define it as a “capability provided to customer at the right time at an appropriate price, as defined in each case by the customer”. Simply it is about meeting the precise product from the customer’s ultimate point of view. The aim is also to make sure that the time and effort invested by the organisation definitely adds value to the end customer by meeting the customer’s need, targeting and removing all non-value added activities.

2.2.1.2 Value stream (VSM)

To identify the waste in order to create value, a Lean project generates value stream mapping. The value stream is presented by Womack and Jones (1996) as the collection of all activities, processes that are necessary to design, order, produce and deliver a product or service. The process may start from the suppliers of raw materials to the hands of the end user. This will be confirmed by Georges (2003) who claims that the ‘value-stream’ mapping is a visual illustration of all the different steps and actions within a process and put into written forms. In other words the VSM, describes each step in the production process of a product or service, from the suppliers through the production and distribution to the end user. It also identifies the current position of a product in the process and helps to spot the value and non-value added activities. While a value-added activity is that one which directly contributes the customer’s requirement, a non-value added activity or “Muda” (meaning waste in Japanese) is that one which does not contributes to the customer’s perception of value. Customers are hence an important source of knowledge. Here is a brief description of these activities:

- **Value-Added activities**: or customer value-adding, it must be constantly improved. Those activities that unambiguously create value.

- **Non value-Added activities or waste (Muda)**

We observe two type of waste:
o **Type One Muda**: steps that do not create value to the customer and may not be avoidable when using current IT and production systems

o **Type Two Muda**: Activities that add no value to the customer and are unnecessary and wasteful and which are immediately avoidable.

The literature highlights eight wastes (Womack and Jones, 1996; Georges, 2003) which are: over processing, transportation, motion, waiting time, inventory, defects, overproduction, and unused human resources. The identification and elimination of waste has been one of the organisational objectives for many decades. Lean provides innovative approaches to recognise and eliminate waste which improve processes flow. Once the organisation knows its customers’ needs, the next step is to identify how the firm is delivering (or not) that to them.

### 2.2.1.3 The process flow

In a Lean organisation, there should be a constant improvement of the flow. Any work in process should flow easily without interruption of value-adding activities. However in the ‘batch and queue’ model of production, the production is completed in lots of various sizes, and the lots are processed along en mass to the next step where they queue in line waiting to be worked on (work in process). Therefore it is critical to eliminate waste and create a smooth flow after the value-mapping because it guarantees that the product or the service will reach the end user without any disruption, deviation or delay. The Lean community rail against that model and promote the virtues of ‘single piece flow’. Womack and Jones (1996) supports this and urge that Lean flow has been presented as a “progressive achievement of tasks along the value stream so that a product proceeds from design to launch, order to delivery and raw materials into the hands of the customer with no stoppages, scrap or backflows”. This implies a recommendation to dispose of the old way of doing which involved batching and queuing in the process.

### 2.2.1.4 Pull system

The organisation should respond to customer demand. It is called pull system. In most organisations that do not adopt Lean thinking, production is usually pushed through the system based on forecast, regardless of the requirements for that product, meaning that some unneeded outputs are produced; therefore, the firm produces products or services which customers do not
require McCarron (2006). In this case we talk about make-to-stock. The inconvenience of this system is the over production because, manufacturers might end up with big inventories at the end of the process with no actual demand on the market. In fact, while VSM is the main tool used in Lean to eliminate waste and therefore improve the process speed, a pull system is then one in which a process is created in order to respond to the real customer demand. Strategically it is a ‘make-to-order’ This is then about identifying the real demand in such a way that the organisation will produce only what the customer wants, when and where the customer wants it. Therefore, the manufacturer will not produce anything unless the customer demands it and this will help the system to progress with no or limited work in process or low inventory turns.

To sum up, Hopp and Spearman (2004) who made further studies on the concept of Pull and push systems in manufacturing and service industries will state that a pull production system will eliminate waste by limiting the number of activities in the process within the system, what a push system may not explicitly do.

2.2.1.5 Perfection

Creating flow and adopting the pull system are crucial to start with as things will become clearer in the process and waste even more visible and easier to remove. Womack and Jones (1996) perceive ‘perfection’ as the “complete elimination of Muda so that all activities along a value stream create value.” When all principles have been applied, it is essential to understand the process even better in order to produce more facts for improvement for this truly achievable goal.

So what is a perfect process?

- It is one that delivers the right product or service to the customer. No more, no less.
- A perfect process involves added-value activities, it enhances desired production, meeting customers ‘need and improving customers’ satisfaction. It is flexible and there is an observation of continuous flow.

Simply, a perfect process should meet all these previous requirements, otherwise it will fail to eliminate some waste or, even worse, some waste will be produced.
2.2.2 Theoretical principles of Six Sigma

This methodology has attracted a lot of attention and many publications have been produced. However, there have been similar definitions of Six Sigma, hence, highlighting relevant aspects. According to Hayler and Nichols (2007) Six Sigma was innovated around 1980 at the Motorola company in the US. The concept behind Six Sigma is built on the foundational ideas of Shewhart (1920’s) and Deming (1986) work and the Total Quality Management. Nowadays, because of its remarkable success in the industry, Six Sigma has engendered additional methodologies such as Lean Six Sigma. For Harry and Schroeder, (2000), the goal of the practice was then to improve the company performance by analysing variations in its processes. Since then Six Sigma has evolved and has been used by various industrial sectors and nowadays this methodology is now utilised in other industries such as health care industry (Taner, et al., 2007). In addition to this historical perspective, the increasing complaints related to defects in Motorola manufacturing encouraged the firm to set a goal to achieve ‘product free of defects’ with the aim of reducing losses and improving quality (Senapati, 2004) and after their success was published many other organisations were interested in the program and adopted Six Sigma as one of their operations management techniques (Thevnin, 2004).

Six Sigma is then a continuous improvement methodology that organisations adopt to improve their business competitive advantage and to back up decisions with concrete facts and measurable data in order to maximise control over production processes or services (Pande, et al., 2000). Pyzdek (2003) agrees with the latter and explains that Six Sigma is a thorough, focused and highly effective quality improvement methodology. In fact this methodology is used to improve profitability through quality improvement by driving out waste through defects identification and elimination and minimising variability to reduce cost and improve operations success (Antony and Banuelas, 2001; Linderman, et al., 2003; Barton and Chiamaka, 2008) and the benefits of applying Six Sigma are the main drivers for the organisation’s interest in the methodology. In fact, it is all about customer value. Employees should be willing and able to deliver timely and substantive response to complaints and the requirements of customers (Naresh, et al., 2005). In other word it is essential to meet the customer’s real need at the right time and the right place. Interestingly, the term ‘Six Sigma’ makes reference to the statistical techniques which measure a distance between a perfect process and performances of the process.
for which the project leader tries to optimise. Paul (1999) affirms that Six Sigma is a statistical phrase which refers to 99.99966 percent accuracy or 3.4 defects per million opportunities. Six Sigma is, therefore, looking to achieve perfection by minimising defects. The latter can be anything from a faulty process to an incorrect customer order.

2.2.2.1 Six Sigma’s methodologies

The implementation of a Six Sigma programme in a project starts with a correct understanding of the ‘Critical to Quality’ (Barney, 2002), and it uses a number of quality management tools, including statistical methods, and creates a special infrastructure of people within the organisation (Master Black Belt, Black Belts, Green Belts, etc.) who are experts in these methods (Antony and Banuelas, 2001). This methodology presents two most commonly used extensions and it is important to choose which methodology applies to the project (Lynch, et al., 2003).

2.2.2.1.1 DFSS (Define For Six Sigma)

According to Creveling, et al., (2003) DFSS is about “preventing problems and doing the right things at the right time during product development”. The manager should hence design the cycle time for the new product or service development. Similarly, Montgomery, (2010) presents DFSS as a structured methodology derived from Six Sigma which aims to reduce variability and improve development process or production into the product design process from the identification of the customer requirement to the delivery of the new product or service. Hence when a company adopt DFSS, there is no need to manufacture and sell a product or service that the customer do not require. Interestingly, DFSS comes into action when the DMAIC approach cannot offer additional enhancement and when more capability is required. It is important to note that while DMAIC assist in fixing issues which need improvement. DFSS helps to design things that don’t break in the first place, things that do more and cost less (Chowdhury, 2002).

2.2.2.2 DMAIC

Six Sigma is a rigorous and structured method that offers a second extension: DMAIC (Define Measure Analyse Improve Control) methodology (Keller, 2001) which aims to develop and to supply products or services close to perfection. It is a problem-solving methodology which
assists management teams in solving problems through five steps called DMAIC (Pande et al., 2000).

The next figure summarises the different purposes at each stage.

**Figure 2.1 DMAIC stages (Source: Kaufmann and Ramos, 2013, p. 5)**

When problems are identified, these steps help project leaders to solve them through sequential steps while using statistical and analytical tools at each stage (Sajid and Kamaran, 2010). This method tries to identify, to eliminate and to master all the root causes of variation acting on the quality of products or services. It was innovated to remove the defects in production or service processes (Ho, et al., 2008). It is then imperative to measure the effects of these variations, understand them, analyse them so as to generate solutions to definitively improve performances in organisations. The DMAIC is implemented to resolve or identify problems in order to achieve a Six Sigma level of performance. These phases are as presented by Barton and Chiamaka (2008).

1 **Define**: Who are the customers and what are their priorities? Where are their problems? Which do we tackle first?
2 **Measure**: How is the process measured and how is it performing? What is its current state of performance?

3 **Analyse**: What are the most important causes of performance failure?

4 **Improve**: How do we remove the causes of poor performance?

5 **Control**: How can we embed and maintain the improvements made?

### 2.2.3 Implementation of Lean and Six Sigma in projects

Lean and Six Sigma are two rigorous and structured methods; disregard of these structures is one of the known factors of failure. In fact, their deployment may fail if some key elements of knowledge management concepts are not mastered very well. They demand a rigorous application of the methodology with an effective knowledge flow within the network of team members, customers and stakeholders. Consider this quote by Gijo, (2011) who urges that “a well planned Six Sigma implementation can lead to a rewarding experience and immense benefits. On the other hand, a flawed implementation may lead to disappointing results-the failure of the entire effort and a significant waste of time and resources” and this applies to any industry type, from manufacturing to service industries or from private sectors to public sectors. The implementation of such knowledge demands to take actions such as building a team of specialists of knowledge, identifying individuals with the key knowledge and creating a good and safe environment that enables effective knowledge flow (Huang and Ling, 2010).

**2.2.3.1 Lean and Six Sigma team members’ role**

Nowadays organisations tend to combine Lean and Six Sigma to optimise results on organisational effectiveness. Hence, Six Sigma team members can work in parallel on Lean projects under the same status of Champion, Master Black Belt, Black Belt and Green belt. The hierarchy is organised as follow:
In bigger companies such as multinationals, Champions and Master Black Belts can administer a geographic business unit covering more than two countries. Then it becomes more complex, where all BBs located in each country are under the supervision of a MBB who is under the supervision of the Champion. However in large organisations, hierarchy facilitates feedback and control. Ford, (2009) mentions that: “lack of structure in small organisations is thought to reduce inertia and facilitate mobility (…) Instead, small organisations may drift during implementation (…) conversely, the hierarchical structure of large organisations facilitates command of the refreezing process. Control systems guide closure of performance gaps necessary for effective outcomes, positioning large organisations to realise relatively high levels of implementation success from their planned change initiatives.” (Ford, 2009, p. 315). This statement from Ford, reveals that the size of the firm can impact on the communication process between individuals. However what is interesting is that he points at larger organisations as more structured and robust firms which facilitate a strong communication process flow.

Processes may have a hierarchical structure in place in organisations which usually begins from the top level (managers) to the bottom level (subordinates). In Six Sigma for example, there is a hierarchical structure as shown in the figure. After training has been provided, certifications are delivered and this is a requirement for promotion (Harry and Schroeder, 2000). Hoerl R. (2001)
presents the roles of each team member. Here, the Champion is the most vital to the effectiveness of the implementation of continuous improvement methodologies. In fact, he is seen as the quality leader and has the main duty to build up the implementation strategy, set objectives, assign resources, and monitor progress of projects (Hoerl, 2001). He is that key leader who is in the position of CEO in a firm and is responsible for the implementation’s outcomes.

Reporting to the Champion or sponsor are the Master Black Belts (MBB), Black Belts (BB) and Green belts (GB) project leaders. The Champion’s role is surely to oversee improvement of the project through coaching, but more importantly, his responsibilities include “Finding and negotiating resources for projects (…) applying their gained knowledge of Process Improvement to their own management tasks” (Pande, et al., 2000, p. 119). The colour of the belts specifies which position they hold. These workers are trained and, during the execution of projects, they play a specific role and are assigned a particular task. They all participate and work as a team for better results and knowledge management effectiveness. Usually, MBBs and BBs work on a full-time basis; this enables them to focus only on the completion of projects (Hoerl, 2001), whereas, GB project leaders work only part-time on projects execution as they have other job responsibilities. While a BB can be perceived as the team leader who also has the responsibility to support the transfer of new solutions and processes to ongoing operations (Pande, et al., 2000), Hoerl, et al., 2001 describe a MBB as the coach, that person who has a more managerial task in the team. Meaning that he has the responsibility to supervise the execution of projects in a specific region or portfolio. He then has the role to select, train, and mentor the BBs’s project selection or approval, and the review of completed projects (Hoerl, 2001). MBBs are expected to have a deeper technical knowledge of the tools as well as other ‘soft’ skills (Hoerl, 2001, p. 393).

2.2.3.2 Critical success factors for Lean and Six Sigma implementation

A comprehensive and flexible way for achieving and sustaining knowledge flow in Lean and Six Sigma implementation is partly to identify the independent variables that influence its effectiveness. Critical success factors are therefore those variables which are critical to the success of any organisation, in the sense that, if the objectives connected to the factors are not realised, the implementation of the strategy will possibly fail (Antony and Banuelas, 2002) and this can result in a tragedy. As Goh (2010) explained, “a tragedy is any feature that, if
unchecked, could negate a triumph, create misguided or misled actions, or even destroy what originally has been useful”. It is then imperative to understand what it takes to improve knowledge transfer process and the entire key input variables that are intervening for an effective process output. The relative weighting of CSFs may help people to understand what factors are essential for making Lean and Six Sigma processes effective and efficient and what factors are not essential to the success. This will enable project leaders and managers to gain a better understanding of the process of Lean and Six Sigma implementation (Antony and Banuelas, 2002).

Various authors have identified factors that play a significant role in the implementation of Lean Six Sigma or which can drive Lean and Six Sigma to flow less. We have for instance: Henderson & Evans (2000); Antony and Banuelas (2001); Waxer (2004); Pande et. al. (2000) and Kubiak (2011) who listed some CSFs. These encompass: management engagement and commitment, organisational structure and culture, human resource competencies, project prioritisation and selection, company financial capability, organisational culture and structure, the reward and recognition system and more.
Table 2.1 Critical Success Factors for Lean and Six Sigma implementation in organisations

<table>
<thead>
<tr>
<th>Article/Book</th>
<th>CSFs for Lean implementation within SMEs</th>
<th>Key ingredients for the effective implementation of Six Sigma program</th>
<th>Practical framework for implementation of Six Sigma in SMEs</th>
<th>Elements for successful launch of a Six Sigma initiative in an SME environment</th>
<th>Lean six Sigma for service</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFSs (ranking)</td>
<td>(1)Leadership and management</td>
<td>(1)Management commitment and involvement</td>
<td>(1)Top management leadership and commitment</td>
<td>(1)Visible management commitment</td>
<td>(1)Readiness assessment</td>
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<tr>
<td></td>
<td>(2)Financial capabilities</td>
<td>(2)Understanding of Six Sigma methodology, tools and techniques</td>
<td>(2)A well-implemented customer management system</td>
<td>(2)Clear definition of customer requirements</td>
<td>(2)Engagement</td>
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<td></td>
<td>(3)Skills and expertise</td>
<td>(3)Business strategy</td>
<td>(3)Education and training system</td>
<td>(3)Shared understanding of core business processes and their critical characteristics</td>
<td>(3)Mobilisation</td>
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<td>(4)Organisational culture</td>
<td>(4)Linking Six Sigma to business strategy</td>
<td>(4)A well-organized information and analysis system</td>
<td>(4)Rewarding and recognizing the team members</td>
<td>(4)Performance and control</td>
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<td></td>
<td>(5)Linking Six Sigma to customers</td>
<td></td>
<td>(5)A well-implemented process management system</td>
<td>(5)Communicating the success and failure stories</td>
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<td>(6)Project selection review and tracking</td>
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<td>(6)A well-developed strategic planning system</td>
<td>(6)Selecting the right people and the right projects</td>
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<td></td>
<td>(7)Cultural change</td>
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<td>(7)A well-developed</td>
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### A Critical Evaluation of Knowledge Transfer Management in Improving Organisational Effectiveness within MNCs

<table>
<thead>
<tr>
<th>CFSs (ranking)</th>
<th>Article/Book</th>
<th>Authors</th>
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<tbody>
<tr>
<td>(3) Resource commitment</td>
<td>Six Triumphs and Six Tragedies of Six Sigma</td>
<td>T.N. Goh (2010)</td>
</tr>
<tr>
<td>(4) Link to compensation</td>
<td>A conceptual model for the successful deployment of Lean Six Sigma</td>
<td>Roger John Hilton and Amrik Sohal (2012)</td>
</tr>
<tr>
<td>(5) Supplier management system</td>
<td>The way to fail</td>
<td>T.M. Kubiak</td>
</tr>
</tbody>
</table>

### Key Points

- **(8) Project management skills**
- **(8) Equipping all with quality tools**
- **(9) Linking Six Sigma to suppliers**
- **(9) A well-developed human resource management system**
- **(10) Training**
- **(10) A well-developed competitive benchmarking system**

### References

- T.N. Goh (2010)
- T.M. Kubiak
<table>
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<tr>
<th></th>
<th>members</th>
<th>process</th>
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<td>5</td>
<td>Communicating the success and failure stories</td>
<td>Establish a &quot;no sponsor, no project&quot; rule</td>
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<td>6</td>
<td>Selecting the right people and the right project</td>
<td>Clarify roles and responsibilities, &amp; MBBs coaching BBs</td>
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<td>7</td>
<td>Irresponsible hype of Six Sigma</td>
<td>Review sponsor training</td>
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<td>8</td>
<td>A bigoted “In Data We Trust” mentality</td>
<td>Integrate team member into the performance appraisal process of team members</td>
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<td>9</td>
<td>Ignorance or neglect of what is important beyond DMAIC</td>
<td>Performance evaluations</td>
</tr>
<tr>
<td>10</td>
<td>Institute a series of hierarchical reviews</td>
<td>Hold functional managers of team members responsible</td>
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</table>
These factors determine the way a company works. The project leaders should take into account each of these seven factors to ensure the successful implementation of a strategy whether of great importance or not. These factors are all interdependent, so if we do not pay attention to one of them, this can affect the others. In fact, the relative importance of every factor can vary in time.

Kubiak (2011) in his article “The way to fail” developed some factors as crucial for a good implementation of Lean Six Sigma. He claims that poor planning and poor execution can lead to poor results. On the other hand, Achanga et al., (2006) have investigated and discussed about the CSFs for Lean implementation within SMEs. Their research investigation has realised four top level factors that are fundamental and critical for adoption. This comprises: leadership and management, financial capabilities, skills and expertise, and organisational culture. According to them, a strong leadership and management are the most important factors in achieving the effectiveness of a Lean implementation and traits capable of exhibiting excellent project management styles. They urge that this will definitely facilitate the integration of all infrastructures within an organisation. This was confirmed by Polischuk, (2009) who claims that one of the key factors and probably the most important required for a successful Lean manufacturing effort is the support and commitment at the top of the organisation. Shainin (2011) supports this idea and clearly explains the link between the problem-solving methodology and an effective leadership which implies that the top management is crucial for a complete and successful implementation of Lean and Six Sigma. Therefore, the global project of deployment of Lean and Six Sigma must be structured, including aspects relative to the communication flow and to the decision-making, in particular by Champions’ implementation and by the constitution and animation of a steering committee. Moreover, Shainin (2011) stressed the importance between the effectiveness of the technical methods and leadership strength. He urges that we need strong leaders with effective methods to create a problem-solving culture. One cannot work without the other and most importantly, creating a disciplined problem-solving culture requires a similar journey, focusing on waste in the problem-solving processes.

The second factor that Achanga et al. (2006) examined as being crucial for any successful project is the financial capability. “Financial inadequacy is thus a major hindrance to the adoption and subsequent implementation of successful Lean manufacturing (...) the application of Lean manufacturing, like any other productivity improvement initiative within any organisation, could
require financial resources to hire, as to aid the actual implementation of such ideas. Training of people to utilise the techniques also requires financial resources.” It is essential to invest time and resources on knowledge transfer in Lean and Six Sigma know-how. Establishing times and places for knowledge transfers will enhance organisational effectiveness. (Davenport and Prusak, 1998)

Furthermore, Achanga et al. (2006) identify the skills and expertise as a third top level key factor. They have discussed that a successful implementation of Lean manufacturing also lies in the use of intellectual capital and ability to innovate and differentiate. In fact some tools used in the application process require a good knowledge and mastering from the employees. It also demands motivation and a desire for technology development as software, templates and tools are emerging. Finally, organisational culture has been spotted as the foundation for the implementation of Lean manufacturing. They urge to say that “High performing companies are those with a culture of sustainable proactive improvement (...) the ability to operate in diverse environments is a pre-requisite for managers.” In order to become a truly world-class organisation, it is generally accepted that companies must integrate their people, processes and technology to drive the implementation of process excellence throughout the business.

Companies are always recommended to review their culture before implementing a Lean or Six Sigma initiative. By definition, “Culture is always a collective phenomenon, because it is at least partly shared with people who live or lived within the same social environment, which is where it was learned. It is the collective programming of the mind which distinguishes the members of one group or category of people from another.” Hofstede and Jan (2004). This reveals that culture is learned and not inherited. Hence culture is what a family, a group or an organisation share. Culture is what makes the organisation and is the identification for the members within the group. Thus organisations can differentiate themselves from each other thanks to the culture. Understanding the culture and the context offers insights into opportunities and barriers to address when trying to gain the support of employees in embracing Lean or Six Sigma. This was approved by Finney (2010) who claimed that “without the support and focus of the organization, a Six Sigma deployment will not alter how people behave and solve problems, and thus, achieve the substantial improvements that successful Six Sigma deployments (...) There is no right way to deploy Six Sigma. The infrastructure and support for a successful deployment should be contingent on the culture of the organization”. In other words, the understanding of
organisational culture by employees is essential in order to facilitate collaboration and decision making. People within the company will always react to change, especially when they don’t see any interest for them. As a company implements Six Sigma it should be aware of this factor by reviewing their culture and putting into place ways to overcome cultural and change issues. Plus, prior to establishing an excellent implementation of Lean and Six Sigma, training and coaching are necessary which generate a really strong improvement structure in parallel with management hierarchy in an organisation, and this is one of the key strengths (Schroeder, et al., 2008). The concept of culture will be discussed in more details in Chapter 4, Section 4.3.2.

These factors are all essential for an effective deployment of Lean and Six Sigma in multinationals. However, factors that may contribute the most to failure are the ineffective ways of knowledge sharing and leveraging of knowledge that could present different frictions:

- Insufficient training in how or where to obtain knowledge, both explicit and tacit knowledge (George, 2002, p. 63). Without clear communication flow, the availability of knowledge does not necessarily imply that it is easilily accessible by the employees (see section 2.4.2.2.1)

- The lack of leadership and management commitment to establish an environment for effective use of knowledge management and related Lean and Six Sigma initiatives. In fact within a self-governed international team, a lack of control may occur. On the contrary, when global implementers are leading the team, failures may be prevented. They ensure a good organisation, delegate tasks at each level and most importantly can react quickly for fast execution and successful deployment within the different units (see section 3.4.2.2).

- Lack of time and resources investment on knowledge sharing can impact on Lean and Six Sigma deployment in bigger structures because they are subjected to many barriers as they operate in a complex geographic environment.

- Striking a balance between the organisational culture and host country culture (see section 4.3.2) The lack of infrastructure, adequate IT systems to facilitate knowledge awareness and knowledge absorption (see section 4.3.1.2)
2.3 Knowledge Basis

Knowledge is not a new science; for many decades, philosophers have tried to suggest the true meaning of knowledge and its perception by human beings. Plato and his student Aristotle in their attempt to define knowledge have described it as the fundamental split between mind and body (Nonaka and Takeuchi, 1995). Decades after, discussion about knowledge from a philosophical standpoint evolved into two traditions: rationalism and empiricism. While the first supported the idea that reason alone without any dependence on experience can disclose the nature of reality, the second tradition maintained the certainty that all knowledge is based on experience and that the human intellect is not fitted with a set of notions prior to experience. In an attempt to reconcile these two traditions, Kant, I., Georgs. H and Karl.M’s beliefs initiated the discussion on the relationship between the self and the outside world which is manifested by society (Holden, 2002).

In general, knowledge is considered as an asset, an item, it is a very subjective concept and is often intangible and thus cannot easily be bought and sold or transferred and stored like other organisational assets or products. In fact, it is strongly connected to its holder and his or her intellectual skills which makes its management quite complex (Haghirian, 2011). According to Argote (1999) it is a powerful mechanism to help improving organisational productivity and increasing its survival prospects. It originates and is applied in the minds of the knower (Davenport and Prusak, 1998) and is only valuable if it is appropriate, accurate, and accessible (Lee and Wu, 2010) and its inflows and outflows transfer within MNCs between HQ and subsidiaries occur along multiple dimensions and in multiple directions. Hence, it is obvious that knowledge is not simple; it is a complex asset making it absolutely difficult to capture and understand in comprehensible terms. Knowledge is more of an intangible asset; it is part of people because it is embeded in their experience. Knowledge is obtained from individuals, then in groups and in organisational routines. So we distinguish between individual knowledge and organisational knowledge, although the latter is made of an assemblage of individual knowledge. This will be discussed in more details in Chapter 3 Section 2.1. Knowledge can thus be made available under transmission channels such as books, articles, emails, phone calls and the most traditional way, face to face and person to person (Davenport and Prusak, 1998). It has been classified in various ways according to previous researches.
2.3.1 Knowledge conceptualisation

2.3.1.1 Data - Info - Knowledge

Data, information, and knowledge are the most essential concepts in the information systems matter (Hirschheim, et al., 1995). They are clearly distinct from each other, and are not “interchangeable concepts” (Davenport and Prusak, 1998, p. 1). The concept of knowledge is different from information, which can be associated with facts about the real world, while information is fundamental to knowledge (Lee and Wu, 2010). Understanding what those three concepts stand for is vital for organisations as their success may depend on knowing which one of them they need and have or what to do with them. Data is the description of event or objective facts while information is data that is processed which can be classified, summarised, and easily transferred to add sense and importance within a particular context. Consecutively, knowledge is formed of information, that is refined from certain context and can be adapted or used in other contexts (Davenport and Prusak, 1998; Grover and Davenport, 2001; Martz Jr and Shepherd, 2003; Kettinger and Li, 2010). To clarify this, Kogut and Zander, (1993) note that: “One way to conceive of this knowledge is the distinction between information and know-how. Information is a factual statement (...)Know-how is a recipe describing how activities are carried out (...) At the corporate level it would be expressed in rules of informal and formal organising such as how to divisionalise product lines” (Kogut and Zander, 1993, p. 631). However, information will remain meaningless and with low value unless it has been interpreted by individuals and thus enabled knowledge creation (Sveiby, 1997; Miller, 2002). Nonaka (1994) insists that information becomes knowledge when it has been interpreted and assimilated by individuals given a particular context and based on their beliefs and commitments. To sum up, Kettinger and Li (2010) simply suggest that: “Knowledge, then, is the framework or the process through which information is produced from data.” (Kettinger and Li, 2010, p. 414). It is the individual capability of a human being to make meaning from information ideally in relationships with other human beings (Miller, 2002).
The following chart by (Sveiby, 1997) suggests how information and knowledge are distinguished:

<table>
<thead>
<tr>
<th>Information</th>
<th>Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static</td>
<td>Dynamic</td>
</tr>
<tr>
<td>Independent of the individual</td>
<td>Dependent on individuals</td>
</tr>
<tr>
<td>Explicit</td>
<td>Tacit</td>
</tr>
<tr>
<td>Digital</td>
<td>Analogue</td>
</tr>
<tr>
<td>Easy to Duplicate</td>
<td>Must be re-created</td>
</tr>
<tr>
<td>Easy to broadcast</td>
<td>Face-to-face mainly</td>
</tr>
<tr>
<td>No intrinsic meaning</td>
<td>Meaning has to be personally assigned</td>
</tr>
</tbody>
</table>

**Table 2.2 Information and Knowledge (Source: Sveiby, (1997))**

Various knowledge terms will be interchangeably use throughout the study depending of the context. Although many authors use knowledge transfer and knowledge sharing when discussing the same concept, there is a clear difference among both concepts. Nonaka and Takeuchi, (1995) for instance have used both terms with predominance towards knowledge transfer. However, Argote and Ingram (2000) urge that there is a dividing line between both terms which is based on the levels of analysis. While knowledge sharing is used more frequently by authors focusing on the individual level, knowledge transfer is used more frequently when groups, departments, organisations or even businesses are in focus. On the other hand, although knowledge flow is intangible, teams generally rely on it to be successful. In fact when sharing knowledge, they rely on networking which is made of links known as knowledge flows. The following table present the distinction between those terms:
Table 2.3 Various knowledge terms

<table>
<thead>
<tr>
<th>Various knowledge terms</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge transfer</td>
<td>“The focused, unidirectional communication of knowledge between individuals, groups, or organizations such that the recipient of knowledge (a) has a cognitive understanding, (b) has the ability to apply the knowledge, or (c) applies the knowledge.” Schwartz, (2006)</td>
</tr>
<tr>
<td>Knowledge flow</td>
<td>Zhuge (2002) describes knowledge flow as a carrier of human knowledge, which passes a team member knowledge to the succeeding team member (receiver) following a definite process logic, sharing its content with the receiver, and accumulating the knowledge of the team members.</td>
</tr>
<tr>
<td>Knowledge sharing</td>
<td>“Knowledge sharing involves simultaneous, multiple exchanges among individuals who are sending and/or receiving knowledge. Knowledge transmitters do not relinquish ownership of their knowledge; the outcome of sharing with a recipient is joint ownership of the knowledge” (Ipe, 2003)</td>
</tr>
</tbody>
</table>

2.3.2 Variations of knowledge involved in Lean and Six Sigma teams during the transfer process

The application of Six Sigma as well as Lean takes place with the support of a number of statistical tools in order to identify, define, measure, analyse and solve problems, which are strongly based in the collection and analysis of data and statistical support (Hong and Goh,
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2003). In this sense, it is essential to make good use of these tools in a more structured way, and to align them with the company’s goals and objectives. Knowledge characteristics can hinder a successful Lean or Six Sigma deployment. The tacit nature of knowledge can certainly cause its immobility along with the geographical specificity (Ordonez de Pablos, 2004), where the importance to identify and evaluate the different types of knowledge involved in Lean and Six Sigma teams.

2.3.2.1 Explicit and tacit knowledge transfer

Both Lean and Six Sigma projects involve processes which are respectively “5 basic Lean principles” and DFSS or DMAIC for Six Sigma. It is crucial to start describing the types of knowledge involved in the teams before looking at the transfer process itself. Knowledge can be characterised as explicit or tacit to a certain extent (Polyani, 1966, Nonaka and Takeuchi,1995) and are not two distinct types of knowledge but rather two variations of one kind of knowledge (Polanyi, 1966). While explicit knowledge is considered as knowledge that can be easily formalised, tacit knowledge is connected with skills and thus know-how (Cook and Brown, 1999). Considering this statement from Cook and Brown (1999), it seems that Lean and Six Sigma know-how transfer involves more tacit knowledge than explicit knowledge, thus learning by doing since it involves action and interaction between individuals within a group. Building on Cook and Brown (1999) example, the researcher starts from the perspective that both tacit and explicit knowledge are not distincts but rather complementary. Cook and Brown (1999) illustrate the distinction between both variations of knowledge with the account of an individual learning to ride a bike. Beside the manual, to be able to learn to ride the bike, the student will need some skills which can be referred to as tacit knowledge. They state: “When we ride around with the aim of acquiring the explicit knowledge, we are not performing an operation on our tacit knowledge that turns it into explicit knowledge; we are using the tacit, within the activity of riding, to generate the explicit knowledge” (Cook and Brown, 1999, p. 385). Lean and Six Sigma team members clearly make use of both variations (tacit and explicit) in what they do. However, there are discussions about the extent to which knowledge can be transferred or whether it can actually be transferred.
Some authors argue that there is no need to transfer tacit knowledge, as it is acquired and possessed by individuals (Davenport and Prusak, 1998; Haghirian, 2011) context-specific and not easily codifiable (Pedersen, et al., 2003). While explicit knowledge can be codified in a tangible form, tacit knowledge is possessed by an individual and cannot be separated from him. Pfeffer and Sutton (2000) criticise the existing literature and practice of knowledge management. They stress the tendency of some authors who conceptualise knowledge as something tangible and explicit rather than intangible and tacit. They suggest that “Knowledge is embedded in (...) shared spaces where it is then acquired through one’s own experience or reflections on the experiences of others (...) Knowledge is intangible.” (Pfeffer and Sutton, 2000). Since knowledge is, after all, “‘what we know’. And what we know cannot be commodified” (Miller, 2002). Polyani (1966) for instance, perceived knowledge as tacit. According to him, when tacit knowledge is made explicit, it is reduced to information and remains meaningless unless it was interpreted by human beings. Johanson and Vahlne (1977) even go far beyond that and argue that knowledge cannot be transferred. They point out that: “Experience itself can never be transmitted, it produces a change-frequently a subtle change-in individuals and cannot be separated from them” (Johanson and Vahlne, 1977, p. 30). Supporting this opinion, Alle, (1997) recognises his difficulty to catalogue or map even his own personal knowledge, let alone talk about organisational knowledge or knowledge that resides in individuals within the organisation. For these authors tacit knowledge is part of its owner and cannot be separated from him or her, the transfer of the piece of knowledge will certainly involve some modifications since it will be interpreted by another individual. Miller (2002) concludes that: “the notion that we can ‘capture’ knowledge becomes ludicrous, just as ludicrous as the notion that we can ‘capture people’s thoughts’.”

Because the capacity to create knowledge, mainly that implicit knowledge, is the key to multinational existence (Kogut and Zander, 1993), Pedersen, et al. (2003) recognise that the intra-organisational transfer of tacit knowledge from one unit to another is a difficult task and can only take place through rotation of the individuals who own the knowledge. According to them a rotation of expatriates between units can facilitate knowledge transfer since it involves face-to-face exchanges. In fact experiential (tacit) knowledge can be best exploited through personal transfer mechanism (Lee and Wu, 2010), interaction with specific clients and other market actors by operating in the foreign market (Pedersen, et al., 2003) because we learn not
only through mental but also by direct personal involvement (Yang, 2003). However, in some cases there is no need to leverage knowledge from one country to another since each market is unique. Pedersen, et al., (2003) observe that knowledge is not only futile but also pointless because knowledge about how to do business in foreign market A is of little use in foreign market B. According to them, to a certain extent tacit knowledge can be converted into explicit knowledge. When tacit knowledge is codified and put into written forms, it facilitates the transfer process while bringing up the risk of uncontrolled dissemination of firm-specific, proprietary knowledge. On the other hand, Jasimuddin, Klein, and Connel, 2005 encourage the use of these two knowledge variations and are strictly against neglecting one and over-emphasising the other. They suggest that maybe the conversion of tacit to explicit knowledge is a real challenge and dilemma for firms as tacit knowledge is “less vulnerable but less accessible by legitimate organisational users whilst explicit knowledge is more accessible but also more vulnerable to illegitimate exploitation”. However they insist that the relevance of the importance given to both types of knowledge in complementary ways can help to enhance the competitive advantage of the firm. From this, it shows no doubt that ‘tacitness’ has a consistently significant negative effect on knowledge transfer (Minbaeva, 2007) since it determines the level of articulation or codification of a given domain of knowledge.

Basically, tacitness is a source of ambiguity (Minbaeva, 2007) and can impact on the knowledge transfer as well as the absorptive capacity of the receiver and the hostility of the sender on sharing knowledge. Magnier-Watanabe, Benton, and Senoo (2011, p. 18) highlight that it “is subjective knowledge that is hard to express with languages, diagrams, figures, or numbers: for example, beliefs, points of view, technical skills, and know-how”. Generally within MNCs for example, the threat and opportunities arising in a specific region will primarily be discovered by the subsidiary located in that area or some other front-unit. The transfer of knowledge between different units requires trust-creation between the source and the recipient, and must be adapted to different cultures, laws, and business practices (Lee and Wu, 2010). Simply, tacit knowledge needs to be articulated in order to be transferred and the individual must be in possession of the most appropriate instrument to make sense of the external information (Minbaeva, 2007). It needs to be adapted to the context, and to do so, it requires best practices. Whereas, Pedersen, et al. (2003) also noted that objective knowledge is explicit such as market data, legislation, export technicalities and can be traded in the market. It is the most easy to articulate and the most
context-free type knowledge. This type of knowledge is tangible; it can be easily codified, documented and transmitted making it available and easy to access within an organisation. Although it is easily codifiable, it doesn’t mean that it does not require interpretation, whether stored in a database, a specification, or some form of document. Indeed in Lean and Six Sigma teams, members gather to interpret statistical data or graphs in order to identify the defect or to eliminate a non-added value activity. However Jasimuddin, et al., (2005) cite Polanyi (1967), they explain that the latter suggests that “we know more than we can tell”. By this he meant that explicit knowledge is just a small part of the knowledge that an individual possesses. In parallel with this, Haghirian, (2011) urges that explicit knowledge is of minor importance in the internationalisation process of firms but it is primarily the on-going acquisition of experimental knowledge that determines the gradual commitment in the internationalisation process.

This research surely builds on Cook and Brown, (1999) view that tacit knowledge and explicit knowledge are two variations of knowledge itself and cannot be separated. However, it supports Minbaeva, (2007)’s argument that knowledge’s tacitness is a source of ambiguity and thus can hinder knowledge transfer. Moreover, it takes into account both Pedersen, et al. (2003) and Lee & Wu (2010)’s idea that tacit knowledge can be best exploited through physical proximity.

2.3.2.2 A third type of knowledge: Emancipatory and the 3 knowledge facets by Yan et al. (2009)

In addition to Nonaka’s and Takeuchi’s (1995) typology of knowledge, Yang, (2003) believes that we also do things through emotions. He claims that: “The facets of knowledge are different aspects of the way in which we know the physical, social, emotional and spiritual world (...) consequently, knowledge has 3 distinct but interrelated facets: explicit, implicit and emancipatory.” He strongly believes that emancipatory knowledge is linked to an individual’s emotional affection which is attached to the objects or situations around him. This third type is really important to consider in a Lean or Six Sigma team. Yang (2009) has proposed that these knowledge types fit into three other different knowledge facets which are technical, practical and critical knowledge. He summarises it in the following table:
Table 2.3 Holistic Theory of Organisational Knowledge (Source: Yang, B-Y., Zheng, Wl., and Viere, C., (2009))

<table>
<thead>
<tr>
<th>Knowledge Layers</th>
<th>Knowledge Facets</th>
<th>Technical</th>
<th>Practical</th>
<th>Critical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundation</td>
<td>Institutionized Conceptual Knowledge (System and Structure)</td>
<td>Collective Perceptual Knowledge (Process and Practice)</td>
<td>Dominated Affectual Knowledge (Value and Vision)</td>
<td></td>
</tr>
<tr>
<td>Manifestation</td>
<td>Rules, regulations, policies, standard operation procedures, technical specifications, formal communication channels and formats</td>
<td>Shared experiences, social norms, customs, conventions, shared understandings, intuitions, insights, routines, technical know-how</td>
<td>Mission awareness, managerial philosophies, sense of social responsibilities, morale, ethical and moral standards, and spirituality</td>
<td></td>
</tr>
<tr>
<td>Orientation</td>
<td>Rationality (reflected as efficiency and optimization)</td>
<td>Reality (reflected as effectiveness and flexibility)</td>
<td>Liberty (reflected as productivity and responsibility)</td>
<td></td>
</tr>
</tbody>
</table>

In this table, he presents 3 facets of knowledge which are technical, practical and critical. For them, the technical knowledge is efficiency and optimisation, and is one of the major driving forces of organisations. It can be seen as the institutionalised conceptual knowledge (explicit knowledge) of each individual in the organisation (Crossan and Lane, 1999). If an organisation is not efficient, it cannot achieve success and be competitive in a market. Therefore, organisations must make good use of their technical knowledge to maximise production of goods and services with efficient use of available resources. According to Tracy Zou and Lee, (2010), in a Six Sigma project, Six Sigma process is a type of technical knowledge. In Six Sigma as well as in
Lean training needs to be provided to the nominated team members before they can actually work on a project. This knowledge is passed on in a formal and structured way through appropriated transmission channels, as demonstrated in the table.

The practical knowledge is part of the organisational processes and practices. It is manifested as tacit knowledge shared by individuals in a group and may have not been or cannot be converted into explicit knowledge and integrated into formal systems. Surely knowledge resides in the individual’s mind; however, it is also expressed in groups, networks or organisations in which members interact regularly in a social community (Weick and Roberts, 1993; Wilson, 2002; Welch and Welch, 2006)( see Chapter 3, Section 3.3.1). Hence Kogut and Zander, (1992) emphasises that if knowledge is only held in the individual mind, then firms could change simply by employee turnover. Some examples of this practical knowledge include shared experiences, social norms, customs, conventions, shared understandings, intuitions, insights, routines, and technical know-how (Yang, et al., 2009). And finally, they present critical knowledge as the dominant effectual because it is attached to the sense of social responsibility and it interacts directly with individual employee’s emotional knowledge (Yang, et al., 2009). Because individuals have different values and vision, even when working in the same firm, their understanding about organisational issues might differ. In the case of Lean or Six Sigma, critical knowledge can be perceived in, for example, a brainstorming session where team members discuss and give ideas on the improvement or design of processes or products, or on the selection of projects (Tracy Zou and Lee, 2010).

2.4 Knowledge creation and transformation cycle during knowledge transfer

2.4.1 Initiation

The concept of transfer itself is quite complex to describe. What is confusing is that there is no exact division between the transfer of knowledge and the creation of new knowledge (Lee and Wu, 2010). By definition, the word “transfer” = transmission + absorption, therefore if knowledge is available and accessible but not absorbed, then there is no knowledge transfer.
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Davenport and Prusak, 1998). A transfer usually starts when both a need and the knowledge to satisfy that need coexist within the organisation, possibly undiscovered (Szulanski 1996). The urge to satisfy a need may encourage a search for possible solutions, thus a discovery of new knowledge. Nevertheless how this knowledge is managed and shared among units willing to satisfy the same need is a real issue in organisations, especially in MNCs operating in the broad triad of developed, underdeveloped and developing countries. Rugman and Verbeke (2008) argue that most MNCs have failed in replicating the market performance achieved at home in other markets, especially geographically distant host countries which often require a completely different firm specific advantage and country specific advantage constitution than the one from the parent company, therefore the feasibility of the transfer has to be analysed and exploited as a process which often requires a lot of time to gather information, put in place, improve, evaluate and sustain the solutions.

Increasingly companies differentiate themselves with their knowledge. A learning organisation is a firm skilled at creating, acquiring, and transferring knowledge, and at adapting its activities to reflect knowledge creation and insights (Garvin, 1998). Knowledge is the company’s greatest competitive advantage in the economy. Without knowledge it is not possible for companies to create, innovate and come out with bright ideas to maintain or gain the position of market leaders. Davenport and Prusak (1998) cites James Brian Quinn ¹ when he states that “the intangibles that add value to most products and services are knowledge-based: technical know-how, products and services, marketing presentation, understanding the customer, personal creativity, and innovation”. These intangibles can be better manipulated if one can understand and apply the knowledge creation cycle proposed by Nonaka and Takeuchi (1995).

Figure 2.3 illustrates that knowledge is created when individual tacit knowledge is converted into explicit knowledge at the team and organisational levels (Nonaka, 1994; Nonaka and Takeuchi, 1995) and internalised by each member of a team, who convert it into new tacit knowledge which can either be socialised and combined into tacit and explicit knowledge respectively or into explicit knowledge and therefore creativity and innovation. It is a cycle where tacit knowledge never becomes completely explicit; it cannot easily be leveraged by the organisation as a whole (Nonaka and Takeuchi, 1995), because the tacitness hinders the knowledge’s flow

¹ James Brian Quinn quoted in Nonaka and Takeuchi 1995, The Knowledge Creating Company, 7
According to the authors, because articulation or (externalisation) and internalisation both require the active involvement of the self (individual commitment), they are critical steps in the spiral of knowledge. The nature of knowledge itself then has a bearing on how it is managed. Therefore, the standard is for codified knowledge that is fairly easy to transmit to be geographically diffused, whereas highly tacit knowledge tends to remain localised (Mudambi & Navarra, 2004). The exchange between tacit and explicit knowledge must be developed in any organisation. In fact, when tacit and explicit knowledge interact something powerful happens. Lean and Six Sigma brainstorming, for example, enables knowledge creation and George, et al., (2004) suggest that “one of the reasons for having people work in groups is to tap into everyone’s ideas and knowledge. There are a lot of fun brainstorming techniques that get people to think creatively. And discussion techniques can help groups make sure that everyone gets a chance to be heard” (George, et al., 2004, p. 30). In this research the researcher will mainly focus on the internalisation, implementation and innovation process of knowledge in Lean and Six Sigma teams.

Source: Nonaka and Takeuchi (1995)

Figure 2.3 Knowledge creation (Source: Nonaka and Takeuchi (1995)
2.4.2 Internalisation of knowledge: Converting explicit knowledge to tacit knowledge

2.4.2.1 Definition

Knowledge internalisation is the process of embodying explicit knowledge in action and practice or simply into tacit knowledge. When knowledge can be transferred and exploited in the intra-corporate context through geographical and cultural barriers effectively, the internalisation process takes place. For Nonaka (1994) the key to knowledge creation lies on it.

2.4.2.2 Mechanism of Knowledge internalisation of Lean and Six Sigma know-how within the MNC / and in Lean and Six Sigma teams

2.4.2.2.1 Training

People represent a great source of power for organisations. However to meet organisation expectations and effectiveness it is necessary to provide training to employees, to enrich them with organisational knowledge. A good use of organisational knowledge will add value to the organisation and maximise its effectiveness. Harry M. (1998), mentioned: “Since organizations are built around people and their knowledge, not just philosophies or programs, the success of the Six sigma ‘breakthrough strategy’ depends on people who are trained” (Harry, 1998, p. 61). All the authors identified in the previous table have also classified Lean and Six Sigma training as one of the critical successful factors for the deployment of those methodologies (Henderson and Evans, 2000; Pande, Neuman, and Cavanagh, 2000; Keller, 2001; Antony and Banuelas, 2002; Ho, Chang, and Wang, 2008).

Internalisation of intangible assets has been subjected to numerous confirmatory empirical tests and is now accepted as the reason why MNCs exist (Gupta and Govindarajan, 2000). In fact, through internalisation, explicit knowledge created (or from books or courses) is shared within the firm and converted into tacit knowledge by individuals. Simply, tacit knowledge is acquired from explicit knowledge. Tsai and Lee (2006) state that: “New knowledge always begins with the individual (...). In each case, an individual’s personal knowledge is transformed into organisational knowledge valuable to the company as a whole”. In fact when employees learn by doing, training and workshops, it allows them to access the knowledge of the entire organisation.
For instance, Lean or Six Sigma training programs for employees in multinationals enable the trainees to understand and see the organisation and themselves as a whole. Hence by helping to convert that theoretical construct (books, lessons from training) into a more clearly observable and measurable one (Heras-Saizarbitoria, 2011) (execution of projects with the collaborative assistance of mentoring and coaching and expertise), it eases the internalisation process of Lean and Six Sigma within the MNC / and knowledge sharing in the respective teams globally. When explicit knowledge is shared throughout the firm, the internalisation process begins as employees begin to broaden, extend, and reframe their own tacit knowledge which they can then share with colleagues.

Knowledge is thus a great asset for organisations and this product is generally difficult to find or buy on the market. It is considered as power and therefore a competitive advantage for organisations (Szulanski, 1996). A firm then has to make knowledge available within the firm for a better use of it. Nevertheless, not only has it to make it available, the existence of the knowledge must also guarantee its use (Davenport and Prusak, 1998). Interestingly, a poor management of the knowledge components and an ineffective use of knowledge by the people at the right time cannot lead to a successful knowledge transfer. Many companies still don’t understand that making the knowledge available does not imply knowledge sharing. A firm does not only have to transmit the knowledge but also has to make sure that that knowledge is being absorbed by the knowledge receiver. Only in that case, it is the phenomenon of knowledge transfer happening.

Firm’s Lean and Six Sigma training handbook, the variety of online courses in continuous improvement methodologies, as well as the related books on knowledge management in bookstores, constitute explicit knowledge property of the organisation. Pedersen, et al. (2003) cite Penrose (1959) as he explains that the internalisation process theory distinguishes between objective (explicit) knowledge and experiential (tacit) knowledge. In fact, through internalisation, the explicit knowledge is converted into tacit knowledge by individuals, thereby enlarging the organisational knowledge base (Nonaka and Takeuchi, 1995). In other words, an individual can have all the books and the knowledge it comes with, but if he is not able to convert that explicit knowledge into tacit knowledge, there is no innovation on the firm’s knowledge, hence no possibility to improve the competitive advantage. If individuals are not
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able to convert explicit knowledge into tacit (individual) knowledge, then the time spent on performance training is worthless (Tsai and Lee, 2006). This is the reason why Nonaka and Takeuchi (1995) note that: “An awareness of knowledge internalization assists an organization in mastering the dynamic interaction between explicit knowledge and tacit knowledge”. In fact, the ability to convert the knowledge learned externally (from books) into effective real actions, refers to advanced skills (Tsai and Lee, 2006) and it is essential for an individual to know how to put that knowledge into practice. The common points on a Lean and Six Sigma internalisation process have been proposed by Toyota and Motorola as follow:

- Training employees
- Workshops
- Mentoring and Coaching
- Expertise availability
- Top management and stakeholders supports

Added to this, in the following chapters, the researcher will present in further details the prerequisite for an effective internalisation and innovation during the knowledge transfer process. This will cover the characteristics of the knowledge sender and knowledge receiver, the relationship of inter-units in MNCs (headquarters-subordinates, inter-subordinates) and any other independent variables.

2.4.2.2 Mentoring, Coaching, Expertise identification and Brainstorming sessions for knowledge implementation and innovation

Although the tacit knowledge (skills) of individuals cannot be taped for the benefit of the firm (Nonaka, 1994; Nonaka and Takeuchi, 1995), mentoring and coaching enables better skills transfer from one individual to another. Swap, Leonard, and Abrams, (2001, p. 95) affirm that, “Much knowledge, particularly knowledge with rich tacit dimensions, is transferred informally through processes of socialization and internalization” In his attempt to make an intersection of knowledge management and Six Sigma approaches, Leavitt, (2002) mentions that Six Sigma should not be perceived as an improvement quality program whose first mission is to cut down the number of defects, but rather as a methodology that enables organisations to better meet their business needs. In this, project leaders should be assisted by top managers (Champions, MBB, or
BB) throughout the completion of the project and after for control and sustainment of the solutions. The effectiveness of knowledge transfer also relies on that, it requires the commitment of the top management and a strong leadership. The coach is the one who “provides expert advice and assistance to process owners and Six Sigma improvement teams, in areas that may range from statistics to change management to process design strategies” (Pande, et al., 2000, p. 120). In fact they have to give their support and provide guidance when needed, or seek for expertise within or outside of the company to maximise projects’ results. This point of view was confirmed by Naida, (2009) who believes that when leaders share knowledge to the front lines, and follow up with mentoring and coaching, something powerful happens, knowledge absorption and implementation begins. Therefore, project leaders surely need to be assisted in executing their jobs; this ensures that the tasks are performed to meet organisations’ goals by respecting organisational policies, practices and procedures. The coach can be perceived as a consultant since he defines clear agreements on team members’ roles and their involvement in the projects (Pande, et al., 2000).

Organisational policies are rules that must be followed by people within the company; however, each individual within the firm brings with him his individual behaviour. Striking a balance between organisational policies and individual behaviour may be one of the key elements in communication flow in organisations. Haghiran (2011) supports this notion as he states that: “knowledge transfer and communication is performed by individuals, who also often have very individual ways of executing these tasks” (Haghiran, 2011, p. xvi) and the top management needs to be aware of those differences and provide necessary mentoring, coaching and expertise in the field. On the other hand, Davenport and Prusak (1998, p. 102) strongly suggest that “knowledge transferred by means of a long apprenticeship or mentoring relationship is likely to have a high viscosity: the receiver will gain a tremendous amount of detailed and subtle knowledge over time.” More importantly, mentors and coaches will also assist individuals in Lean and Six Sigma implementation during brainstorming sessions. Learning how to work with other people and groups is another key success to Lean and Six Sigma deployment since it involves working in a team. According to George, et al., (2004), when employees talk to each other in the work place to see how their experience does or doesn’t match their colleagues’ own, they benefit from making connections with people who have done a similar kind of work before. One can perceive that brainstorming is a good way to exchange ideas, and information to learn
from other people’s experience which enables knowledge creation. For George, et al., (2004, p. 30), it makes no doubt that: “one of the reasons for having people work in groups is to tap into everyone’s ideas and knowledge. There are a lot of fun brainstorming techniques that get people to think creatively. And discussion techniques can help groups make sure that everyone gets a chance to be heard”.

Mentoring and coaching is then a good way to ensure that knowledge is being internalised and implemented. In fact, when mentors and coaches interact and share explicit and tacit knowledge with projects leaders, it enhances their individual capacity to apply the methodologies, to identify the defect and improve processes.

<table>
<thead>
<tr>
<th>Proposition 1</th>
</tr>
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<tbody>
<tr>
<td>Lean and Six Sigma knowledge development and coordination depends on appropriate training, mentoring and coaching</td>
</tr>
</tbody>
</table>

### 2.5 Summary

This chapter consisted on describing the key concepts of this study. First of all the researcher gave a description of two main types of continuous improvements methodologies: Lean and Six Sigma. A brief explanation was given about the deployment of these methodologies in organisations, starting from the different tools used during the implementation process, the hierarchical structure of the teams, the different roles and responsibilities of each member to the critical success factors for a successful deployment of Lean and Six Sigma. Drawing from this, the researcher introduced the notion of knowledge; she discussed the peculiarity between data-information-knowledge which clarified the assumption that knowledge is clearly distinct from data and information which requires more thoughtfulness in the transfer process. It was then important to note that there are two main variations of knowledge. Although Yang, (2003) has identified a third facet of knowledge: the emancipatory, the researcher focused mainly on tacit
and explicit knowledge. She built on (Polyani, 1966; Cook and Brown, 1999) and emphasised that tacit and explicit were two facets of knowledge and not two distinct types of knowledge. Knowledge is more of an intangible asset and its transfer can be complex. It was therefore important to understand the intricacy behind it. Hence, based on Nonaka’s and Takeuchi’s, (1995) knowledge creation and transformation cycle, the researcher finally discussed the process of knowledge internalisation, implementation and innovation of Lean and Six Sigma Know-how. The next step will be to capture the process of knowledge transfer within MNCs. The following chapter will introduce some key notions such as: MNCs conceptualisation; knowledge management; the distinction between individual knowledge, group knowledge and organisational knowledge; knowledge transfer process, and the main determinants of a communication process.
CHAPTER 3 CONCEPTUALISATION OF MNCs AND KNOWLEDGE TRANSFER PROCESS COMPONENTS IN LEAN AND SIX SIGMA TEAMS WITHIN MNCs

3.1 Introduction

While the literature in Chapter 2 focused on Lean and Six Sigma principles and the nature of knowledge, its importance in MNCs must be tackled. Knowledge transfer in MNCs has been explored by many researchers and they have identified that knowledge transfer within an organisation relies on various determinant characteristics such as the knowledge itself, knowledge source and recipient, the relationship between the knowledge source and the knowledge recipient, and other independent variables such as transmission channels and psychic distance (Kogut and Zander, 1993; Ghoshal et al., 1994; Szulanski, 1996; Gupta and Govindarajan, 2000; Minbaeva and Pedersen, 2010). Szulanski (1996) in particular has blended some descriptions of the concept of knowledge transfer from previous researchers as he defines the transfer of best practice as a transfer that ‘connotes the firm’s replication of an internal practice that is performed in a superior way in some part of the organisation, and is deemed superior to internal alternate practices and known alternatives outside the company’ (Szulanski, 1996, p. 28). Moreover, Lee and Wu (2010) defined knowledge transfer between organisational units as ‘a process that covers several stages starting from identifying the knowledge over the actual process of transferring the knowledge to its final utilisation by the receiving unit. In the context of MNCs, the other units are the headquarters and other subsidiaries in the corporation, while the receiving unit is the focal subsidiary’ (Lee and Wu, 2010, p. 120). Therefore, in organisations such as MNCs, it is seen as an exchange of either external or internal knowledge between a source unit and one or several recipient unit(s). The units here could be either the headquarters or the subsidiaries. Because the internal transfers are less obstructed by legacy and confidentiality compared to external transfers, their dissemination and absorption could be less complex and faster. Hence companies should use their organisational knowledge transfer capability as a competitive advantage (Kogut and Zander, 1993).
Organisational knowledge transfer in this situation entails effective knowledge transfer, which implies the receiving unit absorption and implementation of the new knowledge. In order to make good use of Lean and Six Sigma know-how, the organisation as a whole has to improve its learning habits and the sharing of the knowledge. Interestingly, knowledge stickiness, described by Szulanski (1996) as the ‘difficulties encountered within the knowledge transfer process’, is crucial for a successful knowledge transfer, and can either facilitate or impede knowledge transfer. In the same way, Li and Hsieh (2009) suggest that higher levels of knowledge stickiness can result in lower levels of knowledge implementation, internationalisation and innovation. Basically, the knowledge transfer process becomes difficult and almost impossible to achieve when there are many factors interfering with the flow.

In this chapter the researcher defines and presents the characteristics of MNCs, and identifies and evaluates knowledge transfer components in Lean and Six Sigma teams. At the end of this chapter, the researcher presents the first framework of a communication process in Lean and Six Sigma teams within MNCs.

### 3.2 Definition and characteristics of MNCs

#### 3.2.1 Definition

Companies, and especially large international corporations, are continuously willing to expand their businesses around the world with the hope of gaining competitive advantage and increased sales. The motivation behind it is generally driven by the search for new opportunities such as market development abroad, new markets to increase productivity, proximity to raw materials, new technologies, production efficiencies and diversity, and also to keep away from political hurdles such as import quotas, government measures and trade barriers. The organisation’s ability to internalise, implement and innovate knowledge across their different subsidiaries is essential for organisations seeking to benefit from opportunities available outside their national boundaries (Chen and Lovvorn, 2011). Dohlman and Halvorson-Quevedo (1997) insist that developing economy countries for instance are becoming progressively important because of their potential as markets and as sources of raw materials for production sites. Such firms
operating internationally and involved in cross-border business are considered global companies. One type of global company is the MNC. MNCs are international business organisations which build a strong local presence through sensitivity and responsiveness to national differences (Bartlett and Ghoshal, 1989). Therefore the countries that they operate in are named as host countries, but are managed from one country known as the home country by the parent company or headquarters. Alternatively, the branches located in the host country may be known as subsidiaries. Rugman and Verbeke (2004) have discussed the perspective on regional and global strategies of multinational companies. They emphasise that MNCs are generally seen as the drivers of globalisation while there is an uncertainty that they are global themselves. According to them, most MNCs ‘are not global companies, in the sense of having a broad and deep penetration of foreign markets across the world. Instead, most of them have the vast majority of their sales within their home leg of the triad, namely in North America, the European Union (EU) or Asia’ (Rugman and Verbeke, 2004, p. 3). Hence it is obvious that the deployment of MNCs in foreign environments can be a challenge affecting any business outcomes. So how are MNCs characterised?

3.2.2 Characteristics of MNCs and the impact upon knowledge sharing

MNCs have been seen as the main drivers of knowledge transfer due to their superior efficiency in transferring knowledge across borders. For Siew Meng and Chin Tiong (1993), an MNC ‘reflects a decentralised federation with distributed resources and delegated responsibilities. Such structures are impacted by the enduring influence of family ownership, personal relationship and informal contacts upon which organisational processes are built’ (p. 451). It is clear that MNCs operate in a complex geographic environment, therefore they are subjected to cultural diversities, geographic distance, political barriers and time differences, and, in most cases, the size of the organisation itself can be a critical point in knowledge sharing. Building networks in reinforcing organisational ownership is one of the key successes since greater size increases the chances that the piece of knowledge may be present in some other part of the company (Davenport and Prusak, 1998). According to Lee and Wu (2010), there is no doubt that MNCs can be thought of as a ‘network of multidirectional knowledge transactions’ among units located in different parts
of the world (Lee and Wu, 2010, p. 118) where the complexity of sharing and internalising knowledge from one location to another is rather critical. However, Phene et al. (2005) have characterised the MNC as ‘a vehicle for creating and integrating knowledge’ across its units in different locations. Hence the argument that knowledge leveraging is important for MNCs as their foreign units experience situations in their foreign markets (Bartholomew, 1997) highlights that this leveraging can provide new information or knowledge for the organisation which can then be implemented in another location within the network (Bartlett and Ghoshal, 1989). Ghoshal, (1987) has characterised this knowledge leveraging as ‘global learning’. Going along with these views, Haghirian (2011) observes that MNCs often gain and sustain their main competitive advantages by moving product knowledge from one company unit or market to another. Making knowledge accessible to all their members all over the globe is therefore a prerequisite for organisational survival and strategic management. Consequently, MNCs can be characterised as knowledge creating companies which are specialised in the internal transfer of knowledge (Kogut and Zander, 1993; Nonaka and Takeuchi, 1995).
### 3.3 Knowledge management

**Table 3.1 Some definitions of knowledge management**

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<th>Authors</th>
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<tr>
<td>Eyler, A. N. (2001) ‘Corporate knowledge management’, cited in Wilson, T. D. (2002) ‘The nonsense of knowledge management’, <em>Information Research</em>, 8 (1), pp. 1–33.</td>
<td>‘Knowledge management is a discipline that promotes an integrated approach to the creation, capture, organization, access, and use of an enterprise’s information assets. These assets include structured databases, textual information such as policy and procedure documents, and most importantly, the tacit knowledge and expertise resident in the heads of individual employees.’</td>
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<td>Miller, F. J. (2002) ‘I = 0 (information has no intrinsic meaning)’, <em>Information Research</em>, 8 (1).</td>
<td>‘Knowledge is the uniquely human capability of making meaning from information – ideally in relationships with other human beings ... Knowledge is, after all, what we know. And what we know can’t be commodified. Perhaps if we didn’t have the word “knowledge” and were constrained to say “what I know”, the notion of “knowledge capture” would be seen for what it is – nonsense!’</td>
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<td>Davenport, T. H. and Prusak, L. (1998) <em>Working Knowledge: How Organisations Manage What They Know</em>. Cambridge, MA: Havard Business School Press.</td>
<td>‘Knowledge management should become part of everything an organisation does, and be part of everyone’s job. If companies are successful in managing knowledge, they may even forget that they are doing it.’</td>
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Source: Arielle Dora Nganya.S
Knowledge management is a notion that has captured the interest of many researchers and organisations. It is a process through which knowledge is discovered, captured, shared and applied (Sabherwal and Becerra-Fernandez, 2003) between two or more individuals. It relies on organising and making knowledge available to employees and easily accessible when needed, regardless of the context. Generally, complex knowledge is difficult to transfer as it draws upon multiple types of interrelated competencies (Minbaeva, 2007). In Chapter 2, we drew upon Nonaka’s four knowledge management processes to express the complexity of knowledge transfer and the tacit nature of knowledge itself as a factor that slows down the extent to which knowledge can be transferred which impacts upon organisational effectiveness.

Organisational effectiveness therefore relies on how well an organisation is capable of managing knowledge transfer within its firm, and knowledge management effectiveness will depend on different variables such as whether the knowledge recipient received, understood and applied the needed knowledge to execute his task (Gupta and Govindarajan, 2000). Knowledge management has inspired a change from a transaction to a more allocated knowledge management perspective on an inter-unit information processing network. In that network, each player acquires specific knowledge from other players for decision support (Pedersen and Larsen, 2001). From the perspective of Davenport and Prusak, (1998), knowledge management is the key to best practice in the utilisation of organisational resources. Considering the importance of knowledge management, they argue that: ‘knowledge management should become part of everything an organisation does, and be part of everyone’s job. If companies are successful in managing knowledge, they may even forget that they are doing it’ (Davenport and Prusak, 1998, p. xv).

Ching Chyi and Jie (2000) give a meaning to that concept and affirm that: ‘Knowledge management is an emerging set of principles, processes, organisational structures, applications and technologies that help knowledge workers to dramatically leverage their creativity and ability to deliver business value’ (Ching Chyi and Jie, 2000, p. 784). It is simply about individuals and the processes in place that enable them to share information and create knowledge. As a result, there is a causal relationship between knowledge management and organisational competitive advantage which leads to organisational effectiveness (Chen and Lovvorn, 2011). Knowledge management is then a discipline that encourages an integrated
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approach to the creation, capture, organisation, access and use of an enterprise’s information assets (Eyler, 2002, cited in Wilson, 2002). Simply put, knowledge management stands for getting the right information to the right people at the right time through the right transmission channels and with a clear process in place. A knowledge management value chain promotes effective knowledge transfer. It is thus important to identify the key determinants of a knowledge transfer process and describe their characteristics. But first, let’s give a brief comparison of individual knowledge, group knowledge and organisational knowledge in the following section.

3.3.1 Individual knowledge, group knowledge, organisational knowledge and culture

Much literature in knowledge management is uni-dimensional in that it tends to isolate some elements of organisational practices as the key to developing innovation strategies (Terry, 2004). In most organisations as within a society, there is a set of policies, practices and procedures that underline their organisational culture (Jain, 1999) and every employee within the firm must follow them. Nonaka and Takeuchi (1995) distinguished between individual, group and organisational knowledge. They suggested that knowledge creation starts at the individual level, progresses through groups and then spreads throughout the organisation as a whole.

In an organisation, an individual’s inputs impact upon organisational outcomes which in turn impact upon organisational performance. In other words, besides the organisation’s tangible knowledge assets such as books, training material, intranet, documents, portfolio, etc., what makes organisational knowledge is the collection of individual knowledge. In fact knowledge dwells in and is transformed in human beings. Nonaka and Takeuchi, (1995, p. 58), for instance, view it as ‘a dynamic human process of justifying personal belief toward the truth’ and organisational knowledge is absorbed into the minds of individuals and groups (Maturana and Varela, 1992). Knowledge is then created and stored by individuals (Grant, 1996b), either through codification or personalisation, and organisations have a responsibility to generate and combine individuals knowledge and make it available to people within the firm. Knowledge in groups and organisations mostly depends on individual knowledge (Cohen and Levinthal, 1990). For example, sometimes, people who share complementary knowledge may form a group called
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a ‘community of practice’. These individuals often have a collective mind based on common interest, practices and objectives. Communities of practice can be well organised with a strong system of interchange which enables them to identify expertise and solve problems together (Davenport and Prusak, 1998). These groups can enable individuals to express their knowledge to other members and facilitate knowledge sharing and thus a better absorption of organisational knowledge. Lean and Six Sigma teams in general can fall into that category of group since they share a common expertise. Organisational knowledge is then embodied in many different ways within the organisation such as in documents, policies, procedures and, more importantly, human minds (Sabherwal and Becerra-Fernandez, 2003). According to Ordonez de Pablos (2004), these policies and practices are based on assumptions and beliefs that top management knows how to manage their employees and change within the firm. Organisational knowledge (and culture) can thus be presented as a system of shared meaning, beliefs and policies held by employees within an organisation that distinguish one firm from another (Shein, 2004). It is at the foundation of any initiative within firms.

Haghirian (2011), for instance, observed that: ‘Organizational knowledge is useless if individuals do not receive it, interpret it and make further use of it’ (Haghirian, 2011, p. xvi), thus knowledge management is important. To that extent, the author stresses the fact that since employees participate in organisational effectiveness by executing tasks, they are only human. They may act and interact with others within their context and this may further influence their tasks (Haghirian, 2011). Within an international firm, people are bound to have come from different cultural backgrounds, and their individual behaviour can impact upon organisational knowledge sharing. The organisational values certainly influence individual behaviour and thus knowledge transfer in Lean and Six Sigma teams. However, Michailova and Minbaeva (2012, p. 59) note that it is important that ‘top managers articulate, nurture and utilize values to shape certain types of individual behaviour and to achieve desired organisational goals, such as increased intra-organisational knowledge sharing.’ Hence, every employee, regardless of his background, will find it easy to stick to the organisational culture and follow the policies and procedures. In fact, when individuals share meanings and behaviours (organisational culture), it enables better coordination of their tasks, making behaviour understandable (Szulanski, 1996; Trompenaars and Hampden-Turner, 1997; Hofstede and Hofstede, 2004).
However, in Chapter 2 section 2.3.2.1 the researcher has already discussed the difficulty that exists in managing and transferring knowledge. This is mainly due to the tacit nature of knowledge. Some authors see knowledge management as a delusion. Drucker (1969), for instance, highlights that knowledge is difficult and almost implausible to manage. He affirms that knowledge is between two individuals, and only between two individuals, and it is really about what people within the organisation do with the knowledge they own or have received. No matter how many strategies an organisation has in place to collect, share and store individual knowledge, when an employee leaves the company he takes with him a high amount of that knowledge. Supporting this point of view Sveiby (2001) urged that he does not believe knowledge can be managed; instead, he suggests that knowledge management is a poor expression to describe knowledge transfer practices since knowledge resides in the individual mind (Wilson, 2002). Certainly Drucker’s (1969) view on knowledge storage cannot be ignored since one of the main hurdles in organisations in general is to collect and store tacit knowledge from older employees who will be retiring. This is surely an aspect which is difficult to manage in organisations. So how much of the ‘what we know’ are we able to communicate? This is surely a debate worth discussing in further research. Figure 3.1 summarises knowledge dimensions within an organisation.
3.3.2 Knowledge management value chain and the importance of knowledge management

Knowledge is a competitive advantage for organisations and it only becomes visible when smart and experienced people put into practice lessons learned over time to make business decisions. Knowledge management then gives the benefit of encouraging an organisation’s members to share knowledge and improves the organisation’s efficiency, performance and competitiveness (Shin, 2004). Ching Chyi and Jie (2000) suggest that the knowledge value chain is a knowledge management model that covers three streams: the knowledge management infrastructure, the activities of the knowledge processes and knowledge performance. It maps the different levels that enable knowledge creation and implementation for a successful knowledge transfer.
Unfortunately, it can be difficult for managers and especially employees to follow knowledge transfer processes, and only a clear model will enable them to discover, absorb, share and apply the knowledge as they should. Davenport and Prusak, (1998) suggest that the most accurate model may be to see knowledge as a product. The authors insist that, as an approach, some organisations do not hesitate to redefine existing products and services as knowledge assets. Beside this, Sveiby (2001) believes that ‘knowledge focus’ or ‘knowledge creation’ are better expressions since they describe a mindset which pictures knowledge as an activity rather than as an object (Wilson, 2002). However, the conceptualisation of knowledge as intangible (activity) or tangible (object) has been debated by many researchers and most of them have described it as a process (Grant, 1996). Even with the common view that knowledge transfer can be conceptualised as a process, researchers have come out with different conceptualisation approaches. Take, for instance, Nonaka and Takeuchi (1995) who have divided the value chain into four stages:

- Knowledge creation
- Knowledge access
- Knowledge dissemination
- Knowledge application.

In a similar attempt to build a knowledge management value chain, Hong (1999) also presents four stages:

- Knowledge acquisition
- Information distribution
- Information Interpretation
- Organisational memory.

Shin et al. (2001) have reviewed previous studies on knowledge management and have proposed a consolidation of the different approaches as shown in Figure 3.2.
Figure 3.2 Knowledge management value chain (Source: Shin et al. (2001, p. 341).)

In the knowledge management value chain, Shin et al. (2001) describe four stages: creation, storage, distribution and application. Taking the case of Lean and Six Sigma teams, a clear knowledge management value chain should assist individuals to identify knowledge sources and capture knowledge: that is where knowledge creation begins. One of the multiple facets of knowledge transfer in MNCs is finding the most appropriate expert on a specific field of knowledge within the organisation who will be capable of communicating that knowledge. For Davenport and Prusak (1998), there is no doubt that ‘although we make a judgement about who in our immediate area is most likely to be able to help us, we rarely try to find the person in the company who has the deepest knowledge of the subject’ (Davenport and Prusak, 1998, p. 88). People within the company have to be able to access the knowledge needed quickly. By storing knowledge and keeping it in individual or organisational memories (portfolio), the organisation facilitates knowledge acquisition. A customisation of the storage link is necessary to enable employees to search by ‘type of knowledge, the potential recipient and thus the search process’ (Chini, 2004, p. 13). Storing knowledge will then enable knowledge distribution and implementation.
3.4 Knowledge transfer process in Lean and Six Sigma teams within MNCs

3.4.1 Type of knowledge transfer in Lean and Six Sigma

A succession of research in the field of knowledge management has focused on the process of knowledge transfer across geographic borders. Knowledge transfer is a process of its own that follows different stages in order to be effective and efficient. Lee and Wu (2010) define it as ‘a process that covers several stages, starting from identifying the knowledge over the actual process of transferring the knowledge to its final utilization by the receiving unit’ (p. 120). However, limited empirical advice has been provided regarding the management of international knowledge teams.

In many cases knowledge flowing from one overseas unit to another can be misinterpreted or used and applied in a different way. Because the transfers of know-how are perceived as ‘dyadic exchanges of organisational knowledge’ between a knowledge sender and a knowledge recipient (Szulanski, 1996), it is imperative to identify the different types of knowledge flow to which MNCs are exposed. In Figure 3.3, Sveiby (2001) presents nine types of knowledge transfer.
Figure 3.3 The nine types of knowledge transfer (Source: Sveiby (2001, p. 349).)

However, since the researcher is observing the phenomenon of knowledge transfer within MNCs, the four types most relevant for this study are:

- Knowledge transfers between individuals
- Knowledge transfers within the internal structure of the MNC
- Knowledge transfers from individual competence to internal structure
- Knowledge transfers from internal structure to individual competence.

To successfully manage the process of knowledge transfer, it is essential to consider the characteristics of the different actors involved in the transfer process, as well as the characteristics of the context in which the knowledge transfer takes place (Minbaeva, 2007). Considering this suggestion from Minbaeva (2007), in the next section the researcher will focus on the characteristics of the knowledge sender and knowledge receiver, and the impact of the transmission channels on the communication process flow. The relationship between the sender
and the receiver (inter-unit relationship) and the context in which knowledge sharing is practised will be discussed in Chapter 4.

3.4.2 Main sources of knowledge in continuous improvement methodologies (Lean and Six Sigma)

Before presenting the characteristics of the knowledge sender and knowledge receiver, let us begin by identifying the main knowledge sources in Lean and Six Sigma teams. Generally, a good communication in both Lean and Six Sigma teams is important for a successful implementation. Looking at the value stream mapping of a process in a manufacturing company, there are different knowledge sources in Lean and Six Sigma teams. However, the most important are the contribution from the top management and other stakeholders linked to the project and indeed the feedback from internal and external customers (Wu and Lin, 2009). The latter can only be part of the team’s knowledge once it has been codified into written media and transmitted among the team (Tracy Zou and Lee, 2010) since Lean and Six Sigma experts may not be directly involved with customers. As discussed in Chapter 2 section 2.2.3.2, strong commitment and input from the top leaders and management is one of the most critical success factors for a successful knowledge transfer and thus a successful deployment of Lean and Six Sigma (Achanga et al., 2006). In fact, the absorptive capacity should consist of both the employees’ ability and their motivation to share knowledge. The ability and motivation can facilitate knowledge transfer from other units of the MNC (Lee and Wu, 2010) and the network. The Figure 3.4 is an illustration of the network of Lean and Six Sigma teams in a manufacturing company.
Lean and Six Sigma teams are teams in the background. When a problem arises or a project is selected, Lean and Six Sigma project leaders often have to communicate and interact with all departments from R&D to customer service. The project leaders are there to improve processes or workplaces to achieve business success. Most of the people they interact with may be external to the team and they may have knowledge that the team could use (George et al., 2004). As mentioned earlier, all these interactions are important for the success of the project. However, there are two critical types of knowledge sources that are at the foundation of the communication process: the voice of customers, and the top leadership and management (Tracy Zou and Lee, 2010).

3.4.2.1 The voice of internal customers and the project selection

Companies have to value their external customers because customer satisfaction enhances the improvement of the firm’s reputation and image (Muffatto and Panizzolo, 1995). In fact, if customers are happy, they are likely to share their good experience with others. This will result in expanding the business and make for more profitability. On the other hand, Lean and Six
Sigma experts in organisations are there to provide their consulting services to internal customers within the company. They act as problem-solvers coming to the rescue of managers or units facing difficulties. Although it is the same company, when there is a need to solve problems that occur, some managers may not see the need or directly understand how such methodologies could take them out of the difficult situation they are facing. This might result in them not showing their support for the team. A good Lean and Six Sigma leader hence has to be able to sell his expertise and get the internal customers as well as the external customers to buy in. One of the objectives when selecting projects for Six Sigma implementation is that the organisation wants to meet customers’ requirements so the team might need to speak to customers in order to understand their needs (George et al., 2004). According to William (2007), during project selection, project leaders are more likely to centre their attention on the customer’s requirements and initiate projects according to a customer’s observations regarding a specific problem. It is clear that the voice of the customer is one of the main sources of information during project execution, because at the end of the day if they are satisfied, it adds value to the organisation.

3.4.2.2 Top leadership, management and stakeholders

Knowledge sharing has to be articulated by the top management and embedded in organisational structures. Top management identifies the need to provide Lean or Six Sigma training to individuals because ‘deeply ingrained knowledge is primarily relevant to the stakeholders in a specific project and of minor value for other subsidiaries, [while] generalizable knowledge provides insights with relevance to various subsidiaries’. (Chini, 2004, p. 13). At the same time, during project selection and execution, they have to guide the teams through to the completion of projects and show them support and assistance (Polischuk, 2009) with frequent short reviews rather than waiting for them to schedule update meetings (Shainin, 2011). However, leadership has been described by Yukl (2005, p. 8) as ‘the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives.’ Hence, the top management has to find ways to motivate their people to share and to put norms in place to control that sharing.

This is certainly valid in the context of multinationals. The reason why Mudambi and Navarra (2004, p. 61) claim that: ‘Knowledge sharing will not be part of an organisation’s frame of
reference if organisational values supporting knowledge sharing are not internalised by organisational members. In such situations, relevant knowledge may remain undiscovered, under-leveraged and trapped in individual minds.’ Therefore, a strong leader must be one who assigns resources to projects, provides strong mentoring, coaching and sponsoring to the problem-solving teams and encourages them to leverage lessons learned or any other organisational knowledge existing in the firm to improve organisational effectiveness. A strong leader will monitor and coach the teams by removing any blockage of the flow that is preventing the teams from making progress. On the other hand, selecting projects and leveraging lessons learned certainly contributes to organisational effectiveness. Nevertheless, sponsorship and coaching is the key to success (Shainin, 2011) because when teams are entirely self-governed, a lack of control occurs as a result, which may manifest itself by the compromising of knowledge creation and sharing and the waste of valuable resources (Bartlett and Ghoshal, 1999). It is then necessary ‘to develop strong leadership that supports the sharing of strategic knowledge’ (Ordonez de Pablos, 2004, p. 111) for successful knowledge transfer within MNCs.

3.5 Characteristics of knowledge senders and knowledge receivers in Lean and Six Sigma teams

When a defect or a need is identified and the knowledge to eliminate that defect or meet that need exists within the organisation, the transfer begins. Stakeholders and champions identify the need to solve a problem or improve a product or service, potential solutions to that need or to eliminate the defects are identified and evaluated, and the feasibility of the transfer is explored among the teams. Interestingly, knowledge transfer is a process consisting of a dyadic exchange of knowledge between the knowledge sender and the knowledge receiver and the effectiveness of the transfer often depends on the willingness and ability of both actors (Szulanski, 1996). Minbaeva (2007) has analysed the joint effect of four determinants to understand the knowledge transfer process. Citing Szulanski (2000), she explains that those determinants are classified into four groups: (1) the characteristics of knowledge; (2) the characteristics of knowledge senders (disseminative capacity); (3) the characteristics of knowledge receivers (absorptive capacity); and (4) the characteristics of the relationships between senders and receivers. In MNCs’ global
network especially, the difference between subsidiaries stands on the core of understanding their ability to utilise and share knowledge (Inkpen and Dinur, 1998). Similarly, in Lean and Six Sigma teams where members are geographically dispersed in different organisational units, the ability to share, understand and utilise knowledge can be partially influenced by these determinants which can impact on organisational effectiveness.

The characteristics of the senders and receivers play a crucial role in the process. In fact organisations whose employees have superior skills and willingness to both absorb and share knowledge achieve superior knowledge transfer results (Minbaeva, 2007). Mostly in companies where there is a reluctance to share knowledge, especially if this is not part of their culture, and when employees are working in a competitive area, they are often challenged in their own ability to do things. The top management must then encourage the team members (see section 3.5.2.1 below) to be willing to share not only organisational knowledge but also their own individual knowledge because it can enrich the organisational knowledge. However, there might be an issue of who has access to what type of knowledge; in that case, it will require more delicacy in the management of knowledge. It has been advised by Minbaeva (2007) that knowledge may not be articulated but new personnel may be briefed about knowledge sources so that they can get such knowledge upon request. Anyone who has been in the position of an intern at the beginning of his career will surely have glimpsed this issue. Often, there is a problem of knowledge confidentiality and this generally delays the project completion date because of the accessibility to data. On the other hand, one might be confronted by a colleague who is reluctant to share. Employees of an older generation may hesitate to share knowledge, especially knowledge that may be kept in tacit form with newcomers for various reasons such as high knowledge hostility (Minbaeva, 2007) or fear of losing power (Ordonez de Pablos, 2004). Szulanski (1996) believes that the major barriers to internal knowledge transfer are shown to be knowledge-related factors such as the recipient’s lack of absorptive capacity, casual ambiguity and a difficult relationship between the source and the recipient. Minbaeva (2007) insists that ‘employees need to have combinations of skills that enable them to find, acquire, manage, share, receive, and apply knowledge that the organisation needs.’ Hence, the notion of knowledge transfer encompasses both the employee’s ability and his motivation to share and interpret knowledge in order to facilitate the knowledge transfer process within the MNC (McGuinness et al., 2013). Similarly,
every organisational unit will have to demonstrate their own ability concerning how to identify, develop and utilise knowledge (Inkpen and Dinur, 1998).

3.5.1 Willingness to share and motivational disposition to share of knowledge senders

Knowledge is an asset that develops over time via experience which one absorbs through media channels such as books, telecommunications and training courses as well as informal learning. One of the particularities of experience is that it is first of all personal, even though it has been obtained from different sources. It is then the way the learner decides to interpret it, understand it and use it in new situations that makes the difference and results in a unique experience. Davenport and Prusak (1998), for example, will underline that being an expert means to have deep knowledge of a specific subject and that as an individual you have been tested and trained by experience. However, ‘Since knowledge is often equated with power, it is not surprising to find some resistance in its transfer by the knowledge-holder’ (Simonin, 1999). Unfortunately, nowadays knowledge is still seen as a source of power, and in order to maintain that power, the owner of the knowledge will monopolise the relevant knowledge and will not share it with other employees (Ordonez de Pablos, 2004). Ghoshal and Bartlett (1995) have discussed the fact that employees who share an organisation’s values and whose tasks enable them to increase those values own a more powerful motivation to co-operate and thus, by implication, to share knowledge. Therefore a good knowledge transfer process in Lean and Six Sigma teams has to do with the ability and willingness of each individual to share among a group.

Compared to individual knowledge, organisational knowledge is highly dynamic: it is moved by a variety of forces, namely the people in the organisation. In order for knowledge to be innovative and utilised more effectively, there is a need to be aware of the forces that drive it and understand them (Davenport and Prusak, 1998). How and why might the knowledge sender be motivated to illustrate a piece of knowledge in his daily work? The fact is, there must be some favourable situations that inspire workers in the firm to create, transfer and apply knowledge. Other recent contributions have been made by Minbaeva (2007) who states that: ‘One will only be motivated to share knowledge if one believes that the particular piece of knowledge is worth
sharing.’ Therefore, the sender also needs to feel comfortable with his own piece of knowledge; he has to be able to trust in the accuracy and the credibility of that knowledge.

3.5.2 Absorptive capacity and motivational disposition to receive of knowledge receivers

To attain a competitive position, organisations need to offer a better quality of products and services, and improve efficiency through innovation. This requires an ongoing search for new tools and management opportunities to provide these competencies. However, there is a lack of absorptive capacity which prevents firms from effectively acquiring and utilising external as well as internal knowledge. Absorptive capacity is at the centre of knowledge flows in MNCs as it affects a firm’s ability to innovate and adapt to its changing and competitive environment (Lee and Wu, 2010). It does not refer only to the acquisition or adaptation of knowledge by a firm, but also to the organisation’s aptitude to exploit it among them (Cohen and Levinthal, 1990). Knowledge transfer flows across and within subsidiaries and the HQ is one of the most significant assets to improve the firm’s competitive position. Cohen and Levinthal (1990) proposed that if subsidiaries differ in their absorptive capacity, this will impact on the degree of knowledge transfer between subsidiaries. They emphasised the communication systems between the external environment and the firm as well as among the sub-units of the organisation since each unit is unique. Similarly, Minbaeva (2007) has observed that the incapability of the receiving unit (or one member of the team) to absorb new knowledge is one of the main inhibitors to organisational knowledge transfer. The complexity of knowledge transfer involves receivers devoting extensive resources to absorb, understand, adapt and integrate the knowledge into its existing system (Chen and Lovvorn, 2011). During the knowledge transfer process, the receiver may not receive, understand, interpret and apply the knowledge in the way the sender intended, or worse they may interpret it individually and reuse and apply it in a completely new way. For this reason, the knowledge receiver’s dedication to understanding and absorbing knowledge is of such importance for an organisation since the organisation’s absorptive capacity will depend on the absorptive capacities of its individual members. They should be able and willing to absorb new knowledge. In this, both ability and motivation are two main aspects of absorptive capacity. The absorptive capacity of knowledge receivers is then a major determinant
of the knowledge transfer process. In short, a low absorptive capacity can impact on the degree of knowledge transfer (Minbaeva, 2007).

3.5.2.1 Motivating individuals

The most challenging task of managers is to motivate employees to achieve their goals (Moorhead and Griffin, 1998). This motivation will enhance their performance which will impact upon organisational effectiveness. There are thus two different driving forces. First, there are forces external to the employees such as the nature of the work and the reward and recognition provided by the firm (organisational drivers). The second type of driving force is rather individual; it is embedded in the employees’ needs (Iqbal et al., 2012). Executives and managers should motivate their employees to be more receptive and enable them to improve their communication skills so they have a greater ability to interpret, understand and use the knowledge received. This has been examined by Chen and Lovvorn (2011) who suggest that: ‘The successful accomplishment of knowledge transfer not only requires substantial time and effort but also strong motivation from important decision makers and key players on the recipient’s side’ (Chen and Lovvorn, 2011, p. 50). Various authors have presented approaches on how to motivate employees. However, some of the most important ways are: the investment of time in communication with employees, the establishment of easy communication channels, performance feedback and tracking, the encouragement of knowledge innovation, and rewards and recognition (Caudron, 1995; Nelson, 2003).
3.5.3 Basis of the sender's and receiver's relationship: trust and confidence in handling knowledge – common interest between the source and receiver units

Knowledge transfer involves many exchanges and interactions among people who are sending and/or receiving knowledge. The knowledge senders do not renounce ownership of their knowledge; the result of sharing with a receiver is joint ownership of the knowledge (Ipe, 2003). To break barriers between cultures, sharing ‘a view of the world’ is essential for MNCs: it is ‘a prerequisite for the development of sufficient levels of trust among subcultures and for knowledge sharing among individuals to take place, (Michailova and Minbaeva, 2012, citing Nahapiet and Ghoshal, 1998; Tsai and Ghoshal, 1998).

3.5.3.1 Shared mind and group think

Strong foundations for communication processes enable team achievements. In fact innovation is not achieved by an individual, it takes a strong team, it is a ‘shared mind approach’ (Jacobs, 2000). ‘Mind’ ‘is not the name of a person, place or thing, but, rather, is a dispositional term that
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denotes a propensity to act in a certain manner or style’ (Weick and Roberts, 1993, p. 361). Ulrich and Smallwood (2003) define the notion of ‘shared mind’ as the degree to which the management of teams and other employees have a common vision-set about the future. Thus the phenomenon of collective mind occurs within a group of individuals (Martin, 1992) when they construct mutually shared fields (Weick and Roberts, 1993), it is embedded into the notion of group and provides a ‘bridge from the individual cognitive constructs to the team level (Brockmann, 1998, p. 209). According to Wegner et al. (1985) individuals in close relationships enact a single transactive or memory system, complete with differentiated responsibility for remembering different portions of common experience. In other words, people in groups have a relationship base which facilitates interaction and decision making since individuals have a common vision which goes together with trust.

3.5.3.2 Trust and confidence in handling knowledge

For an effective knowledge transfer, it is important to build strong relationships that rely on trust and common interest (which will be presented in the next chapter). Organisations should hire smart people and create time and space to get them to talk to each other (Davenport and Prusak, 1998). However if there are no strong trusting ties, knowledge transfer will not improve (Levin, 1999). One thing is sure: no relationship can be built if there is no exchange, no dialogue and therefore no trust. In some cases it takes time to establish a relationship that is based on trust. Relationships are sometimes thus a prerequisite in acquiring knowledge (Burt, 1992), learning and solving problems (Hutchins, 1991), and a trusting relationship will result in a higher exchange between two units (Levin and Cross, 2004). For Davenport and Prusak (1998), the lack of trust is one of those frictions that can inhibit knowledge transfer. People become more comfortable to share knowledge when there is a relationship and trust at the foundation. When they trust each other, they are more willing to share and give useful knowledge (Andrews and Delahay, 2000); also, they will have a better absorptive capacity for other knowledge (Levin, 1999).

In fact, international communications such as visits and meetings (Bresman et al., 1999) and personal affinity (Gupta and Govindarajan, 2000) enhance trust and thus facilitate international knowledge transfer.
In cases where the receiver does not have trust in the sender’s credibility and accuracy in receiving and understanding the knowledge he is sharing, he is more likely to miss steps during the knowledge transfer process. Similarly, if the source doesn’t have trust in the recipient’s absorptive capacity in receiving, interpreting and analysing the piece of knowledge he is transferring, it can slow down the process (because he would like to make sure that his knowledge has been understood and take additional measures if it has not) or result in the source not communicating knowledge at all. So the higher the absorptive capacity of the knowledge receiver, the more effectively knowledge is transferred. This is the reason why it takes good leadership and management skills for an effective knowledge transfer (Ordonez de Pablos, 2004). Good leadership and management skills mean that when knowledge has been communicated, the sender can trust the receiver to understand it. Equally, the receiver will be able to receive, interpret the knowledge or even get in touch with the sender if he or she is facing difficulties in interpreting and understanding the sender’s knowledge. Therefore strong managerial leadership and a foundation of trust can contribute to effective knowledge transfer.

3.5.3.3 Common ground

‘People can’t share knowledge if they don’t share the common language’ (Davenport and Prusak, 1998). In fact, when groups of individuals who have some practice in common encounter shared problems or have the same areas of interest, then the process of knowledge transfer and creation is better understood because they have ‘a sense of collective identity and social context in which they can effectively develop and utilise their knowledge’ (Krishnaveni and Sujatha, 2012, p. 33). If members of a unit or a group don’t share a common interest, it will be complete chaos, making it difficult for Lean and Six Sigma experts to bring in their expertise. Hence managers have to provide a common vision and cognitive grounds (Von Krogh et al., 2000) which enable organisational socialisation (Nonaka and Takeuchi, 1995), especially for members of a team located in different regions (Mahnke and Venzin, 2003).

Davenport and Prusak (1998) note that one of the major success factors for knowledge transfer within a team working on projects is the common language of the participants. It is clear that by common language they do not just mean ‘English’ or ‘German’, but refer to the main drivers of people’s practices and also the vocabulary of people working on specific areas. For example, in
the case of Lean, when training people from the marketing department, the trainer must not use too much Lean jargon, otherwise they will not understand. Instead he should use terms with which they are familiar and should draw examples from that specialised field. He should be able to translate examples and observations from Lean teaching and practice into language and concepts that the marketing specialists can better understand. This is part of the adaptation in the internalisation process. Experience has shown that people with common interest who are brought together will easily connect, therefore communication flows almost effortlessly which can lead to knowledge being transferred effectively. Furthermore, when individuals perceive a clear common ground and have a high level of trust in the integrity and competence of their colleagues, knowledge is better received, understood and analysed (Krishnaveni and Sujatha, 2012). Thus having a common work language, a common interest and physical proximity helps participants running projects to establish a foundation of mutual respect. Speaking a common language can ease knowledge sharing.

**Proposition 2**

*Trust, common interest and ‘shared mind’ facilitate the motivational disposition and willingness to share of the knowledge sender and the absorptive capacity and motivational disposition to receive of the knowledge receiver.*

Transmission of alternative knowledge types relies on alternative communication channels (Szulanski, 1996; Hansen et al., 1999). Depending on the knowledge type and how it is packaged, an appropriated approach has to be selected in order to pass on that knowledge (Chini, 2004). Good quality and a high number of knowledge transmission channels will affect the simplicity with which knowledge flows between the sender and the receiver (Brewer, 2008). Successful knowledge transfer requires systems, methods and procedures. These systems and procedures constitute what a user wants or needs to know, how knowledge should be created, collected and stored, and the responsibility for the process (Lee and Wu, 2010). Certainly, specialised configuration and formalisation allow easy data collection and transmission systems (Nelson and Winter, 1982). However, firms often do not know what they know and have poor systems to locate, store and retrieve the knowledge that resides in them (Lee and Wu, 2010).
Hence, it is important for MNCs to choose a transmission channel that suits the exact characteristics of the knowledge subject to transfer. If unsuitable media are used, it may result in a loss of knowledge during the process or may result in high costs with potentially negative effects on the overall performance of the organisation (Pedersen et al., 2003).

3.6.1 Choice of knowledge transmission channels – type of knowledge – speed

Over the years, many strategies have been used for knowledge transfer. A lot has been written about the techniques for knowledge transfer. Davenport and Prusak (1998) for instance have listed techniques such as training, workshops, reports, assignees, liaisons and, other channels to enable knowledge transfer in organisations. The difficulty of capturing and transferring knowledge depends on the kind of knowledge involved in the process and the choice of the transfer mechanism will depend on the characteristics of the knowledge. In fact, the more tacit and context-specific the acquired knowledge is, the less efficient is the use of written media (Pedersen et al., 2003). Because it is based on individual experience and involves intangible aspects, tacit knowledge must by definition be impossible to articulate, codify and put into tangible data (Nonaka and Takeuchi, 1995; Wilson, 2002). While face to face communication is mainly used as the first choice mechanism for tacit knowledge, written media are preferred to carry explicit knowledge (Pedersen et al., 2003).

**Figure 3.6** Knowledge types and transmission channels (Source: Arielle Dora Nganya.S.)
In Chapter 2 section 2.3.2.1, the researcher discussed the different variations of knowledge, whether knowledge itself could be transferred and to what extent. Interestingly she agreed with the views of Cook and Brown (1999) and Polanyi (1966) that tacit and explicit knowledge are two variations of knowledge and one cannot be completely converted into the other. For Cook and Brown (1999), they are instead two complementary types of knowledge and one can be used to generate the other. However, the researcher stressed how best to transfer knowledge since it had two distinct variations and considered Minbaeva’s (2007) suggestion that, due to the tacit nature of knowledge, knowledge could be difficult to articulate (Wilson, 2002). She then considered Pedersen, et al.’s (2003) and Lee and Wu's (2010) opinion that tacit knowledge could be better transferred through personalisation compared to explicit knowledge which can be transferred through codification.

Sometimes, the fact that firms may lack the infrastructure to manage knowledge (especially tacit knowledge), especially for employees seeking expertise within the organisation, can impact on knowledge sharing. In fact, combining both knowledge characteristics and transmission channels represents a significant choice that is expected to have severe implications on performance (Pedersen et al., 2003). Determining the best method for enabling the widespread internalisation of explicit and tacit knowledge throughout an organisation is an issue of significant concern to organisations (Tsai and Lee, 2006). In contrast to Cook and Brown (1999), Hansen et al. (1999) identified two ways to transfer knowledge internally: codification and personalisation. According to them, because there are two distinct types of knowledge, they need to be transferred differently. The first, codification, is more suitable for explicit knowledge which can be easily stored and shared in a system, and is thus easily accessible by members of the organisation. The second, personalisation, enables the transfer of tacit knowledge, but because it cannot be easily stored and codified, it needs to be transferred person to person through physical proximity.

3.6.2 Codification: written media, information systems and the impact upon speed

As globalisation increases, the speed at which knowledge and information are transferred globally becomes a major issue in international organisations (Haghirian, 2011). However, the speed at which knowledge is transferred mostly depends on the type of knowledge being
transferred. Explicit knowledge is knowledge which can easily be codified. It is easy to put into blue prints and manuals and is therefore easy to store in a document database that can be available to and accessible by everyone in the organisation. Codification is a way to transfer explicit knowledge from the owner of the knowledge who has developed it, stored it in a database and promoted its reuse by another other individual who needs it (Kumar and Ganesh, 2010). In Lean and Six Sigma principally, there are many opportunities to reuse knowledge such as standardised training materials and manufacturing or quality improvement design activities that are used to address new design problems (Lyer et al., 2005) or even projects that have been conducted in different units.

Knowledge can be transferred in various ways by written media by means of manuals, books, documents, written instructions, emails, etc. This transfer mechanism is less costly compared to face-to-face communication mediums, and MNCs can improve their potential when using it (Pedersen et al., 2003). Information technology especially helps organisations to locate the knowledge sender and communicate with him easily. Knowledge transfer within a firm is then enhanced by information technologies (Earl, 2001). Furthermore, discussions on virtual networks facilitate contact between the person seeking knowledge and those who may have access to the knowledge. Also, video communication may contribute to knowledge transfer (Lee and Wu, 2010).

**Proposition 3**

*Integrated and compatible IT systems enable highly effective explicit knowledge storage and leveraging in projects.*

### 3.6.2.1 Knowledge overload in Lean and Six Sigma teams

Although explicit knowledge can be transferred through formal methods, its codification presents the problem of information overload (Schulz and Jobe, 2001) since it can be put into manuscript form. Davenport and Prusak (1998) discussed the aspect of both useful and unproductive knowledge moves. One of the important factors that one must take into consideration is
knowledge overload. Unfortunately in most communication processes, unproductive knowledge is being transferred and because of the level of tacitness of the knowledge, it is difficult to speed up the process. Nonaka and Takeuchi, (1995) urge that top management should provide employees with a sense of direction during knowledge sharing processes. They insist on standards for justifying the value of the knowledge that is constantly being developed by the organisation’s members. In organisations, it is quite common to have a large database that has not been reviewed or a large amount of documents and unread emails which consume storage.

Due to the increased use of electronic devices and the influence of highly interactive online information technology, organisations’ internal management and knowledge, application procedures are becoming increasingly complex (Lee et al., 2010). Although technology is a great asset of MNCs, the more outdated the technology is, the more difficult it is to maintain a good communication system. Knowledge sharing difficulties may occur when there are no or few similarities in technology within MNCs. Nancy and Van (1998) suggest that when the technology does not keep to an organisation’s standard, where no standard exists or where the technology requires structured interfaces with other units making adoption risky, it can have an impact on knowledge transfer performance and speed. The speed at which the knowledge is transferred will mainly depend on the type of mechanism used and the structure in place to facilitate that sharing.

3.6.3 Personalisation: physical proximity and communities of practices

Unlike explicit knowledge, tacit knowledge has a more intangible aspect. In fact, because it is based on the owner’s personal experience with the phenomenon, it is more complicated to codify and put into a database that could be easily accessible by others. More importantly it can take time or be almost impossible when attempting to convert tacit knowledge into explicit knowledge. It is a rather delicate and difficult task that can be a long process because it cannot be readily transferred and replicated (Nonaka and Takeuchi, 1995).

According to Kogut and Zander (1992), companies that have acquired experience of knowledge transfer are more likely to develop efficient ways to codify and transfer tacit knowledge.
Simonin (1999) supported this idea when he affirmed that general experience in knowledge transfer management was a crucial facilitator. The capability of transferring tacit knowledge across borders distinguishes MNCs from the purely domestic firms (Pedersen et al., 2003) and the central competitive dimension of what firms ‘know how to do’ is to create and transfer knowledge efficiently within the organisational context (Kogut and Zander, 1992). It is therefore a difficult task for firms to make good use of tacit knowledge. Considering this issue, Malhotra (2000) states that: ‘Knowledge management technology can store human intelligence and experience. Technologies such as data-bases and group-ware applications store bits and pixels of data, but they can’t store the rich schemes that people possess for making sense of data bits. Moreover, information is context-sensitive. The same assemblage of data can evoke different responses from different people’ (p. 6).

The personalisation is primarily linked to tacit knowledge and its transfer among individuals. Tacit knowledge can be transferred through formal and informal methods. One of the best tools to enable the transfer of tacit knowledge are ‘communities of practices’ (Wenger, 1998), ‘story telling’ (Haesli and Boxall, 2005) and shared physical and virtual spaces (Nonaka and Konno, 1998). According to Krishnaveni and Sujatha (2012, p. 26), communities of practices ‘refer to informal groups of people bound together by a common purpose. In these communities, members are provided opportunity to share their best practices, which are commonly implicit in nature.’ In fact, this can provide the firm with a method to share implicit knowledge within a community by simply connecting individuals with common grounds, enabling them to capture knowledge and expand it.

Generally one of the most traditional ways of transmission will be face-to-face meetings, even more so through the rotation of employees between units. Yet within the communities of practices, physical proximity remains the best channel for sharing tacit knowledge. Not only is this technique excellent when it comes to transferring tacit knowledge as it relies more on the knowledge sender’s experience, but it is the most effective way to communicate and inform somebody about a specific topic. Davenport and Prusak (1998) confirm this when they claim that tacit knowledge and ambiguous knowledge are especially hard to transfer from the sources to the recipients in other areas of the organisation and suggest that expatriates are one way of sharing
Proposition 4

*Mentoring and coaching via personalisation between units enables a better transfer of tacit knowledge.*

### 3.6.3.1 The role of expatriates in knowledge transfer

The inclusion of expatriates in units helps to improve tacit knowledge sharing. Expatriates play an important role in enabling the transfer and implementation of knowledge from their home subsidiary or parent company to other units (Fang et al., 2010), and such knowledge transfer can be effective through the rotation of employees who own the knowledge (Pedersen et al. 2003). In most cases, while working in an environment, individuals are able to master and know their market better than any other foreigner to the location. Hence getting the expertise of employees going around the company and spending some time in different units promotes a better knowledge transfer. This has been confirmed by Selmer (1999) who states that: ‘Successful implementation of global strategies depends on getting the right people with the right skills, at the right time which typically requires the movement of people across national borders.’ Support for this view was also found by Hansen et al. (1999) who urge that conditions should be created to allow the transfer of tacit knowledge between individuals. It can effectively happen by connecting people within an organisation and it ‘generally requires extensive personal contact. The “transfer relationship” may be a partnership, mentoring or an apprenticeship, but some kind of working relationship is usually essential’ (Davenport and Prusak, 1998). From their comments, it is obvious that because of the complexity of tacit knowledge it is preferable for the source and recipient to meet face-to-face for effective knowledge transfer. It seems that besides being considered as mechanisms to control overseas units, expatriates are also seen as instruments to transfer both technical and management know-how as well as organisational culture (Harzing, 2001).
For these reasons, the mentoring and coaching concept of Lean or Six Sigma plays a big role. With coaching and mentoring, project leaders are able to gradually learn and build up experience from the knowledge source. Moreover, in the case of training or coaching, it is always better to establish a relationship between team members located in different geographic regions. However, it is clear that organisations, even large ones, can’t always afford to fly people to those who most need the shared knowledge. Tacit knowledge should therefore not only rely on face-to-face meetings. In fact, the infrastructure of tacit knowledge can also include electronic channels (Davenport and Prusak, 1998). Other substitutes for the face-to-face meetings can be used such as video teleconferences or, in the worst case scenario, phone calls or emails. The weakness with the latter is that people are less likely to read and answer emails directly, and it takes good management and personal commitment due to time differences.

Personalisation then is a good way to share tacit knowledge. However, it presents two concerns. First of all Szulanski (1996) urges that people might be reluctant to share a specific piece of knowledge because of fear of losing their position and power which can restrict knowledge flows even within an organisational unit. Because knowledge is seen as power, the owner may not be motivated to share if he perceives that the knowledge receiver has invested little or no effort on the development of his own personal competencies (Simonin, 1999).

3.6.3.2 Organisation patrimony

The second concern is the loss of employees which can lead to the loss of valuable tacit knowledge since it could not be codified and stored (Droege and Hoobler, 2003). Organisations should make sure that this particular type of knowledge is being passed on to other employees. When an employee leaves the company, he takes with him a large amount of the firm’s intellectual property and culture. Trompenaars and Hampden-Turner, (1997) agree with Hofstede’s (1995) view and suggest that: ‘Culture is man-made, confirmed by others, conventionalised and passed on for younger employees or newcomers to learn. It provides people with a meaningful context in which to meet, to think about themselves and face the outer world’ (Trompenaars and Hampden-Turner, 1997, p. 24). In companies where the employee average age is more than 45, there is a need to make sure that the knowledge is passed on to the new generation by the old one. It would be really unfortunate if senior practitioners of continuous
improvement methodologies were to leave the company without passing on the essence of their experience to the younger generation. In fact it would be a big loss for the company, as they are not only losing experienced employees, but they are losing the opportunity to enrich other individuals within the firm. To avoid such issues, the company should put in place strategies for tacit knowledge sharing. The researcher has discussed the fact that explicit knowledge can easily be stored in some kind of technological highly structured database. The problem lies with tacit knowledge, and the more apprenticeship, training, coaching and mentoring the company organises between seniors and juniors, the better will tacit knowledge be transferred and kept in the company. Some form of technology then should be used to enable people to share tacit knowledge directly in such big entities (Trompenaars and Hampden-Turner, 1997).

3.6.3.3 Informal knowledge transfer: enabling serendipity, knowledge innovation

Most explicit knowledge is always available in the company database and is easily accessible by everyone working on specific projects. However, Davenport and Prusak (1998) highlight that the unstructured transfer of knowledge has the advantage of opening the door to serendipity and thus innovation since colleagues discover new ideas, useful advice, creative solutions and new ways of doing things. Unfortunately this method is not seen by all chairmen as a good way of sharing knowledge, thinking that employees are trying to avoid work when in fact they are having informal conversations directly or indirectly related to work. In fact, managers need to recognise the value of informal knowledge transfer. Crossan and Lane (1999) agree with him, and they recommend that organisational learning of practical knowledge can be eased by action-oriented activities such as socialising through conversation and dialogue. Furthermore, Watanabe et al., (2011) have emphasised that an organisational culture which is open and encourages informal knowledge transfer such as dialogue and discussion will promote communication and thus knowledge sharing.

Developing economies, for instance, are usually characterised by a large power distance which is negatively linked with individualism. While managers are often highly regarded people, individuals performing at a lower level in the organisation may be seen as unequal in roles, power and skills (Naresh et al., 2005) and people judge the knowledge or information they get on the basis of who transfers it to them (Davenport and Prusak, 1998). Some authors argue that
only when individuals within an organisation value and desire knowledge sharing will they engage in it (Lin and Lee, 2004; Minbaeva and Pedersen, 2010). Consequently, individuals’ goals and values gradually come to align with the organisation’s own and thus maximise internalisation outcomes in ‘producing self-discipline and appropriate behaviour that is guided by knowing what is right and proper’ (Welch and Welch, 2006, p. 22). Unfortunately employees at high management levels are rarely accessible by employees at lower levels. Hence a good manager and leader is one who practices ‘management by walking around’ and is able to listen and talk (Larry & Ram, 2002). Interaction and dialogue between employees must then be encouraged in firms to enable knowledge sharing and innovation.

However, although informal knowledge must be encouraged, it cannot ensure that a competency developed in one location will be adopted in another part of the world efficiently because it lacks good effective mechanisms to transfer strategic knowledge. It is therefore important to consider formal and intentional ways of transferring knowledge within the firm.

3.6.3.4 Balance between codification and personalisation

To sum up, each strategy brings its unique attributes, but also has draw-backs. However, they are complementary to some extent. Some authors have argued that and 80–20 balance of emphasis on codification and personalisation strategies would be the most effective for organisations. To deploy an effective knowledge transfer, firms must employ either 80% codification and 20% personalisation or vice versa (Hansen et al., 1999; Haesli and Boxall, 2005). Nevertheless, the ease and speed with which knowledge flows throughout the firm will determine the success of MNCs (Hedlund, 1986; Bartlett and Ghoshal 1989; Gupta, 1991).

**Proposition 5**

*Knowledge transfer speed is affected by the choice of transmission channel which impacts on knowledge transfer effectiveness.*
3.6.4 Transmission channels and cultural diversity

One of the best ways to develop trust is in face-to-face meetings. The transmission channel used to transfer knowledge can also depend on the cultural background of both the sender and the receiver. In some cultures, people are more relaxed and even prefer to meet after work to discuss current projects with colleagues, and these conversations of course will still add value to the firm. They would rather meet at a coffee shop or a club to discuss issues rather than go back home and rely on electronic devices to communicate with others. Davenport and Prusak (1998) presented a good example through the former’s trip to Japan, confirming that the choice of the transmission channel can be driven by the cultural background of both the company and the host country. They explained that, on that particular trip, Davenport suggested to a small group of Japanese managers that they could leave the office earlier and go home and exchange ideas via electronic devices. He was surprised that they turned down his recommendation saying that they were not in the habit of going home early nor were their wives expecting them. What Davenport missed then is that, as a westerner, it was normal to go home and carry on with work duties. He thought the Japanese had a similar habit. Interestingly, these are the kind of mistakes or misunderstandings that could slow down knowledge sharing. Culture can be a source of conflict within the organisation, which might occur when there is a misunderstanding of practices and values. Hofstede and Jan (2004) made a clear note on this point by claiming that: ‘Culture is more often a source of conflict than of synergy; cultural differences are a nuisance at best and often a disaster.’ Imagine that in Japan Davenport had imposed a way of doing things because the company culture said so – it could have surely impacted upon organisational results because he would have failed to consider the local way of doing things. He came to the conclusion that ‘when you need to transfer knowledge, the method must always suit the culture’ (Davenport and Prusak, 1998). Although the company should not abandon its own culture for the profit of another foreign culture, it is important for managers to know that the choice of transmission channels for knowledge sharing can be affected by both the company culture and the local culture; therefore they have to strike a balance between all the cultures within the organisation. In the next chapter, section 4.3.2, the researcher discusses the cultural impact in organisations.
3.7 Knowledge transfer control mechanism

The effectiveness of knowledge transfer in MNCs depends on the factors that facilitate or impede the transfer process. The facilitators and inhibitors of knowledge transfer often represent external causal characteristics to the management of the MNC organisation (Pedersen et al., 2003). There is no doubt that an effective knowledge transfer has an impact on the financial performance. Pedersen et al., (2003) argue that the success or failure of a knowledge transfer can be measurable on the financial bottom line of the MNC subsidiaries involved in the transfer. While formal evaluation systems related to subsidiary knowledge transfer increases subsidiary willingness to transfer, knowledge management in terms of subsidiary transfer willingness and transfer performance can be fostered and enhanced by the introduction of formal evaluation systems related to knowledge sharing (Blomkyist, 2012). Mechanisms such as special bonus systems and budget evaluation styles are examples of the mechanisms that could encourage subsidiary managers to improve knowledge sharing within their unit (Chini, 2004). Such performance evaluation systems help ‘to maintain internal consistency and facilitates transfers between different subsidiaries throughout a company network’ (Trompenaars and Hampden-Turner, 1997, p. 42). Furthermore, Taggart and Hood (1999) suggest that with a formal control mechanism, HQ can control the level at which each subsidiary performs. This does not only enable the HQ to assist units that are underperforming but also to identify new competencies and opportunities for the company as a whole. Knowledge control mechanisms are thus valuable to the organisation. Ordonez de Pablos (2004) would argue that appropriate recruitment selection, training evaluation and reward policies enhance employees’ awareness of the benefits derived from sharing knowledge in the firm. It is then up to the managers to play around with those strategies to achieve organisational effectiveness.

**Proposition 6**

*Knowledge transfer control mechanisms increase individual motivation to share and the ability to absorb knowledge, thus knowledge innovation.*
3.8 Time and cost investment in knowledge transfer

A lack of time and meeting places will narrow the idea of productive work. The creation and sharing of knowledge in the spatially dispersed multinational organisation is a necessary but not ideal condition for success in the global marketplace. If valuable knowledge remains in, or only diffuses slowly from, the individual MNC affiliates, opportunities for worldwide leverage are lost (Pedersen et al., 2003). The communication system then is a facilitator that can contribute to an effective knowledge transfer in firms. It helps to make effective use of knowledge as unfortunately it appears that in some organisations, the knowledge needed already exists within a firm but is not accessible or available when required (Davenport and Prusak, 1998). As a result, there is a waste of time, effort and expenses when the exploitation of the knowledge involves training and coaching. In fact they suggest that to develop an effective absorptive capacity, it is insufficient to expose an individual briefly to the knowledge. Instead, considerable time and effort should be invested on the individual’s problems in absorbing knowledge, otherwise little transfer will occur (Cohen and Levinthal, 1990).

According to Davenport and Prusak (1998), a good way to increase competitive advantage is to ‘hire smart people and let them talk to one another’. Unfortunately this is not always the case in organisations. Organisations will often do their best to recruit the smartest people. However, they will overload them with so many tasks that they will be left with no or little time to interact, share and develop their own competencies. Instead, they have to allow their employees to interact, getting them to share knowledge because practical knowledge also includes individual employees’ knowledge that has not been incorporated into the formal system, such as their awareness of market changes (Yang et al., 2009). Knowledge creation is also stimulated by conversation and language-based learning in teams (Brown and Duguid, 1991; Nonaka and Takeuchi, 1995). Informal knowledge is therefore one of the great sources of power for organisations. When members of staff are able to interact and share ideas on specific topics or job difficulties, the effects on organisational performance are even higher.

Allowing time for training, apprenticeships, workshops and coaching to facilitate knowledge internalisation is important. As discussed earlier, one of the best transmission channels for tacit knowledge is the face-to-face meeting. Unfortunately it is not every organisation that can invest
resources in flying people around the globe to share knowledge. In most cases, the expense can be one factor (Davenport and Prusak, 1998). Sometimes in a difficult project, the firm is able to resist bringing a group together to run a Lean or Six Sigma project implementation. One of the reasons is often that they see it as an additional and unnecessary expense when they believe that the problem can be solved through technological mediation. In such a case the information system channels will be used to transfer knowledge. What they miss here is that with written media or through technological transmission channels, one may not always get the same results as in previous projects.

The model shown in Figure 3.7 synthesises the independent variables that affect knowledge sharing between two individuals in an organisation. This will be gradually developed as the researcher progresses in the literature review.
Figure 3.7 Framework of communication process flow management between team members
(Source: Arielle Dora Nganya. S.)
3.9 Summary

This chapter has discussed the characteristics of MNCs and the different components of the knowledge transfer process within an MNC. First the researcher gave a description of MNCs, characterising them as international business organisations where the process of transferring knowledge across geographic borders can be rather critical. For a better understanding of the complexity behind it, she presented different approaches to the concept of knowledge management, and distinguished between individual knowledge, group knowledge and organisational knowledge. It was observed that the latter was a collection of individual and group knowledge (Nonaka and Takeuchi, 1995). Further on, based on the classification of the different types of knowledge transfer in MNCs by Sveiby (2001), the scope of this study was limited to four relevant types of transfer which enabled the researcher to identify two main knowledge sources in Lean and Six Sigma teams which are the top management and the voice of the customer. Therefore it was important to discuss the characteristics of the knowledge sender and the knowledge receiver and the relationship base that improved the communication process between both players. Interestingly, the literature highlighted that knowledge transfer mechanisms were to be chosen depending on the knowledge variation. Personalisation and codification were then presented as the two main media through which knowledge is transmitted. While the first was more suitable for tacit knowledge, the second better accommodated explicit knowledge. It was argued that the investment in time and cost must be considered to facilitate successful and quick knowledge transfer and that the knowledge transfer mechanism motivated individuals to share. The discussions in this chapter enabled the researcher to draw up a communication process flow management model.
CHAPTER 4 INTER-UNIT RELATIONSHIPS IN THE KNOWLEDGE TRANSFER PROCESS IN LEAN AND SIX SIGMA TEAMS WITHIN MNCs OPERATING IN THE TRIAD AND THE INFLUENCE OF PSYCHIC DISTANCE

4.1 Introduction

Multinationals are the main drivers of globalisation as they foster increased economic interdependence among national markets (Rugman and Verbeke, 2004). However, ‘when companies go international, their planning and control systems continue to be influenced by their national culture’ (Hofstede and Jan, 2004) because of the need to have a ‘uniform global image’. This uniform image is all about the brand name, the product design, the customer services, etc. The firm is looking for that uniqueness around the world (Lancaster et al., 2001). Interestingly, MNCs are complex, multi-dimensional entities and knowledge sharing in these big entities is sometimes problematic. In fact, knowledge transfer within such firms, and especially between members of Lean and Six Sigma teams located in different geographical units, involves a network perspective, coordination and control issues, capabilities and context, and more importantly the flow of knowledge (Chini, 2004). However, when firms go international, they often focus on the financial expense of things, neglecting the effect of cultural differences on their business outcomes. Some organisations do not seem to perceive that the way of thinking and acting of individuals within a context depends on their cultural background. Trompenaars and Hampden-Turner (1997) urge that: ‘One culture can be distinguished from another by the arrangement of the specific solutions it selects for each set of problem situations. The solutions depend on the meaning given by people to life in general and to their fellows, time and nature in particular’ (Trompenaars and Hampden-Turner, 1997, p. 27). Hence managing the way individuals deal with each other within organisations can help to improve knowledge transfer effectiveness. Knowledge management is not only vital for MNCs, but in some cases it can also present a serious threat for their effectiveness. Alas, some organisations disregard the importance
of knowledge and find it difficult to understand what they know and how to transfer that knowledge among their different units. ‘Although most knowledge management projects do improve the efficiency and effectiveness of individual departments or business processes, these results generally give CEOs and stockholders little to get excited about’ (Davenport and Prusak, 1998).

In this chapter, the researcher highlights the impact of the economic context on knowledge sharing and the effect of cross-cultural differences in knowledge transfer in Lean and Six Sigma teams within MNCs. Also she describes the type of communication flow in the inter-unit relationships (headquarters-subsidiaries and inter-subsidiaries) within such firms.

**4.2 Inter-unit relationships and their impact in Lean and Six Sigma teams within MNCs**

Knowledge sharing is a relational act which is rooted in a sender–receiver relationship which involves a voluntary communication of an individual’s knowledge to other individuals as well as the receiving of other’s knowledge (Van den Hooff and Van Weenen, 2004). Multinational corporations are complex multi-dimensional entities; therefore, knowledge flows occur not only along multiple directions but also across multiple dimensions (Gupta and Govindarajan, 2000) between HQ and the subsidiaries and in inter-subsidiary communications. The importance of inter-unit relationships and knowledge flows in the network has been recognised and extensively discussed. MNCs have seen far beyond the need to expand sales, services etc. Today, they have been merging their subsidiaries to expand activities such as research and development (R&D), geographic or product range responsibilities and support activities. In fact, since organisational knowledge consists of a ‘web of coordinating relationships’ (Szulanski, 1996, p. 28) connecting the various resources of an organisation in a network, knowledge flow between the parent company and its foreign subsidiaries has been explored by many authors (Ghoshal et al. 1994; Szulanski and Jensen, 2004; Gupta and Govindarajan, 2000).

As the years pass, MNCs are becoming more global, expanding their businesses all around the world in search of better opportunities in other geographies. Indeed it is to the benefit of the HQ to encourage subsidiaries to develop their own competencies, so that they can improve the firm’s
capability. Knowledge that has been developed in one unit can be shared with other units and exploited within their contexts. However, this does not always guarantee a positive effect on the subsidiary’s position in the MNC as it is often complex to transfer knowledge from one location to another. The inter-unit communication flow is one important aspect in knowledge transfer processes in Lean and Six Sigma teams within MNCs. Ghoshal et al. (1994) identified two kinds of inter-unit linkages in MNCs which are the vertical linkage between each of the national subsidiaries and the HQ and the horizontal linkages among the subsidiaries themselves. However, there are many factors influencing these relationships that will be discussed later on in this chapter.

Generally when a Lean or Six Sigma team is set to work on a specific project, it is essential for each team member to ask himself: ‘Who depends on me for information? And on whom do I depend?’ (Drucker, 1998). Subsidiaries and HQ interact in a network, and each player fits in a strategic position and contributes to the well-being of the firm. The Lean and Six Sigma teams in such firms are even more complex where members of the teams are often geographically dispersed in different units. The role of subsidiaries is also of importance when it comes to receiving the know-how and adapting it within their context while acquiring and developing local know-how that can also be used in other units of the MNC. Figure 4.1 illustrates the different directions in which knowledge can flow within an MNC.
S: subsidiary

**Figure 4.1** Multi-dimensional knowledge flow within MNCs (Source: Arielle Dora Nganya, S.)

### 4.2.1 Subsidiaries’ role and power in knowledge transfer

Let us begin with a discussion of the subsidiaries’ role in knowledge transfer before engaging in the different type of inter-unit exchanges. Cultural and economic differences are reflected in the structural variations across units internationally, and consequently in the differences in organisational structures and diverse strategic roles for subsidiaries (Malnight, 2001). Differences across geographic units exist due to the strategic role they play in the network. Subsidiaries’ level of autonomy may vary according to the relationship with the parent company.
The level of autonomy of the company plays an important role in the communication process. Hence subsidiaries can also be perceived as either knowledge receivers or providers (Chini, 2004). A slow or ineffective internal knowledge transfer flow may easily result in impeding the ability to exploit a competitive advantage by a subsidiary (Szulanski, 1996).

Subsidiaries cannot continuously rely on their HQ (Doz et al., 1997). However, they evolve over time and can see their level of autonomy and power decrease or increase. Also subsidiaries’ power can be linked to their role as the source of local market knowledge and capabilities (Chini, 2004). Mudambi and Navarra (2004) explain that the role of the subsidiary within the MNC is the outcome of HQ–subsidiary bargaining, and that subsidiaries with control of the firm’s R&D intangibles exercise a great deal of bargaining power whereas subsidiaries with limited control over such intangibles have little bargaining power in dealing with HQ. As a consequence, the level of lateral interdependence among units varies across strategic roles (Govindarajan and Gupta, 2001). Subsidiaries then play an important role in knowledge creation and various researchers have focused on the role of these units in knowledge innovation (Holm and Pedersen, 2000).

4.2.1.1 Historical approach of subsidiaries’ role in MNCs

Research has been done to classify and identify the various roles that subsidiaries may have within an MNC. This research has evolved since 1980 through the pioneering work of White and Poynter (1984) whose first approach was based on the three distinctive dimensions that subsidiaries develop: product scope, market scope and value-added activities. D’Cruz (1986) focused on the ‘scope’ and characterised subsidiaries as ‘world product mandates’ while taking responsibility as the implementer of the product design. On the other hand Delany (1998) determined a different type of subsidiary that he named the ‘enhanced mandate’. He describes it as a unit that does not have control over the global and local value chain, but has some activities in the value chain. However, Bartlett and Ghoshal (1989) have elaborated a different approach to the subsidiary level in the network. They explore the ‘knowledge-based’ approach which is based in the assumption that MNCs are obliged to involve every unit regardless of cultural differences for better management of activities to gain global competitiveness (Manolopoulos, 2010). They will argue that subsidiaries can be categorised as follows:
Later on, Gupta and Govindarajan (1991) perceived MNCs as network operations that include capital, product and knowledge flow and developed the ‘knowledge-related’ approach. They identified four subsidiary roles by combining two aspects of knowledge flow: the magnitude and the directionality of operations:

- Global innovator
- Integrated player
- Implementer
- Local innovator.

In their attempt to combine both the ‘scope’ and the ‘knowledge-related’ approaches, Birkinshaw and Hood (1998) classified subsidiaries into three categories:

- Local implementer
- Specialised contributors
- World mandates.

The literature on the conceptualisation of subsidiary roles has been explored by various authors. However, Manolopoulos (2010) suggests that: ‘Subsidiary operations are differentiated according to the importance, distinctiveness and needs of their local marketplace and the ability to support and expand the group’s current range of final products’ (Manolopoulos, 2010, p. 845). Moreover, Birkinshaw and Morrison (1995) clearly distinguished between role and strategy. While they describe ‘role’ as a process whereby the unit conforms to the imposed function, they perceive ‘strategy’ as a higher degree of subsidiary autonomy to set its own destiny. They then produced Table 4.1 which synthesises subsidiaries’ strategic mandate typologies.
Table 4.1 Typology of strategic mandates (Source: Birkinshaw and Morrison, 1995, p. 733).

<table>
<thead>
<tr>
<th></th>
<th>Local implementer</th>
<th>Specialised contributor</th>
<th>World mandate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>White and Poynter (1984)</strong></td>
<td>Minature replica</td>
<td>Rationalised manufacturer</td>
<td>Global mandate</td>
</tr>
<tr>
<td><strong>D’Cruz (1986)</strong></td>
<td>Branch plant</td>
<td>Globally rationalised product specialist</td>
<td>World product mandate</td>
</tr>
<tr>
<td><strong>Bartlett and Ghoshal (1986)</strong></td>
<td>Implementer</td>
<td>Contributor</td>
<td>Strategic leader</td>
</tr>
<tr>
<td><strong>Jarillo and Martinez (1990)</strong></td>
<td>Autonomous</td>
<td>Receptive</td>
<td>Active</td>
</tr>
<tr>
<td><strong>Gupta and Govindarajan (1991)</strong></td>
<td>Local innovator, implementer</td>
<td>Global innovator</td>
<td>Integrated player</td>
</tr>
<tr>
<td><strong>Roth and Morrison (1992)</strong></td>
<td>Integrated</td>
<td></td>
<td>Global subsidiary mandate</td>
</tr>
</tbody>
</table>

4.2.1.2 Subsidiaries’ roles

There are various functional activities in which firms perform and specific functional knowledge is evolved and integrated around these activities. The fact that MNC units are often integrated vertically around the functions that they perform, knowledge transferred internally should be specific and articulable (Minbaeva, 2007). In addition, the structural context of subsidiaries varies according to their role in the network. Birkinshaw and Morrison (1995, p. 730) describe the structural context as a 'set of formal and informal management systems' that establish the relationship of the subsidiary to its HQ and other affiliates. It is then one of the main determinants that shape a subsidiary’s mandate. Subsidiaries can thus be set up as:

- No voice subsidiary (contributor or receptive subsidiary): the HQ imposes a role on the unit which is controlled through either a formal or informal control mechanism. They are passively integrated into the global system of operations of the rest of the organisation, perform mainly marketing and sales activities (Jarillo and Martinez, 1990) and
contributors are mandated to implement approaches, decisions or knowledge innovated in other units (Chini, 2004). There is a high level of interdependence with the HQ and other subsidiaries.

- **Autonomous (local implementer) or local innovator** (Gupta and Govindarajan, 1991): the subsidiary decides on their operations and management system. This specific type of unit is independent from the rest of the network in the MNC since it conducts most of the activities in the value chain in a limited geographic scope (Jarillo and Martinez, 1990). Although they have an important responsibility for the development of local know-how in just about all functional areas (Chini, 2004), in the global integration they can be dependent on the HQ and engage in the whole value chain (Birkinshaw and Morrison, 1995).

- **Lead subsidiary** (world mandate or strategic leader): the subsidiary activities are managed from its site although these activities are integrated into the whole value chain (Birkinshaw and Morrison, 1995). There is a high knowledge inflow and outflow which implies that it also has the responsibility for knowledge creation (Chini, 2004) that can be used and applied in other units. It is an active player in the competitive strategy of the organisation for seeking a strategic asset.

- **Black hole**: can be classified as a low performing world mandate subsidiary or a high-potential specialised contributor according to Birkinshaw and Morrison (1995).

While Paterson and Brock (2002) stress that strategic decisions do not only rely on the HQ but that subsidiaries can also take decisions, Mudambi and Navarra (2004) argue that a subsidiary’s competence development also creates tensions. Indeed such development may not always increase the subsidiary’s ability to influence strategic decisions within the MNC and could actually hinder it. They support the view that the internationalisation of R&D has unleashed a considerable degree of tension within MNCs and that this tension is more strongly related to knowledge flows than to autonomy-control issues. In fact because subsidiaries are likely to push for more and unsuitable levels of autonomy (Chini, 2004), Mudambi and Navarra (2004) believe that any subsidiaries that have acquired considerable strategic independence in all aspects of their operations are therefore able to exercise considerable intra-firm bargaining power to influence the distribution of the firm’s resources. Consequently, sensitive management tools such
as formal control mechanisms are required which will enable units to evaluate their contribution to organisational effectiveness (Taggart and Hood, 1999).

To sum up, knowledge transfer presents even better results when each individual or unit shows some positive attitudes towards knowledge sharing in the organisation. Understanding and recognising each other’s priorities is one of the key elements. In fact during the implementation of knowledge transfer from HQ to subsidiaries, workers at a unit may perceive positive or negative changes in the value of applicable knowledge (Li and Hsieh, 2009).

**Proposition 7**

*Subsidiary autonomy and the HQ–subsidiary network enhance knowledge absorption, standardisation, adaptation and implementation between global and local implementers and internal customers which impacts upon knowledge transfer effectiveness.*

### 4.2.2 Relationship between headquarters and subsidiaries and the communication flow

This relationship focuses on two streams: the centralisation and formalisation of decision making, and the use and integration of the portfolio of all units to maximise the use of organisational knowledge in the whole company (Paterson and Brock, 2002). The management of knowledge flow in MNCs certainly requires the need to balance the ‘local responsiveness and the central coordination’ (Chini, 2004, p. 37) since the different subsidiaries may develop their own local standards and resistance to centralised decisions. The HQ is at the foundations of the MNC. Particularly in those western countries which have a higher degree of universalism, the HQ holds the keys to global marketing, global production and global human-resource management (Trompenaars and Hampden-Turner, 1997). In fact, it is the apex of the organisation and every other unit relies on it partially or fully. Ghoshal et al. (1994) urge that the ultimate responsibility for strategic direction, decision making and overall coordination rests with the HQ. Therefore in order to be effective when carrying out those responsibilities and coordination tasks, the HQ will have to put in place an effective communication process with each subsidiary based on trust and common ground (*see Chapter 3 section 3.5.3*). However since
A Critical Evaluation of Knowledge Transfer Management in Improving Organisational Effectiveness within MNCs

some subsidiaries within the MNC have the potential to initiate and develop value-added activities and implement autonomous decision making (Ambos et al., 2006; Manolopoulos, 2010), it challenges the perception of the HQ as the decision maker and subsidiaries as passive units following HQ’s mandates (Hedlund, 1986).

As explained in section 4.2.1, subsidiaries play an important role in the organisational knowledge creation and utilisation cycle. In fact, the relationship between the HQ and the subsidiaries is of more importance to the specific role that the subsidiary plays in the network. This often determines whether the subsidiary has more control over the knowledge and does not simply rely on the HQ. The communication process between the HQ and subsidiaries is significant for organisational effectiveness. Parent companies should be able to make good use of their organisational knowledge and they play a big role in managing knowledge transfer in the network of inter-units (Rabbiosi and Santangelo, 2013). As a result of this effective knowledge transfer management, innovation can occur in diverse subsidiaries globally (Bartlett and Ghoshal, 1989).

4.2.2.1 HQ–subsidiary knowledge flow (inflow)

This type of knowledge flow is the most traditional in which the subsidiary relies on the HQ and exploits all know-how advantages. Since ultimate responsibility for strategic decision making and overall coordination rests with the HQ, subsidiaries are initially set up by the parent company with certain goals and objectives to achieve. However, researchers have identified lateral knowledge flows as beneficial for subsidiaries. Firms will benefit from a reduction in cost by encouraging knowledge development in subsidiaries rather than communicating knowledge across borders (Bartlett and Ghoshal, 1989), even though knowledge leveraging is important and adds value to organisational competitive advantage. However, subsidiaries benefit from interacting with other units; hence a network of lateral flow is a prerequisite to achieve responsiveness and learning (Bartlett and Ghoshal, 1989) in MNCs.

4.2.2.3 Subsidiary–HQ knowledge flow (outflow)

Because subsidiaries also develop their own competencies, their resources and capabilities may be transferred within the MNC including the HQ and used for further development of combined
knowledge and capabilities that ‘generate new applications from existing knowledge’ (Kogut and Zander, 1992, p. 391). However, Lee and Wu (2010) argue that because of the differences between the HQ and subsidiaries, a successful knowledge transfer between them requires appropriate adjustments to match the environment faced by the subsidiaries. The speed of knowledge transfer is crucial for the success of MNCs. In order to build or sustain their competitive advantage, such organisations will have to be fast in the process of sharing knowledge. As a result, an MNC that is not capable of quickly transferring new knowledge to its subsidiaries will possibly turn into a source of new ideas for competitors (Govindarajan and Gupta, 2001).

4.2.3 Inter-subsidiaries’ relationship communication (inflow and outflow)

Regarding inter-subsidiary communication, the degree of involvement of the subsidiary in the company network and the internal competitiveness within and across units influences knowledge transfer. A subsidiary network is made of relationships formed with external partners. However, each unit is unique and is embedded in its own local context, and integrated in the MNC network. According to Lee and Wu (2010) to gain competitive advantage MNCs depend on their ability to facilitate and manage the inter-subsidiary transfer of knowledge. As each subsidiary develops its own competencies, there is a need to share, adapt and apply those competencies in other geographic areas to maximise competitive advantage. The integration of knowledge development is important as it eliminates duplication of efforts and saves costs (Kogut and Zander, 1992, 1993). However, subsidiaries are often subject to two contradictory forces: the external source of local knowledge and HQ’s limited knowledge about its subsidiaries’ network (Chini, 2004). When the HQ has limited knowledge about its subsidiaries’ network it can slow down decision making or create hostility to the general or specific changes that are implemented. So how do organisations overcome resistance to change?

**Proposition 8**

* A robust communication process flow enables better HQ-subsidaries and inter-subsidiaries interactions, thus highly effective knowledge implementation.
4.2.4 Overcoming resistance to change management in inter-unit communications

The concept of ‘change management’ is a familiar notion in all types of industries. However, how organisations manage and overcome resistance to change is what distinguishes them. Yarberry (2007, p. 80) defines change management as ‘a core information technology general control required to support the business functions of any enterprise (...) a control system that ensures programs, systems, and infrastructure modifications are authorized, tested, documented, and monitored’. Change management therefore varies depending on the nature of the business, the change the organisation is trying to implement and the people involved in the process. To maintain their competitive position, organisations use Lean and Six Sigma improvement systems to achieve the degree of change needed. However, it is not always easy to implement organisational changes. According to Cornell (1996) direct opposition to the change may involve sabotage of the change by delaying its implementation. It may also take the form of direct action such as forming pressure groups or lobbying parliament. What is being observed frequently is that, for example, foreign subsidiaries will pretend to conform to HQ directives (Trompenaars and Hampden-Turner, 1997). In developing countries in particular, where the industrialisation process is heavily based on multinationals, a productive globalisation implies a deep change in models of operations management adopted by every enterprise, especially MNCs which are the main drivers of that process (Fleury, 1999). In other words, investing in new markets will also involve considering the management style as well as the local culture. As a result of those organisational changes, developing countries will have to adapt to them to keep up economic and social progress (Splettstoesser and Kimaro, 2000).

During the knowledge transfer process, general or specific modifications can be made at the recipient unit, such as the break-up of existing routines and/or changes in the organisational culture (Kostova, 1999). Generally, during the communication or knowledge transfer process, subsidiaries may be asked to make some modifications to enable improvements. However, in some cases some resistance may occur and the way the HQ or the sender unit deals with those resistances is vital for an effective knowledge transfer. The extent to which subsidiaries accept modifications, make the transferred knowledge workable and adapt to different situations is also important. In fact, it is necessary for the HQ to make sure that the knowledge has been properly
transferred and that the changes are implemented. However, change management is not an easy task because resistance to change is ‘powerful, even in the face of indisputable objective evidence that a particular change makes sense. We are hardly wholly rational creatures’ (Davenport and Prusak, 1998, p. 102). Therefore, it is imperative to come up with strategies on how best to overcome resistance to the change management.

4.2.4.1 Overcoming resistance to change with relationship base and ‘shared mind’

There are many factors that can lead to resistance to change, for instance culture. Culture is a set of behaviours, values and habits and as individuals we have been acquiring them gradually since our childhood from our parents, environment and society (Hofstede and Jan, 2004). Resistance to change is instinctive and trust is important to overcome it (Davenport and Prusak, 1998); it is difficult to change an individual’s mind-set, his own way of doing things, without trust at the foundation. Trompenaars and Hampden-Turner (1997) emphasised that although organisations cannot strip employees from their common sense constructs or routine ways of seeing, they can try to understand their individual behaviour and build from ‘the way they think’. Interestingly, employees within a company are individuals coming from different cultures, and their background can influence the way they perform or interact with each other (Haghirian, 2011). Hence, change may not fully penetrate if chaotic and dramatic levels of change clash with people’s values. In Chapter 3, section 3.5.3, the researcher discussed the concept of the relationship base. In fact within a group, when the phenomenon of the collective mind occurs, management of members is easier because people have a ‘shared mind-set’ for decision making and the execution of tasks (Wegner et al., 1985; Martin, 1992; Ulrich and Smallwood, 2003). When people within a group or an organisation have a common vision, resistance to change is unlikely to take place. Indeed this collective mind must go along with trust. Relationship and trust are thus two prerequisites to a ‘shared mind-set’ (Levin, 1999; Burt, 1992). Thus it is important to build relationships based on trust to enable a common vision to effectively transfer knowledge and implement changes because people need to feel secure and ensure that others are trustworthy. According to Davenport and Prusak (1998) this implies that individuals who work within the same field, who are in the same community of practice or share the same work culture are able to communicate better and transfer knowledge more effectively than people who do not.
4.2.4.2 Overcoming resistance to change by Lewin (1947)

Building a strong relationship based on trust and a shared mind-set clearly enhances the implementation of change. However, how do managers get people to buy in and change their individual mind-sets? The fact that individuals take part in the same group does not necessarily indicate a similarity of attitudes, understanding or language. In fact a mind-set is the individual importation of a set of ongoing interactions in a system of social activity where the participants make sense of the interactions and relay that sense back into the system (Weick and Roberts, 1993). Therefore, even within a collective mind, in groups, communities of practices or organisations there is still some influence of the individual mind since it requires individuals to form that collective mind.

Lewin (1947) suggested a three-stage theory of change management commonly referred to as Unfreeze, Change, Freeze (see Figure 4.2).

For a successful implementation of change to take place, leaders and managers must understand and generate the motivations behind these changes. They have to be able to get the people to buy in and picture a common interest for that change. Simply put, this stage is about trimming down the forces that are struggling to maintain the status quo, and dismantling the current mind-set. Unfreezing can be done by confronting employees with an existing problem in order for them to be aware of the need to change and therefore to seek new solutions. According to Levasseur (2001):
Although it is necessary to tell people about the proposed change for them to understand and support it, active, top-down communication alone is not sufficient to ensure success. A fundamental principle of effective change management is that people support what they help to create. Active participation by the affected parties in the change process is the most important element of effective change. (Levasseur, 2001, p. 72)

The next step consists of implementing the change. Change can be introduced if people are motivated to accept it. If the motivating forces are understood then these can be exploited to bring about the change (Cornell, 1996) (see Chapter 3 section 3.5.2.1 for motivation strategies). However, there may be a period of confusion as the organisation gradually transits from the old way of doing things to the new way by implementing new values, behaviours, decisions and strategies. After the implementation of the change, Refreezing involves continuous feedback from top management until the change has effectively taken place. In fact, as the organisation moves toward a desirable objective, new behaviour requires strengthening to maintain the firm at that improved performance level and to avoid falling back on previous patterns of action (Lewin, 1947). At this stage the organisation may be able to crystallise and adapt the general or specific changes to the new way.

### 4.3 Psychic distance concept

It is crucial for the researcher to examine and discuss the challenges that can arise when knowledge flows within an international organisation, more importantly in the case of MNCs where employees and subsidiaries are separated by geographical distance, linguistic and cultural differences and time differences, and where in many cases employees have never met physically (Haghirian, 2011). Knowledge then becomes difficult to manage when there is a distance between units. Interestingly the use of IT systems supports explicit knowledge transfer (Pedersen et al., 2003) and tacit knowledge only to a certain extent. Buckley and Carter (1999, p. 80) urge that: ‘Organizational and cultural barriers internal to the firm become a prime concern when the firm’s management is seeking the most effective use of its intangible knowledge assets.’ Psychic distance is thus a mix of cultural, organisational and economical subsets and may impede the knowledge transfer process of MNCs (Pedersen et al., 2003).
4.3.1 MNCs in the triad of developed, underdeveloped and developing nations: embeddedness of knowledge in context

Most of the articles on knowledge transfer discussed in the previous chapters have barely highlighted the importance of the context embeddedness of knowledge and knowledge transfer in MNCs. It is one of the objectives of this research to analyse and evaluate Lean and Six Sigma knowledge internalisation and implementation in different geographical contexts and the inter-unit exchanges in the broad triad of developed, underdeveloped and developing nations. Cohen and Levinthal cited the work of Lindsay and Norman (1977) and suggested that knowledge may be nominally acquired but not well utilised subsequently because the individual did not already possess the appropriate contextual knowledge necessary to make the new knowledge fully intelligible (Cohen and Levinthal, 1990). Can this impact on the results of the implementation of Lean and Six Sigma in different areas? Since these specific techniques have been developed in the more advanced economic countries, will that explain the challenges?

MNCs are unique organisations which are made up of a range of unique organisational units. Hence, the context of every unit and individuals working within those units may differ (Inkpen and Dinur, 1998). Every organisational unit in an MNC operates in a specific and unique context. In this study, the researcher has selected three economic dimensional contexts which are developed, developing and underdeveloped countries. Later on, she will discuss the notions of cultural and organisational distance which are also considered as key elements that could differentiate one unit from another. First of all, she brings up the issue of economic context.

4.3.1.1 Economic context: concept of development and underdevelopment

Globalisation offers the potential to raise economic growth rates significantly, but at the same time it exposes firms and economies to intense competitive pressures and developing countries are particularly exposed to those pressures (Fleury, 1999). Generally, organisations are looking for more opportunities and new markets, while domestic organisations in developing countries are trying to learn and gain knowledge and expertise from industrial countries with the hope of growing and extending their businesses. Sugden et al. (2005) see economic globalisation as a process in which new technologies and a new geography imply the possibility of strategic decisions that result in alterations to the prospects for, and forms of, economic development.
Interestingly, the economic dimension of globalisation has been constantly dissolving into all the rest of its dimensions: controlling the new technologies, reinforcing geopolitical interests and, with postmodernity, finally collapsing the cultural into the economic and the economic into the cultural (Jameson, 2000). According to Splettstoesser and Kimaro (2000), developing countries will have to cope with the resulting organisational changes and will have to adapt to them to avoid falling further behind and risk exclusion from economic and social progress. This will encompass organisational learning where organisations will be called to be more innovative by learning new ways of doing things and improving their communication skills when it comes to knowledge transfer.

One of the objectives of this thesis is to understand whether the concept of development influences the way MNCs interact with their different units located in either developed countries or developing countries. It is thus important to clarify the meaning of economic development in order to understand the characteristics of the concept of development and underdevelopment. In their book *Development Problems and Policies*, Jain and Khanna (2009–10, p. 42) explain that the concept of economic development refers to growth in real per capita income as well as structural and institutional change to increase the economic welfare or well-being of the people. The main objective here is the eradication of poverty. They further explain that what differentiates a developed nation from an underdeveloped one is the degree of economic development. According to them an underdeveloped economy is one which is characterised by widespread poverty, low economic performance in comparison to advanced economies and under-utilisation of product potential (Jain and Khanna, 2009–10, p. 14). To synthesise this concept, they present the characteristics shown in Table 4.2.

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2 This section of the chapter is mainly built on their insight into economic development. This notion has been discussed by many authors, among them Jain and Khanna (2009–10) who have presented a table of the differences between developing and developed countries.
Table 4.2 Differences between developed and underdeveloped economies*

<table>
<thead>
<tr>
<th>Basis of difference</th>
<th>Developed economies</th>
<th>Underdeveloped economies</th>
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</thead>
<tbody>
<tr>
<td>1. Per capita income</td>
<td>Per capita income is high. It is above $9,000 per annum on average. Most of the people are rich.</td>
<td>Per capita income is low. It is less than $700 per annum on an average. Most of the people are poor.</td>
</tr>
<tr>
<td>2. Standard of living</td>
<td>Standard of living is high.</td>
<td>Standard of living is low.</td>
</tr>
<tr>
<td>3. Economic inequality</td>
<td>Economic inequalities are few</td>
<td></td>
</tr>
<tr>
<td>4. Capital and capital-output</td>
<td>Rate of capital formation is high. It is between 25% and 30%. Capital-output ratio is low.</td>
<td>Rate of capital formation is low. It is between 10% and 20%. Capital-output ratio is high.</td>
</tr>
<tr>
<td>5. Agriculture</td>
<td>Dependence on agriculture between 2% to 5%, i.e. very low. Agriculture is developed and advanced.</td>
<td>Dependence on agriculture between 70% to 80%, i.e., very high. Agriculture is backward and underdeveloped.</td>
</tr>
<tr>
<td>6. Rate of development</td>
<td>Economy is dynamic.</td>
<td>Economy is static.</td>
</tr>
<tr>
<td>7. Natural resources</td>
<td>Natural resources are fully utilised</td>
<td>Natural resources are not fully utilised</td>
</tr>
<tr>
<td>8. Foreign trade and indebtedness</td>
<td>Terms of trade are generally favourable. Finished products are exported and agricultural products or raw materials are imported. Less indebtedness.</td>
<td>Terms of trade are generally unfavourable. Agricultural products or raw materials are exported and finished products imported. Heavy foreign indebtedness.</td>
</tr>
<tr>
<td>9. Industry</td>
<td>Industries are developed.</td>
<td>Industries are backward.</td>
</tr>
</tbody>
</table>
### 11. Growth rate of population
- Growth rate of population is generally low. These countries pass through the third or fourth stage of demographic transition. Population is less.
- Growth rate of population is generally high. These countries are in the first or second stage of demographic transition. Population is more.

### 12. Human capital
- Large human capital formation. Good health of the people. 90% of people are literate. Trained and skilled labour.
- Little human capital formation. Most of the people are unhealthy and unskilled. Less efficient labour.

### 13. Unemployment
- Less unemployment. It is frictional and structural. No disguised unemployment.
- Large-scale unemployment. Disguised unemployment widely prevalent. Chronic unemployment.

### 14. Production Technique
- Production technique is developed and advanced. More possibilities of research and innovations.
- Production technique is backward. Little possibility of research and innovations

### 15. Cultural environment
- Cultural environment is materialistic. Dignity of labour is maintained. People’s outlook is modern.
- Cultural environment is spiritualistic. Dignity of labour not recognised. People’s outlook is traditional.

*This table is from Jain and Khanna (2009–10). They explain the differences between developed and underdeveloped economies.*

In Table 4.2 the authors have highlighted the key elements that can differentiate a developed country from a less developed or developing country. However, although some key elements such as unemployment, growth rate of population, per capita income, standard of living etc. are not directly under the control of MNCs, the production technique, the human capital and the cultural environment can affect MNCs’ knowledge transfer if there is no high-quality
management in place. Subsidiaries are therefore subject to different challenges and require different administrative practices (White and Poynter, 1984).

4.3.1.2 Infrastructural context challenges in underdeveloped countries

The infrastructure of a country is a crucial factor. In fact the infrastructure eases knowledge transfer and establishes knowledge flows throughout the firm. This includes ‘business intelligence, collaboration, distributed learning, knowledge discovery, knowledge mapping and opportunity generation as well as security (Chini, 2004, p. 51). Because of contextual differences between the HQ and its subsidiaries, any piece of knowledge will have to be codified and transferred in a more useful and simple form through converted technological infrastructure. According to Szulanski and Jensen (2004), due to the difference in infrastructure between the HQ and its subsidiaries, the latter may even be reluctant to implement knowledge transfer. The HQ may also be reluctant to implement a knowledge transfer programme, because the infrastructure between the HQ and the subsidiary is different.

Jain and Khanna (2009–10) define an underdeveloped economy as one that is characterised by widespread poverty, low economic performance in comparison to advanced economies and underutilisation of product potential (Jain and Khanna, 2009–10, p. 14). Indeed with such a description, the economic and infrastructural differences between countries could be seen as inhibiting factors for knowledge sharing. Nancy and Van (1998) cite the work of Lyster (1997) and Ohmae (1995) who affirm that developing or emerging countries refer primarily to countries that typically are in early growth stages in terms of economic development and have been growing more rapidly than traditional developed country economies. While specific country factors differ from one to another, some environmental, cultural factors or their implications may be comparable and thus managers who understand one may be able to apply that knowledge to other settings. In addition, developing countries often have unpredictable political and social situations that make interactions with them difficult and this discourages potential business opportunities for international firms (Simonin, 1999). These countries often suffer from a shortage of capital or qualified human resources (Naresh et al., 2005). While management innovation is rapidly evolving in developed countries, the notion is still to take root in developing countries. Developing countries should engage in innovation strategies in the areas of
'new skills logistics systems, specialised infrastructure’ entailing high levels of networking between firms, universities and research institutes (Lall, 2001). According to these authors, developing countries can be more critical for international firms than appears to be the case. Because knowledge sharing is the key to all success in those giant firms, it is clear that when looking at Table 4.2, underdeveloping nations cannot be seen as opportunities for MNCs. Who would want to invest in a market with all these drawbacks and negative characteristics? The fact is it would take great determination for a firm to extend its market in such countries knowing all the risks it could encounter. However, on the other hand, there are some assets that developing countries have compared to developed nations. Some authors support the idea that developing countries are starting to be seen as the future hope for western firms as they continue to invest and build up new strategies to strike a blow against the slowdown in organisational management in those parts of the world. In fact they strongly believe that these markets could generate important income for firms willing to operate in these parts of the world. Dohlman and Halvorson-Quevedo (1997), for example, insist that developing economy countries are bound to be increasingly important because of their potential as markets, as sources of raw materials, as production sites and as strategic regional centres of expansion in other areas. Anand (2009) goes along with this statement stating that western companies that keep investing in developing countries despite their problems at home will grow businesses that will help them ride out future recessions in a decoupled world. They may also be better positioned to survive the current recession if it persists. These companies will gain a critical first-mover advantage in new market segments, such as the rural segment, that are tough to break into. On the other hand, Nancy and Van (1998) recognise that some of the underdeveloped countries are often seen as unsaturated markets and new opportunities, and more importantly as sources of raw materials for global firms. These companies find it hard to enter markets and investment opportunities are limited even in their own regions. The triad here represents a geographic place sharing a number of commonalities. Anand (2009) insists that although today’s great crisis has slowed down developing countries, they continue to grow. Not only will they turn out to be advanced economies by the time the recession ends, but their markets will be considerably restructured by new government policies.
This is why it is even more important for MNCs attracted to those new markets to think of a much more adaptable way to communicate between their units so as to share their competencies and knowledge for better performance.

4.3.2 Striking the balance between corporate, national and host country culture: adaptation or standardisation of knowledge for knowledge transfer effectiveness in Lean and Six Sigma teams within MNCs

In recent years, economic activity has increasingly emerged and globalisation has importantly taken place. MNCs especially distinguish themselves from other global organisations with their ability to transfer knowledge and know-how across borders (Kogut and Zander, 1992). On the other hand, each culture distinguishes itself from other cultures by its ability to create specific solutions to certain problems which expose themselves as dilemmas (Trompenaars and Hampden-Turner, 1997). Good management of conventional knowledge transfer from HQ to foreign units must benefit the organisation as a whole. However, McGuinness et al. (2013) argue that one impact of globalisation is that knowledge transfer takes place across several aspects (space, time, language, culture, etc.) as well as in multiple directions (forward, backward and laterally) which can interfere in the knowledge sharing process. It is clear that firms must encourage their subsidiaries to develop their own competencies so that they can be leveraged in other units (Kogut and Zander, 1992) but companies located in different geographic areas must be aware of cultural diversities. Striking the right balance between corporate culture, national culture, and the host country culture is not always evident for the organisation. Indeed a right balance between such determinants can produce better knowledge transfer in Lean and Six Sigma teams.

<table>
<thead>
<tr>
<th>Proposition 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisational distance between subsidiaries and HQ affect knowledge transfer in international teams within MNCs</td>
</tr>
</tbody>
</table>
4.3.2.1 The impact of cultural diversity on knowledge sharing in Lean and Six Sigma teams within MNCs

‘Culture is not a “thing”, a substance with a physical reality of its own. Rather, it is made by people interacting and at the same time determining further interaction.’ (Trompenaars and Hampden-Turner, 1997, p. 24)

Cultural awareness and the management of cultural differences are common notions that organisations may have to deal with whether internationally or domestically, because even within a local context, regions may differ in many ways. In MNCs which are larger and more complex entities, it becomes challenging to implement and internalise solving-problems methodologies in a standardised way. In fact, just because a problem-solving piece of knowledge implementation has been successful in country A does not mean that it will automatically produce the same results in country B even if they are geographically close. It takes good skills to internalise and adapt the knowledge to the country or department. Nevertheless many firms scarcely seem to consider the impact of culture on business and it is unfortunately where the biggest source of failure arises. Trompenaars and Hampden-Turner (1997) made some reflections on that topic and suggested that: ‘Culture still seems like a luxury item to most managers, a dish on the side. In fact culture pervades and radiates meaning into every aspect of the enterprise.’ They based their research on ‘cultural sensitivity’ and explained how awareness and understanding of cultural diversity is a key skill for everybody in the organisation. Ghauri and Cateora (2005) support their idea and claim that ‘Marketers should understand how their own culture affects their assumptions about another culture (…) Being more culturally sensitive will reduce conflict, improve communication and thereby increase success in collaborative relationships.’ Culture can thus influence knowledge sharing in multinationals because it is embedded in the human being. It was learned by individuals when they were little, from parents who acquired them when they were children (Hofstede 2005). According to Hennart and Larimo (1998), it lies in the differences between the national culture of the home (HQ) and the host countries (subsidiaries). Hence culture is a number of beliefs and behaviours that are acquired and as long as a group is formed, a culture is derived from it. This has been argued by Professor Hofstede (2005), who urges that ‘Culture is always a collective phenomenon, because it is at least partly shared with people who live or lived within the same social environment, which is
where it was learned. It is the collective programming of the mind which distinguishes the members of one group or category of people from another.’ From this definition, it is obvious that cultural differences, including individual behaviours (personal preferences and attitudes), language, education, age, religion and prejudices against other cultures may obstruct or limit knowledge transfer across borders.

Consider this statement by Ordonez de Pablos (2004): ‘Certain organisational cultures support and facilitate knowledge transfer whereas other cultures promote knowledge retention’ (p. 113). In other words, it seems that the ability of a firm to come up with a corporate culture that values the innovation, sharing, creation, use and implementation of knowledge depends on its capabilities in managing cultural and environmental differences. For Davenport and Prusak (1998) and Haghirian (2011), while organisations are formed of individuals whose values and beliefs inevitably influence their thoughts and actions in carrying out their daily tasks, they also have corporate values and beliefs. It is therefore obvious that people from different backgrounds facing the same situation will have different reactions or will think differently because they have different values and beliefs. Hence organisational culture is that culture which shapes assumptions about what knowledge is worth exchanging, defines relationships between individual and organisational knowledge and determines who is expected to control specific knowledge as well as who must share it (Lee and Wu, 2010). It can be seen that corporate culture enables knowledge creation, storage and distribution in the firm but the key to that effective knowledge transfer also resides in how well MNCs strike a balance between corporate culture and national culture and the culture of foreign units. Haghirian (2011) points out that the transfer of knowledge from HQ to their culturally diverse subsidiaries and vice versa can only be effective if people own ‘high cultural competence, have excellent language skills and are willing to invest a lot of time in transferring knowledge between the organisational units’. In fact employees’ values and beliefs may have a dominant impact on organisational knowledge and sharing if people are not aware of those differences and do not have the necessary skills to overcome any misunderstanding or misinterpretation which will lead to wrong decision making.
4.3.2.2 Impact of organisational distance in knowledge sharing in Lean and Six Sigma teams within MNCs

MNCs must have strong systems in place to enable geographically dispersed units to communicate. The transfer of knowledge between units within the same country is far from trivial. However, the problem of knowledge transfer will become increasingly difficult with geographical and cultural distance (Lee and Wu, 2010). In particular subsidiaries whose knowledge is valuable in the organisation as a whole have to ensure that this knowledge is available for the entire MNC (Boettcher and Welge, 1994). Thus the subsidiary’s location matters because the more liberal the location, the greater the potential knowledge creation (Cantwell and Iammarino, 1998). Knowledge transfer may present a challenge even when communicating simple information in subsidiaries which are more geographically distant from their HQ, and by implication have a high level of cultural difference (Haghirian, 2011). Interactions across distance then require the integration and existence of the MNC as a single organisation across cultures (Manev and Stevenson, 2001). Transferring knowledge from HQ to a culturally different subsidiary will only work if people have the skills to avoid cross-cultural differences.

Let us take the example of continuous improvement methodologies such as Lean or Six Sigma. These methodologies have been innovated and used in organisations located in more advanced economies. Hence it is obvious that an American MNC will implement Lean or Six Sigma on projects running in its units in South America, Africa or Asia. Making that knowledge available for other units maximises its chances of achieving zero waste, identifying defects and improving quality globally in the firm and thereby increase sales and profits. It is quite obvious that in a company wanting to achieve such organisational effectiveness, leaders will not hesitate to make good use of that asset globally, making the knowledge available and accessible for every unit in the organisation. Despite the fact that Lean and Six Sigma teams’ members and experts may be located in a different geographical area, one of the strongest advantages of big firms is the diversity of people which results in wider sources of knowledge within the organisation. However, unless the expertise has been identified and allocated to implement strategies and decisions locally, it is not always easy to find the person who has the greatest in-depth knowledge of a topic in the company. Davenport and Prusak (1998) stress the fact that the
geographic distance can sometimes impede the willingness of the knowledge seeker to cross barriers in search of that deepest knowledge. It will then be less likely for an individual working in a firm such as an MNC to find the best expertise next door or even in the same location.

One of the facets of organisational distance is the differences in infrastructure discussed in section 2.1.2. This includes IT systems which has been discussed in Chapter 3 section 3.6.2. In the following section the researcher evaluates language and individual behaviour.

4.3.2.2.1 Individual behaviour and language

The very first impediment in international business success is a person’s self-criterion which influences the way he or she makes decision making. The self-criterion is an unconscious reference to one’s own cultural values, experiences and knowledge as a basis for decisions (Ghauri and Cateora, 2005). By understanding each other’s behaviour and way of doing things people act and take decisions in a smarter way. Trompenaars and Hampden-Turner (1997) note that the way of thinking and acting in a situation differs depending on the culture. In fact they believe that ‘one culture can be distinguished from another by the arrangement of the specific solutions it selects for each set of problem situations. The solutions depend on the meaning given by people to life in general and to their fellows, time and nature in particular.’ Haghirian (2011) supports this view and describes the knowledge transfer process as the communication between two members of an organisation who intend to share knowledge but who may be hindered in doing this effectively because of communication problems, individual background and perceptions or the inability to understand the information which is received from overseas.

Individuals are therefore the main players in any knowledge transfer process. In fact, every knowledge management process, whether it is knowledge creation, sharing or implementation, is linked to the individual performing it and therefore is intensely connected to this individual’s intentions or strategies (Haghirian, 2011). It is also connected to the individual’s capability of making sense from information to create knowledge (Miller, 2002). Individuals thus have their individual culture which may also affect the work process and thus knowledge sharing. Usually, the communication between two individuals from different backgrounds and cultures can be a very complicated and frustrating task because although both parties might speak English misunderstandings and misinterpretations may be frequent. The lack of fluency in a co-worker’s
native language may represent a greater obstacle since even well codified knowledge remains inaccessible. Cultural distance can also create difficulties for understanding the mechanisms of local markets (Simonin, 1999). According to Davenport and Prusak (1998, p. 98) ‘effective knowledge transfer is far easier when participants speak the same or similar languages’. As a means of communication, competency in a shared language is necessary for effective knowledge transfer. If people do not share a common language within a group, communication is almost impossible and they may not be able to understand and trust each other.

The awareness of cultural differences between individuals within the company can impact on organisational effectiveness. In fact, some problems in the knowledge transfer process can arise in the company because of the gap between cultures.

4.3.2.3 Managing cross-cultural differences in Lean and Six Sigma teams in MNCs: adaptation and standardisation of knowledge

The concept of culture in the field of international business has always created challenges and difficulties for organisations. Recognition of this issue has innovated cross-cultural management which is a discipline within international management. Cultural distance raises barriers to understanding co-workers and the nature of their competitive advantage. Due to cultural and environmental differences between the HQ and its subsidiaries, knowledge transferred within the network may not always suit the local context of subsidiaries. The impact of cultural differences may arise from various origins that ‘may be so variable according to industry sectors and management styles in operation, according to cultural and organisation values in contention, according to personalities, locations business objectives, experience and expectations, according to the quality of interlingual communication that the very quest to make culture apprehensible as a concept and as a fact of life almost seems doomed from the outset’ (Holden, 2002, p. 5).

4.3.2.3.1 Adaptation vis standardisation

Often, due to cultural and environmental differences, customers in different countries may have different perceptions of product or service quality. Customers in developing countries, for instance, have lower quality expectations and therefore a wider zone of tolerance when it comes to ineffective service or low-quality products when compared to customers in developed
countries, resulting in a discontinuous improvement of quality in that area (Naresh et al., 2005). Similarly, individuals in different subsidiaries have different backgrounds which may affect the way they work and interact (Davenport and Prusak, 1998; Haghirian, 2011). According to Li and Hsieh (2009), to avoid unnecessary cost and knowledge transfer failures, transferred knowledge implemented at subsidiary sites has to be modified to the local circumstances. In fact it has to be adapted to the context and specificity of the local firm.

Multinationals are often confronted with the need for global standardisation and local adaptation, hence units may have different: operations management, level of autonomous responsibility for making decisions, level of competence and organisational characteristics (Jarillo and Martinez, 1990; Bartlett and Ghoshal, 1989; White and Poynter, 1984). On the other hand subsidiaries are encouraged to be actively creative by developing their own competencies rather than accepting predetermined roles; this can increase the overall efficacy of the whole network as innovation will increase (Birkinshaw and Hood, 1998). In spite of the fact that corporations operate globally and their organisational structure is redesigned at a global level to provide a better integration of decision-making and communication processes, a standardised approach is never fully successful in large firms. It seems clear that there is a need to have in place a standardised way of operating; nevertheless the key to successful international marketing is adaptation to the cultural and environmental differences between one market and another (Ghauri and Cateora, 2005). Adapting knowledge to each local subsidiary can therefore improve knowledge creation in organisations. In fact a good balance between both standardisation and adaptation may save time, reduce cost and improve innovation, but unfortunately ‘subsidiaries of MNEs face dual pressures: they are pulled to achieve isomorphism with the local environment and they also face an imperative for consistency within the organisation’ (Rosenzweig and Singh, 1991, p. 340).

**Proposition 10**

*Cultural differences between individuals within an international team affect the way in which they interact with each other, and thus impact on knowledge transfer effectiveness.*
‘Once we begin to see culture and knowledge about culture as an organisational resource, then cross-cultural management focuses less on the management of cultural differences and more on the application of this resource, which is then a form of organisational knowledge, to resolve international management problems.’ (Holden, 2002, p. 15)

4.4 Summary

This chapter investigated inter-unit relationships in the knowledge transfer process in Lean and Six Sigma teams within MNCs operating in the triad, and the influence of the psychic distance. First of all, the researcher gave a broad description of the role of a subsidiary within an MNC. It was argued in the first section that subsidiaries may possess power within the network and can be categorised as: no voice, autonomous, leader and black hole. The relationship and the communication process flow between the HQ and its subsidiaries were seen as important for organisational effectiveness. While the relationship between the HQ and its foreign units and their roles determined the communication process flow, there was a distinction between two different flows: HQ–subsidiary inflow knowledge and subsidiary–HQ outflow knowledge. The first type of flow was considered as more traditional and encouraged the exploitation of the HQ’s knowledge by the unit. On the other hand, the second flow emphasised subsidiaries’ competencies that were developed and shared with the HQ and other units within the MNC. Since these interactions between the HQ and the subsidiaries involves important decision-making in order to implement minor or general changes, it was important to tackle the concept of change management. It was discussed that resistance to change may occur as a result of decision making. This was partly due to culture, and a lack of ‘shared mind’ since the interaction between individuals may be influenced by their individual backgrounds. Thus Lewin’s (1947) theory of change management was introduced as one of the solutions for overcoming resistance to change.

The second section of this chapter focused on psychic distance. First of all, the researcher commented on the implications of economic differences in knowledge sharing in the broad triad of developed, underdeveloped and developing countries and the challenges of infrastructural context that underdeveloped and developing countries present for foreign MNCs. Finally, moving on to culture, the impact of cultural diversities and organisational distance upon
knowledge transfer in international teams within MNCs was discussed. A balance between standardisation and adaptation as a solution to cross-cultural differences was believed to be a systematic approach to avoid cultural clashes.
A Critical Evaluation of Knowledge Transfer Management in Improving Organisational Effectiveness within MNCs

PART II RESEARCH METHODOLOGY AND FINDINGS

Part II

Chapter 5 Model of Knowledge Transfer in Lean and Six Sigma Teams within MNCs and the Generated Propositions

Chapter 6 Research Methodology

Chapter 7 Findings and Discussions
CHAPTER 5 MODEL OF KNOWLEDGE TRANSFER IN LEAN AND SIX SIGMA TEAMS WITHIN MNCs AND THE GENERATED PROPOSITIONS

5.1 Introduction

The first part of this study consisted of a discussion of the elements that affect the knowledge transfer process in Lean and Six Sigma teams within MNCs. The researcher gradually put forward some propositions along with a couple of frameworks. In this chapter an attempt to model the Lean and Six Sigma knowledge transfer within MNCs will be presented along with the different propositions originating from the frameworks. This will serve to suggest more empirical work to identify gaps in the field of knowledge transfer in MNC management practice with a major focus on Lean and Six Sigma know-how. The frameworks below have been developed within the scope of international business, across geographically distant subsidiaries of a selected MNC. It has been observed in the literature that because of cultural, organisational and management differences no one single framework will apply to facilitate knowledge transfer in such big international firms. Instead, the framework has to fit in the context of a specific field of practice and network. This is why the researcher has chosen to limit this study to the implementation of continuous improvement methodologies: Lean and Six Sigma.

Figures 5.1 and 5.2 represent the frameworks drawn from the literature review.
**Figure 5.1** Framework of communication process flow management between team members (Source: Arielle Dora Nganya. S.)
Integrating the literature, the model of MNC knowledge transfer in Lean and Six Sigma teams shown in Figure 5.2 depicts the different levels of effective knowledge transfer. Each level is presented in detail followed by the derived propositions.
5.2 Knowledge internalisation

Continuous improvement methodologies such as Lean and Six Sigma have shown remarkable results in improving organisational performance. Organisations practising such disciplines will not hesitate to develop this knowledge within the firm to achieve success. As discussed in Chapter 2, Lean and Six Sigma are two efficient and compatible methodologies to improve processes and individuals must be trained and continuously coached to be able to implement them effectively in projects. Various authors believe that through learning capacities (training, mentoring and coaching) the internalisation process may efficiently take place within an MNC (Harry, 1998; Henderson and Evans, 2000; Pande et al., 2000; Keller, 2001; Antony and Banuelas, 2002; Ho et al., 2008), and this may require a good relationship balance between HQ and subsidiaries to enable inflow and outflow communication. The researcher therefore generates the first proposition.

**Proposition 1**

*Lean and Six Sigma knowledge development and coordination depend on appropriate training, mentoring and coaching.*

5.3 Knowledge implementation

Knowledge implementation is an important phase in Lean and Six Sigma projects. After training, to enable better absorption of the acquired knowledge, project leaders must execute projects. Within the MNC, subsidiaries may have different roles (see Chapter 4, section 4.2.1.2). They may be engaged either globally or locally which may involve knowledge inflow and outflow between the HQ and the subsidiaries in the network. It requires a good collaboration between global and local implementers to deploy Lean and Six Sigma effectively. Therefore it was important to evaluate the second proposition.

**Proposition 2**

*Trust, common interest and ‘shared mind’ facilitate the motivational disposition and willingness to share of the knowledge sender and the absorptive capacity and motivational disposition to receive of the knowledge receiver*
5.3 Knowledge leveraging

Unlike tacit knowledge, explicit knowledge may be easier to transfer through electronic and written mechanisms (see Chapter 3, section 3.6.2). IT is now viewed as an effective medium to share know-how by firms with employees and activities around the globe. Within Lean and Six Sigma teams or the community of practice in MNCs, a culture of leveraging projects, expertise or competencies has been developed and implemented in one origin and applied in new contexts. The researcher emphasises that knowledge storage and leveraging may enhance knowledge effectiveness, and thus suggests the following proposition.

**Proposition 3**

*Integrated and compatible IT systems enable highly effective explicit knowledge storage and leveraging in projects.*

Mentors and coaches give support to project leaders during project execution. In Lean and Six Sigma teams, MBBs – who can be considered to be experts – play the role of mentors because they are more experienced and can therefore better assist BBs and GBs. The researcher presumes that mentoring and coaching may be an effective way to transfer implicit knowledge since it involves ‘learning by doing’ and thus enhances the knowledge receiver’s absorptive capacity. She develops the following proposition.

**Proposition 4**

*Mentoring and coaching via personalisation between units enables a better transfer of tacit knowledge.*
5.5 Communication process flow management

The knowledge transfer process involves communications that take place within an organisation, between units or within a group, but most of all it is between two ears, and only between two ears (Drucker, 1969). To enable a better communication process flow, Minbaeva (2007) identified four main determinants to understanding knowledge transfer: the characteristics of knowledge, the characteristics of knowledge senders, the characteristics of knowledge receivers and the characteristics of the relationships between senders and receivers. However, the researcher also emphasises the choice of transmission channel as a fifth determinant to effective knowledge transfer because knowledge itself has two variations: tacit and explicit. While the latter may be easily codified, put into tangible data and transferred through IT tools, the former may be difficult to articulate and transfer through that medium since it is embedded in the individual’s mind. In Chapter 2, section 2.3.2.1 and Chapter 3, sections 3.5 and 3.6, the researcher discusses those factors and devises the fifth proposition.

![Diagram showing knowledge types and transmission channels](Source: Arielle Dora Nganya.S)

**Figure 5.3** Framework 2: Knowledge types and transmission channels (Source: Arielle Dora Nganya.S)

5.5.1 Knowledge transfer speed

Knowledge transfer may not be efficient if the process is too long. In today’s increasing competition, organisations need to react quickly to advanced technologies and customer need.
This may not be possible if information does not flow easily between the different units of a firm to match customer expectations. The researcher proposes that the choice of transmission channel should be made according to the type of knowledge. As explained previously in Chapter 3, Section 3.6, tacit knowledge may be better transmitted through personal contact while explicit knowledge may be better transmitted through written media. She thus points out that transferring tacit knowledge through written media may be a difficult task that may take time.

**Proposition 5**

*Knowledge transfer speed is affected by the choice of transmission channel which impacts on knowledge transfer effectiveness.*

### 5.6 Knowledge innovation

When employees are motivated, and perceive a clear organisational and individual benefit, it contributes to organisational effectiveness. It is important to ensure that knowledge has been transmitted, absorbed and used (Davenport and Prusak, 1998). Only then can one talk about knowledge transfer effectiveness. Organisations must set strategies to measure, if not control, knowledge transfer and encourage knowledge sharing to guarantee effectiveness. This may result in the motivational disposition of employees to share and receive knowledge and therefore create knowledge. She built the sixth proposition.

**Proposition 6**

*Knowledge transfer control mechanisms increase individual motivation to share and the ability to absorb knowledge, thus giving rise to knowledge leveraging opportunities and knowledge innovation.*
5.7 HQ and subsidiary interactions

Within an MNC, decisions can be made in either a formalised or centralised way and organisational knowledge should be used through the integration of portfolios for the benefit of the company as whole. However, although the HQ is at the centre of strategic decisions the management of knowledge cannot be successful without a balance between subsidiary/HQ relationships and networking. Chini (2004, p. 37) for instance, has emphasised ‘local responsiveness and central coordination’ to ease communication and enable development of unit competencies. Therefore the researcher put forward the next two propositions.

**Proposition 7**

*Subsidiary autonomy and HQ–subsidiary networking enhance knowledge absorption, standardisation, adaptation and implementation between global and local implementers and internal customers which impacts upon knowledge transfer effectiveness.*

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<th>Proposition 8</th>
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<tbody>
<tr>
<td><em>A robust communication process flow enables better HQ-subsidiaries and inter-subsidiaries interactions, thus highly effective knowledge implementation.</em></td>
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5.7 Psychic distance

Cultural and organisational distance have been discussed in *Chapter 4, section 4.3.2* as two concepts that may hinder knowledge transfer within MNCs. The researcher stresses the fact that cross-cultural differences within a group may interfere with decision making and thus change management because employees who enact together within a context have their own individual backgrounds which may influence the way they interact with each other. These concepts were perceived by various authors as factors that may impede organisational effectiveness if not taken into consideration (Trompenaars and Hampden-Turner, 1997; Hofstede and Jan, 2004; Ghauri
and Cateora, 2005; Haghiran, 2011). Consequently the researcher presents the following propositions.

**Proposition 9**

*Organisational distance between subsidiaries and HQ affects knowledge transfer in international teams within MNCs.*

**Proposition 10**

*Cultural differences between individuals within an international team affect the way in which they interact with each other, and thus impact on knowledge transfer effectiveness.*

\[
f (\text{Knowledge Transfer Effectiveness}) = K(\text{Transmission} + \text{Absorption}) + K \text{ Implementation} + K \text{ Leveraging} \\
= K \text{ Internalisation} + K \text{ Implementation} + K \text{ Leveraging} \\
= K \text{ Innovation}
\]

**5.10 Summary**

This chapter has consisted of a presentation of the conceptual framework that is believed may facilitate the researcher’s examination of the study which aims to identify the gaps within the field of knowledge transfer within MNCs. The researcher highlighted the important levels of knowledge transfer in international Lean and Six Sigma teams. She distinguishes four levels: knowledge internalisation, knowledge implementation, knowledge leveraging and knowledge innovation. At each stage she explained the reasons why she has considered elements in these frameworks as crucial for effective knowledge transfer. The researcher drew on these frameworks to generate propositions and to build questions for interviews. The conceptual
framework will be refined after data analysis in order to develop a model of knowledge transfer within MNCs that highlights the inhibitors and the facilitators of knowledge transfer processes with a major focus on knowledge flow in Lean and Six Sigma teams.
CHAPTER 6 RESEARCH METHODOLOGY

6.1 Introduction

Considering the gaps generated in Part II, it is important to identify the most appropriate research methodology for this study. Indeed with this methodology, the researcher should be able to tackle and support the research problem. In this specific case a theory building approach has been selected.

6.2 Research philosophy: positivism and interpretivism

In this part of the chapter, the researcher started by identifying the research philosophy, research approach and research strategy that best fitted the study.

The research process ‘onion’ is at the centre of any research methodology. According to Saunders et al. (2009), the research onion is a way of depicting the issues underlying the choice of data collection methods and then peeling away the outer layers. The first layer raises the question of the research philosophy that has been adopted. This was confirmed by Creswell (2003) who believes that it is necessary to begin a study with philosophical assumptions. These assumptions will underpin your research strategy and the methods you choose as part of that strategy (Saunders et al., 2009).

The research philosophy contains useful assumptions about the way in which the researcher views the world. An understanding of the research philosophy helped the researcher to clarify the most appropriate research design to achieve the objectives of this study. Since this research involves working with an observable social reality (knowledge transfer in Lean and Six Sigma teams within MNCs), data collection was done using existing research on the topic to develop a framework which was then used as a basis to generate propositions (see Chapter 5).

Let us begin by giving a brief description of the research philosophy with the aim of determining the most appropriate research paradigm to achieve the objectives of this study. The most
common and traditional philosophical hypotheses for academic researches are positivism or objectivism and social constructionism also known as subjectivism. These assumptions then led the researcher to a number of research philosophies that gave her guidelines to the research process. This study was mainly inductive as a model was the outcome of this study. According to Bryman and Bell (2007), the process of induction involves drawing a generalisable supposition out of observations. In an inductive study, this is what the connection looks like:

Observations/Findings → Theory

6.2.1 Positivist philosophy

Positivism is a natural science epistemology. Bryman and Bell (2007) suggest that it is a doctrine extremely difficult to constrain and therefore to outline in a precise way, because it is used in various manners by researchers. The phenomenon can be analysed into variables and, in most cases, the scientist is always capable of differentiating truth from fiction, and therefore has the capacity to agree on the real reasons for things if he/she wishes to do so. Remenyi et al. (1998) note that being a positivist entails the researcher working within an observable social reality. The researcher is more likely to gather data through observations of the reality in search of causal relationships in the data in order to create a generalisation of the context (Gill and Jonhson, 2010). According to Saunders et al. (2009), only phenomena that you can observe will lead to the production of reliable data. By developing hypotheses based on existing theories, the researcher can test them and confirm or refute these theories, leading to the further development of theory which then may be tested by further researchers. In fact, the ‘resources’ researcher is external to the process of data collection in the sense that there is little that can be done to change the essence of the data collected. In order to facilitate the replication of the research, the investigator is encouraged to use a highly structured methodology (Gill and Jonhson, 2010). Positivism therefore involves elements of both deductive and inductive approaches which means the researcher could have considered adopting this philosophy for this study.
6.2.2 Interpretivist philosophy

However, unlike the positivist, the interpretivist argues that if the researcher wants to understand social action and reality he or she has to look into the motive and significance which that action has for people. The interpretivist will listen to the feelings and focus on the ‘primacy of subjective consciousness’ (Remenyi et al., 1998). Thus it is reasonable that part of the data collection comes from Lean and Six Sigma team members’ and experts’ views, perceptions, experiences and understanding about knowledge transfer in their team within the MNC. The ontological position of the researcher suggests that these views and interpretations of the phenomenon are meaningful properties of the social reality (Mason, 2002) which her research questions are intended to investigate. Further more the researcher considers the Bryman and Bell (2007) suggestion as they explain that interpretivism emphasises upon the view that a strategy that respects the differences between individuals and the objects of natural sciences is required, and thus entails the social scientist seizing the subjective meaning of social action. Simply put, it is the way human beings try to make sense of the world around them (Saunders et al., 2009). In other words, interpretivism advocates that it is necessary for the researcher to understand differences between humans in our role as social actors. This highlights the difference between conducting research among people rather than objects. Since this research will involve interactions with people, the researcher considered adopting interpretivism over positivism.

6.2.3 Why interpretivist philosophy for this research?

In this study the researcher is looking at Lean and Six Sigma knowledge transfer between different units within MNCs, mainly between individuals. Interpretivism can happily support this study which considers people’s views, interpretations, meanings and understandings as the primary data. The principal concern for the researcher is to identify factors that inhibit or contribute to a better flow of knowledge in Lean and Six Sigma teams within such large entities. True, there is indeed a deep concern about the communication process strategies of the HQ and subsidiaries. Understanding ‘how’ these processes are being conducted or ‘why’ senior managers are derailed for unseen reasons which are not obvious, even for those involved in the
process, are part of the key objectives of this study. Therefore, the goal of the researcher here entails not making any change in the order of things, but rather understanding and explaining the phenomenon happening in this context, and focusing on the details of the situation and the reality behind those details. In fact, as a social scientist the researcher would like to go far beyond observing the details of the situations. Since Lean and Six Sigma project leaders perform in groups, or even within a community of practice which implies the notion of ‘collective mind’, it is fundamental for the researcher to gain access to people’s ‘common-sense thinking’ and thus to interpret their actions and their social world from their point of view (Bryman and Bell, 2007).

6.3 Research design

The research design provides a value stream mapping of the research. As stated by Bryman and Bell (2007), it provides a framework for data collection and analysis. In fact, it emphasises decisions about the priority being given to a range of dimensions of the research process in order to clarify the action plan for achieving the research objectives.
A Critical Evaluation of Knowledge Transfer Management in Improving Organisational Effectiveness within MNCs

Figure 6.1 Research design (Arielle Dora Nganya. S)
6.4 Case study research

The case study here is a single organisation. The researcher will generate an intensive examination of a single case in relation to which a theoretical analysis will be engaged.

6.4.1 Case study selection

To illustrate the research’s propositions, one MNC was chosen as the case study. The selection of that case was not arbitrary. At the time researcher conducted this research, the Dow AgroSciences (DAS) company had global sales of $6.4 billion in 2012 and employed more than 7,700 people worldwide (Dow Chemical Company, 2012). In the chemical and agricultural business, DAS is one of the leading competitors in the world. The company operates worldwide although it is an American company. DAS is relatively stronger in America while in other parts of the world it is less or more strong in terms of market share, revenue and competitive position.

The sampling selection procedure to select the appropriate case study (MNC) for this research presented the following inclusion criteria:

1. The MNC originated from a developed country and the HQ is located in a developed country.

2. It is a multinational company (MNC) with a presence in over 50 countries.

3. The MNC had to be operating in developing, underdeveloped and developed countries. Therefore, the different subsidiaries involved in the case study will be picked up from this triad.

4. The organisation had to be using both Lean and Six Sigma as one of their operations management techniques.

5. They had to be operating at a fully functional level (production, distribution and service).
The researcher has worked as an intern in the DAS company which has given its support for the project and has allowed her to use it as her case study. To make sure that her sampling was related to the objectives she wanted to achieve, members of Lean and Six Sigma teams in both the subsidiaries and the HQ were targeted. This was the representative population of this research. The researcher had no power to identify the most appropriate participants. However, the Champion (Lean and Six Sigma team Corporate Director) did his best to select individuals who were involved in this research. The researcher used a data set consisting of six dyads between foreign subsidiaries and the HQ.

6.4.2 Case company background

Dow AgroSciences, based in Indiana, USA, is a leading developer of crop protection and plant biotechnology solutions. It is a wholly owned subsidiary of the Dow Chemical Company, an American multinational chemical corporation headquartered in Midland, Michigan, USA. Dow Chemical is a provider of plastics, chemicals and agricultural products with a presence in about 160 countries and employing about 50,000 people worldwide (Dow Chemical Company, 2012).

6.4.2.1 Company history and Lean and Six Sigma adoption

Dow AgroSciences was originally known as DowElanco and began in 1989 as a joint venture between the Agricultural Products business of the Dow Chemical Company and the Elanco Plant Sciences business of Eli Lilly & Co.. The company was renamed in 1997 when Dow acquired 100 per cent ownership of the business. Dow’s Lean and Six Sigma programmes have registered impressive savings in the company. Moreover, the programme has enabled the organisation to create an environment for positive, powerful cultural change that is consistent with Dow’s global and human objectives (Motwani et al., 2004)

DAS’s Lean and Six Sigma deployment focuses on improving organisational effectiveness and its knowledge management strategy lies in expanding knowledge transfer within the company and the effective use of the tools and resources available for successful knowledge sharing in teams. Moreover, the company has a strong organisational culture which they try to align with the different cultures globally. This makes DAS the most appropriate case in that it will enable
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the researcher to identify some strategies that other firms may not be able to provide (Siggelkow, 2007). When looking at the company history, the firm, as an agricultural manufacturer, has always focused on the standardisation and reuse of knowledge in other units.

The researcher was quite intrigued by the size of the company. How can such a big entity manage and transfer knowledge like Lean and Six Sigma across borders effectively? How do international Lean and Six Sigma team members effectively communicate? This company case surely presents the right criteria for this study as the single case study since Lean and Six Sigma implementation is a well-documented success story in Dow as a whole (Motwani et al., 2004).

6.5 Data collection process

There was a wide range of methods that could be used for data collection in this study. Interestingly, there are advantages and disadvantages to each approach. With regard to qualitative and quantitative approaches, for instance, various authors have attempted to define qualitative research and have discussed the differentiation with quantitative research. There is a really strong distinction between both concepts which present different data characteristics and require different analysis methods (Williams, 2005).

6.5.1 Qualitative research

While quantitative research is research that entails the usage of numbers (Cramer, 2003) and has generally been associated with ‘hard’ and thus positivist analysis by the scientist (Williams, 2005), qualitative research is research that uses any methods that rely upon primary source information, where very often the ‘data’ is not numerical (Yates, 2004) and puts emphasis on words in the data collection and analysis (Bryman and Bell, 2011). Since the subjective human being sense-making is difficult to quantify, qualitative or anti-positivist approach is more appropriate for the analysis of the ‘soft’ (individual mind) (Cohen and Levinthal, 1990; Williams, 2005). In fact, compared to the positivist’s focal point on the observation of ‘empirical’ events and the illustration of other activities, most qualitative works feature the
description of specific situations, where data can be gathered through interviews from a range of contexts. The understanding, interpretation, themes and insights that emerge from fieldwork and the following analysis are the essence of qualitative research (Patton, 2002).

A quantitative approach could have been applied to this research which would have enabled the collection of numerical data and highlighted the relationship between theory and research through a deductive approach (Bryman and Bell, 2011). However, because the quantitative approach did not allow the researcher to have a very general sense of what to search for and to act as a means for uncovering the variety of forms of the phenomenon which would have enabled the researcher to build a theory from the data collection and analysis (Blumer, 1954; Bryman and Bell, 2011), it was decided that the qualitative approach could better tackle this aspect as it had helped to describe the phenomenon in all its aspects in Lean and Six Sigma teams within the context of MNCs. It enabled the researcher to explain a social process within an organisation, which required a deep understanding and analysis of people’s contextual experiences, views and interpretations (Mason, 2002). In this study, the researcher could be perceived as an anti-positivist which explains her choice of interpretivist philosophy and thus qualitative research.
6.5.2 The quality of case study research

Table 6.1 presents the different research strategies, while in this section, the quality of case study research is briefly reviewed.

Table 6.1 Research strategies

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Form of research question</th>
<th>Requires control of behavioural events?</th>
<th>Focuses on contemporary events?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>How, why, what if?</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Survey</td>
<td>Who, what, where, how many, how much?</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Archival analysis</td>
<td>Who, what, where, how many, how much?</td>
<td>No</td>
<td>Yes/No</td>
</tr>
<tr>
<td>History</td>
<td>How, why?</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Case study</td>
<td>How, why?</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Source: Yin (1994, p. 6).

According to Yin (2009), the first and most important condition for differentiating among the various research methods is to classify the type of research questions being asked. It was necessary to assess and test the quality of the case study research. In fact, a case study consists of a detailed investigation, often with data collected over a period of time, of one or more organisations with a view to providing an analysis of the context and processes involved in the phenomenon under study (Cassell and Symon, 1994; Hartley, 1994). Defining the research question for this study was therefore an important step to take. Although there are various research strategies, the selection depends mainly on the form of research question. Looking at:

- the flow of Lean and Six Sigma know-how between HQ and subsidiaries
- the knowledge flow between Lean and Six Sigma teams members within MNCs
The research questions devolved into other sub-questions:

RQ1: How are the internalisation, the implementation and the innovation processes of Lean and Six Sigma know-how conducted between the HQ and the subsidiaries? Does it differ from one unit to another?

RQ2: What influences the communication flow in inter-unit relationships?

RQ3: Is the knowledge transfer process between two different cultures less successful than knowledge transfer within one culture or similar cultures?

RQ4: What are the challenges faced by the HQ and the subsidiaries during knowledge transfer processes within the international teams among the broad triad of developed, developing and underdeveloped countries?

RQ5: What are the inhibitor and facilitator factors of knowledge transfer processes within MNCs?

These questions are the focus for this study. They are explanatory and likely to lead to the use of a case study, histories and experiments. Case studies can offer important evidence to harmonise experiments. In fact, some methodologies are limited in their ability to explain ‘how’ when case studies could be used to investigate such issues. A case study then is a research approach that can be theoretically moving and data rich for this specific piece of work. Hence a case study has been selected to promote understanding of how such know-how is transferred within MNCs and how much challenges are encountered during the internalisation and implementation processes in Lean and Six Sigma teams.

Yin (1994) presented six ways to collect qualitative data: documentation, archival records, interviews, direct observations, participant observation and physical artefacts. Data for this study will be obtained through semi-structured interviews and documentation.
6.5.3 Primary data: semi-structured interview

The primary data for this study were collected through interviews. An interview is a purposeful discussion between two or more people. The use of this data collection method helped gather valid and reliable data on participants’ perception and understanding of the phenomenon that were much more relevant to the research questions and objectives (Saunders et al., 2009). Although structured or unstructured interviews have been considered, the researcher felt their misnomer nature could restrain her possibility of gathering consistent data. While the first did not offer the room for serendipity because of open-ended questions, the second presented a lack of structure which, according to Mason (2002), no research should lack. The researcher’s epistemological supposition about interactions with the participants then influenced her choice for semi-structured interviews for part of the data collection of this study. Semi-structured interviews are non-standardised and are often identified as qualitative research interviews (King, 2004). There is no clear design regarding the list of questions, just a clear idea of the elaboration of themes and key questions to be covered, even though their use may differ from participant to participant (Saunders et al., 2012). The purpose is that there will be an opportunity for the interviewees to communicate freely their knowledge and feelings about the phenomenon.

To help gain more clarity on the issue of knowledge transfer in Lean and Six Sigma teams, a set of semi-structured interviews was conducted in six subsidiaries and the HQ belonging to a single manufacturing company. Table 6.1 presents the different research strategies. In this section, the quality of case study research is briefly reviewed. The participants were all natives of the geographical location of the subsidiary in which they work. These units were located in four main regions Asia (Malaysia), Europe (France, Germany, UK), Latin America (Argentina, Brazil) and the USA where the headquarters is based. The interviewees were either productivity and strategy leaders, strategy acceleration and productivity leaders or project managers to whom a criterion of a minimum of five years of experience in Lean and Six Sigma methodologies within the company was applied. Overall, 10 one-on-one interviews were conducted, their durations ranging from 60 to 70 minutes. The questions mostly probed into how knowledge flowed between units in Lean and Six Sigma teams, and how the team members understood, interpreted and reused it within their contexts.
However, the main challenge of this method was that it required the researcher to be highly active and engaged as she had to identify and solve some issues in the research process which were not anticipated before data collection. In fact, the lack of standardisation in this specific type of interview can reveal concerns about reliability, generalisability and participant bias since it can only be analysed qualitatively (Saunders et al., 2012). For example, during the conduct of some interviews the researcher had omitted some questions in a particular geographical context. However, the researcher had to be very practical and use her reflexivity skills in solving such issues, by revisting the participants to cover unanswered questions. Even though the researcher was not prepared to face these data quality issues through her approach to questioning, her ability to demonstrate attentive listening and to recognise and deal with difficult participants, her knowledge about the context (the researcher has worked in Dow AgroScience company as an intern in the past), and her multi-language skills which made the participants comfortable (the researcher is fluent in both Portuguese and French which enabled her to build a relationship with the participants from Brazil and France) helped her to avoid some issues during the conduct of interviews.

The aim of these interviews was to gather as much information as possible about Lean and Six Sigma knowledge transfer between units within MNCs. After providing the interviewees with the participant information sheet, the researcher made sure that they understood their input in this research. This contributed to them feeling comfortable during the interviews and to them even telling more than was expected. In fact, the interviews led to discussions on fields that had not been previously considered and which were significant for the understanding of the impact of cultural diversity upon the knowledge transfer process, and the absorptive capacity of the knowledge sender. The data gathered through semi-structured interviews were analysed qualitatively in order to find out whether the strategies of knowledge management used by Dow in reinforcing Lean and Six Sigma deployment in the organisation as a whole contributed to the organisation’s effectiveness.

Physical proximity seemed the most reliable medium for interviews in order to understand the ‘whys and hows’, therefore trips to the Brazilian and the French subsidiaries were made. However, due to financial constraints, the researcher limited interviews with participants from other units (Argentina, France, Germany, USA, Malaysia) to electronic devices and technology
such as Skype and telephones. To avoid losing data and to gather as much information as possible, the semi-structured interviews were audio-recorded and subsequently transcribed. Each interview was saved and the researcher maintained confidentiality and anonymity (with some participants) by categorising and coding the participants. An arbitrary sample of the interviews was re-verified through a second meeting. Little additional or new information was captured during the follow-up interview. In this, she was able to comprehend the data drawn from the transcript, integrate them and identify the key patterns within them for further exploration. Then, she tested the propositions against the patterns from the data looking for alternative explanations in order to come up with conclusions and develop the model.

The interview questions were based on the independent variables affecting the knowledge transfer process in the Lean and Six Sigma teams within MNCs. To check the reliability of measures, the inter-rate reliability test was conducted prior to the analysis between participants. For example, the responses on some questions were obtained from both HQ and the overseas subsidiaries.

6.5.3.1 Preparing the interview guide

The major worry of the researcher was whether the questioning would allow her to glean the ways in which research participants view their social world and whether there was flexibility in the conduct of the interviews. In this study she was obliged to be selective in the choice of independent variables influencing the model. So the interview questions were categorised into themes to make it easy for both the interviewer and the interviewee in the process.

In order to make sure that the researcher covered every aspect of the research, she used Mason's (2002) procedure to plan and prepare qualitative interviewing which suggested the steps shown in Figure 6.1.

Starting with the big research questions, the researcher broke them down into mini-research questions. She then generated interview topics related to the mini-research questions while cross-checking that all questions and sections covered the possible topics. She produced a list that she called the ‘interview guide’ and began the investigation with a fairly clear focus, rather than a very general notion of wanting to do research on a topic, so that the more specific issues could be
addressed. All the main sections and some questions were standardised to ensure that everybody would give an answer about the main topic. However, depending on the context or the participant, some questions evolved throughout the interviews. The questions may not have followed on exactly in the way outlined on the schedule. Questions that were not included in the guide may have been asked as they picked up on things said by interviewees. But, overall, all of the questions were asked and a similar phrasing was used from interviewee to interviewee.

**Figure 6.2** Overview of the planning and preparation procedure for qualitative interviews (Source: Mason, 2002, p. 72)
### 6.5.3.2 Interview guide structure

**Table 6.2** Interview guide structure

<table>
<thead>
<tr>
<th>Themes</th>
<th>Categories</th>
<th>Sub-categories</th>
<th>Number of questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lean and Six Sigma characteristics</td>
<td>Internalisation</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Implementation</td>
<td>Mentoring and coaching</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Expertise</td>
<td>3</td>
</tr>
<tr>
<td>Communication process flow within MNCs</td>
<td>Characteristics of knowledge source</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Characteristics of knowledge recipient</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Inter-units relationship</td>
<td>Relationship and communication flow HQ–subsidiaries</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Relationship and communication flow inter-subsidiary</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Psychic distance</td>
<td>Culture awareness</td>
<td>Cross-cultural differences</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Individual background</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Language skills</td>
<td>2</td>
</tr>
<tr>
<td>Organisational factors</td>
<td>Knowledge transfer</td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>
### Table: Knowledge transfer mechanisms (IT systems)

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time and cost investment on knowledge transfer</td>
<td>3</td>
</tr>
<tr>
<td>Knowledge transfer control mechanism</td>
<td>2</td>
</tr>
<tr>
<td>Economic differences</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: Arielle Dora Nganya. S.

#### 6.5.4 Secondary data: documentation and case study database

Secondary data can comprise both quantitative and qualitative data. These types of data are generally used in descriptive and explanatory research and may be raw data or published summaries (Saunders et al., 2009). Simply put, secondary data are the research explored by previous authors or company archives and documentation. It is important and necessary to have clear consistent documentation of information for this thesis. Without the documentation it may not be sufficient to support a research purpose. In fact, for this study, documentation was used as secondary data to support interview information. According to Saunders et al. (2009), documentary data consist of written media such as notices, correspondence, minutes of meetings, reports to shareholders, diaries, transcripts of speeches and administrative and public records, as well as virtual outputs such as internet resources (Bryman and Bell, 2007). Thus some secondary data such as data tables, training manuals and downloadable diagrams on Lean and Six Sigma deployment in different geographic regions were collected and analysed.

Knowledge transfer is a concept that all types of organisations face. So documentation data came from multiple sources – in short, everything that mentioned the topic from newspaper articles,
books, government publications and journals to the organisation's documentation. Although some documents may have already existed as mentioned previously, others can be generated through the research process by the researcher or/with the participants (Mason, 2002). The goal is to highlight anything relevant to the topic that can support points that have been identified in interviews.

In this specific research, documentation included: progress reports, project summaries, company annual reports, training manuals, etc. These documents were used as supplementary information to validate and verify the interview data in order to increase the reliability of the findings. All secondary data was retained in the case study document database, and can be presented upon request. Since organisational documents are often considered to be competitive weapons to the business (Bryman and Bell, 2011) confidentiality and anonymity were critical. However, some documents were made public such as annual reports, articles, company regulations, etc.

On the other hand, part of the documentation was used to describe the organisation and its history in the deployment of Lean and Six Sigma. Whilst interviewing, the researcher was allowed to access some of the company archives on Lean and Six Sigma deployment within the MNC. However, because of the difficulty in penetrate the organisation's intranet, the researcher had also to rely on public documents.

To have a structured and organised documentation file, a case study database was created to store and save data collected from the single case study (Yin, 2009), both in electronic and written form.

### 6.5.5 Field notes

Field notes or *aides-mémoire* were used as an important foundation to guide the researcher throughout this study. One remarkable attribute of case study research for building theory is the frequent overlap of data analysis with data collection (Eisenhardt, 1989). Hence field notes can be employed by qualitative researchers whose goal is to try to understand the phenomenon being studied. Various notes were recorded and used throughout the data collection process, for a better follow-up in the research process. The field notes were stored in a folder. This simply helped the
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researcher to access the subject and record any ongoing thoughts, emerging ideas (Emerson, 1995) and comments related to knowledge transfer management in MNCs and Lean and Six Sigma know-how transfer. It was mainly useful when reviewing knowledge transfer stickiness and the emerging critical ideas to help build the theory.

6.6 Using NVivo for interviews case study data analysis

A qualitative case study helps in exploring the phenomenon of this study in all aspects. According to Baxter and Jack (2008), the qualitative case study is an approach to research that assists investigation of a phenomenon within its context using a selection of data sources. SPSS is quite widely used with quantitative data analysis. While the use of multiple computer software programs in quantitative data analysis is booming in the market, a variety of methods and software are constantly developed to assist researchers enhance qualitative data analysis. Nowadays, some computer-assisted qualitative data analysis software has been introduced. For instance, there is software such as ‘EZ-Text’ and NVivo that have helped in various qualitative case studies.

For this study, the researcher has chosen NVivo for data analysis. The analytical coding is the process of interpreting and reflecting on the meaning of the data to arrive at new ideas and categories. It involves collecting data that should be reviewed to enable the development of categories and themes (QSR International Pty, 2012). In fact, NVivo is software that supports qualitative and also mixed methods research. With NVivo, one can collect, organise, analyse and store contents from interviews, focus group discussions, surveys, audio and video. The researcher can hence deeply analyse his data by using the search query and visualisation tools. This software can handle virtually any data, such as Word documents, PDFs, pictures, audio files, videos, social media data and web pages, spreadsheets and database tables (QSR International Pty, 2012). Combining the project into one file makes it portable and easily accessible. Hence NVivo is considered ‘a front-line innovator in qualitative data analysis’ (Gurdial Singh and Jones, 2007). In order to be effective, several stages guide the researcher through a concise and precise analysis. The researcher has chosen to follow Gurdial Singh and
Jones’ (2007) procedure the steps of which enable the researcher to gradually analyse case study data.

6.6.1 Step 1: Working with data

The first phase in data analysis involves ‘working with data’. Working with data is in reality an ongoing process, beginning from the instant the researcher started gathering data through interviews and documentation, continuing with interview transcription followed by data analysis and ending with reports and findings. In fact the system of working with the data in qualitative terminology has been referred to as ‘interpreting’ (Silverman, 1993), ‘transforming’ (Wolcott, 1994) and ‘making sense of data’ (Hammersley and Atkinson, 1995), as quoted by (Gurdial Singh and Jones, 2007). In this specific case, to ensure the validity of the data after transcription of the semi-structured interviews, the researcher went back to the participants to review and confirm the validity of the transcript drafts. In case there was any misunderstanding of the meaning of the statements, the researcher discussed them with the participants and made sure that they were reviewed and corrected in line with the transcript. This was done in order to comply with Yin (1994) who highlights that to enhance the construct validity of the study, each draft transcript report should be sent to the respondents interviewed for peer checking.

6.6.2 Step 2: Organising data

After the data was collected through semi-structured interviews, the researcher started organising that data. First of all, interviews were transcribed and saved in Word documents. These documents were then stored in folders that were labelled with each participant’s name. Hence, there was a file for each participant which made it easy to differentiate documents. Then all transcript documents were exported to the NVivo software. By modifying the document format, the researcher ensured that they were compatible with the program. These files included the interview transcripts of ten participants and the ten interview audios.

Once all the data were organised and exported to the software, the next stage entailed codifying and classifying the data into nodes. Coding embodies a key step in the process of qualitative data
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analysis. Charmaz (1983) has presented it as ‘the process of categorizing and sorting data’ (p. 111), where ‘codes’ are described as serving to ‘summarize, synthesize, and sort many observations made out of the data’ (p. 112). Coding provides a link between data and conceptualisation because there might be a close connection between coding and the creation of attributes to classify them, regardless of whether the latter are pre-specified and later revised or emergent (Miles and Huberman, 1984). Coding here represents the gradual building up of categories and contents out of the data. For Gibbs (2002) a node (called in NVivo a category) is ‘a theoretical concept or idea with passages of text that in some way exemplify that idea’. Nodes are thus the route by which coding is undertaken (Bryman and Bell, 2011). It therefore involves analytical thinking to establish the consistency and validity of the coding method. However, there are criticisms of the concept of coding, one of the more common being that ‘the coding approach to qualitative data analysis is the possible problem of losing the context of what is said’ (Bryman and Bell, 2011, p. 588) while another is that coding results in the data being fragmented which disrupts the narrative flow of what the participant said (Coffey and Atkinson, 1996).

6.6.3 Step 3: Refining the data and developing categories from coding

The researcher used both structured and NVivo coding. After importation of the transcripts into NVivo, they were read several times by the researcher to identify categories and topics. Texts from the transcript were coded into nodes (see Table 6.3). Each category was then labelled with either a word or a small phrase, and then a description of the meaning of the category was given using the key characteristics of the questionnaire guide or statements from the literature review. The label of each node must not be a description of the text (Gibbs, 2002). Instead, it should reveal and relate to a broader phenomenon.
Table 6.3 Examples of texts coded in the analysis process

<table>
<thead>
<tr>
<th>Nodes</th>
<th>Texts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mentoring and coaching</td>
<td>‘That’s when the real and powerful knowledge transfer happens. When they come in with their problems and they want your advice. That’s how we get the work done successfully. For new project leaders in particular, frequent follow-up soon after the training is critical to leader development and project performance, two-week intervals work best for most 3–6 months scoped projects.’</td>
</tr>
<tr>
<td>Training</td>
<td>‘We would like as many people as possible in the company to undertake this training, because it’s a new improved way of thinking. So it’s been a proven way to find solutions and solving problems, a much more productive way.’</td>
</tr>
<tr>
<td>Cultural awareness</td>
<td>‘You need to know, as a global executive, that every time you step into a new culture, you have to be aware of the local culture. That’s why when we are trying Lean and Six Sigma deployment, for example, we try our best to use local people to do the local jobs, because if you take the cultural part, Lean and Six Sigma have many other steps in the process and they are linked to people’s behaviours.’</td>
</tr>
<tr>
<td>Language</td>
<td>‘I don’t think that language is the barrier on delivering the training. I have to recognise that in some countries they are very much native focused, but generally those people that we send for training normally should be able to speak and understand English.’</td>
</tr>
<tr>
<td>IT systems</td>
<td>‘Tools and technologies are available. There is always support to leverage projects.’</td>
</tr>
</tbody>
</table>

Source: Arielle Dora Nganya. S.

The researcher gradually worked on each participant’s transcript. After the coding of the first participant, the researcher had a total of ‘n’ free nodes. Initially the investigator tried to codify most of the text from the data because it enabled the researcher to practise since she was coding
data for the first time. Secondly, she realised that by doing so it provided her with width and depth to the categories’ structure. However, after completion of coding all of the first participant’s documents, she recognised the disadvantage of proceeding in that manner, as the amount of free nodes kept growing. When dealing with this issue, Gibbs (2002) mentions that extended passages are simple to understand while shorter ones are more confusing because they have both content and context and this enables the researcher to capture the meaning within the circumstance. Small texts may lack reference to their original context even though they are easier to code as they embody only one idea (Gurdial Singh and Jones, 2007). In fact since these interviews involved getting participants to give their views, understandings and experiences about the phenomenon, it was hardly possible for the researcher to code small text. Coding small texts would have involved missing out some crucial points since ideas and arguments were flowing chronologically. This is the reason why the researcher decided to code longer texts when necessary for the rest of the participants.

After discussion with supervisors a coding frame was developed. In that frame, there were categories (parent nodes) with sub-categories (child nodes), which could in turn have had sub-categories. When categories started taking shape during the coding of the first transcript, the investigator then completed the coding for all the participants. So when the coded passages supported the category on the frame, they were added to it (category folder). However, if they enclosed new ideas another node was created and included in the frame. Increasingly, the researcher realised that the node’s structure kept expanding. When new nodes emerged, the coding frame was modified and the transcripts were reviewed depending on the new configuration. This helped to identify the differences and similarities in the data for the clarification of the relationships between categories. This process was effective for the development of categories into a model or framework that summed up the data into key themes and models which were then conceptualised into wider themes after further debate. Towards the end of the analysis no new themes appeared, which implied that main themes had been spotted (Marshall, 1999).
6.6.4 Step 4: Breaking data into manageable units and linking categories

Axial coding is the next step. Here the researcher has to refine, develop and interrelate the categories that were coded for each folder (Strauss and Corbin, 1990; Gurdial Singh and Jones, 2007). Simply put it is about organising and breaking categories into comprehensible and controllable units of analysis. The researcher then proceeded in two ways. First of all she selected and merged the free nodes in the Node folder. One way was by selecting and merging the listed free nodes in the Node folder. This action enabled her to hierarchically set up a tree node. These hierarchies of categories were essential for this analysis and were part of the nodes’ structures. Secondly, she started elucidating the relationship between categories in the tree. Figure 6.2 is an example of tree categories that were classified.

![NVivo categories classification screen shot](image)

**Figure 6.3** NVivo categories classification screen shot (Arielle Dora Nganya. S)

Building links between categories was the next step. In this specific software, the relationship between nodes is determined by recognising if the node is a parent, child or sibling (Gurdial
Singh and Jones, 2007). Diagrams were used to understand the link and relationship between knowledge transfer management practices and the factors affecting that process in multinationals. In a hierarchical category system (e.g. tree diagram) these links may indicate superordinate, parallel and subordinate categories. Links are likely to be based on commonalities in meanings between categories or assumed causal relationships (Baxter and Jack, 2008). This had been incorporated in a tree. That framework included an open, a temporal or a causal network. It is also possible that a category may not be embedded in any model or framework.

Figure 6.3 is an example of the type of relationship between a selected node and the sub-categories identified in this study.

![Figure 6.3 Change management node with child nodes (Arielle Dora Nganya. S)](image)

As the data analysis developed the investigator could clearly see that the number of free nodes was decreasing because more hierarchy nodes appeared which made the identification of their relationship logical.
6.6.5 Stages 5 and 6: Searching for patterns and describing the data

In this step, Hammersley and Atkinson (1983) suggest that the researcher must dip into the data and then look out for patterns, identifying possibly surprising themes, events and phenomena, and being sensitive to inconsistencies. The following chapter will mainly focus on this step.

6.7 Validity, reliability

Merriam (1998) emphasised that to provide future researchers with the research standpoint, one needs to ensure that the researcher’s personal biases are understood. Among the researcher biases in this study the following were classified:

1. The researcher was a trained and certified Six Sigma Green Belt.
2. The researcher believed that the Six Sigma improvement methodology was a valid improvement methodology.
3. The researcher knew three of the people that were involved in the study. However, during the interviews she was careful to ensure that bias was not introduced.

Prior to data analysis, the researcher provided data to the Champion and some MBBs. They gave valuable feedback during the research progression. Also, to ensure accuracy of the data collected the interview transcripts were sent back to some participants. On the other hand Yin (1984) warns researchers regarding validity and reliability. He mentions that ‘there is a causal relationship between x and y, without knowing that some third factor – z – may actually have caused y’ (Yin, 1984, p. 38). Hence it was necessary to verify the reliability of the data through triangulation. The researcher made sure that causal factors identified during interviews were verified by documentation where possible. While some documents were retrieved directly from the company database, others where produced directly with some participants (i.e. Lean and Six Sigma deployment structure in DAS) Figure 7.4.

Due to the limited number of participants interviewed in each country (Argentina (1), Brazil (1), France (2), Germany (1), Malaysia (1), USA (3)), the researcher had to find ways to confirm the consistency of the responses from the participants. Some of the approaches used were as follows:
• Asking the participants similar questions using different approaches.

• Requesting documents to confirm some important statements (i.e. communication tools (Figure 7.10), internal knowledge map (Figure 7.5))

• Interviewing all participants who came from the subsidiaries first before meeting with participants from the HQ. As the participants from the HQ were global implementers, they had good knowledge of how things worked in foreign subsidiaries, and the researcher could confirm the validity of the responses of the participants from the subsidiaries with those from the HQ.

• Doing follow-up interviews. These interviews did not only enable the researcher to clarify questions that needed more explanations, but also helped to track down and compare affirmations from participants from both HQ and subsidiaries.

6.8 Summary

This chapter has developed the research design to answer the research questions and to achieve the objectives of this thesis. The researcher opted for the interpretivist philosophy for this study because it supports people’s views, interpretation and understanding as primary data. She hoped that it would enable her to understand how knowledge transfer processes are managed and why unsuccessful transfers can impact on Lean and Six Sigma deployment in MNCs. Using a single case study (DAS) facilitated an intensive examination of the research questions through semi-structured interviews. Data were purely qualitative (participants’ views, understandings and experiences) which enabled the researcher to explain that phenomenon within the organisation. NVivo 10 was chosen for data analysis, and the different stages of the analytic process and data organisation were presented. The next chapter will focus on the data analysis.
CHAPTER 7 FINDINGS AND DISCUSSIONS

7.1 Introduction

The researcher used qualitative techniques to critically evaluate the inhibitors and facilitators of knowledge transfer in Lean and Six Sigma teams within MNCs. Ten intensive interviews were conducted over a one-month period. A single case study was conducted within an American MNC operating in more than 150 countries and whose subsidiaries are based in Indianapolis (USA). The corporate director of the Lean and Six Sigma team helped in nominating the participants and all interviews were performed by the principal researcher.

As mentioned in the previous chapter, each interview lasted between 60 and 70 minutes. They were taped and then transcribed. The interviews were then exported into the NVivo 10 software for the purpose of qualitative analysis. NVivo 10 provided the researcher with the ability to categorise qualitative passages into nodes with the aim of analysis. A variety of parent and child nodes were then created (e.g. Knowledge internalisation, Training, Mentoring/coaching, Culture awareness, Common interest, Personalisation, IT support, etc.). The software provided the researcher with the ability to model and queries the data throughout the analysis part of this study.

Propositions were derived from the developed frameworks and the conceptual framework. This latter summarises the different levels during knowledge transfer in Lean and Six Sigma teams: knowledge internalisation, knowledge implementation, knowledge leveraging and knowledge innovation. Knowledge internalisation is mainly about knowledge development, how Lean and Six Sigma know-how is developed within the MNC, knowledge flow between the HQ and the subsidiaries and how the communication flow enables better transfer of the know-how. The second level is the implementation of the knowledge which emphasises the execution of projects, the learning-by-doing using learning capacities. The third level is to capture how knowledge is being reused and applied in new projects and different geographical areas. All these levels lead to knowledge innovation and thus knowledge optimisation. More sub-categories could be added...
to these lists but there are quite enough to justify a rational selection. This framework will then be refined after the analysis of the case study.

Figure 7.1 Conceptual framework (Arielle Dora Nganya.S)
The propositions that were addressed in this study were as follows:

<table>
<thead>
<tr>
<th>Proposition 1</th>
<th>Lean and Six Sigma knowledge development and coordination depend on appropriate training, mentoring and coaching.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposition 2</td>
<td>Trust, common interest and ‘shared mind’ facilitate the motivational disposition and willingness to share of the knowledge sender and the absorptive capacity and motivational disposition to receive of the knowledge receiver.</td>
</tr>
<tr>
<td>Proposition 3</td>
<td>Integrated and compatible IT systems enable highly effective explicit knowledge storage and leveraging in projects.</td>
</tr>
<tr>
<td>Proposition 4</td>
<td>Mentoring and coaching via personalisation between units enables a better transfer of tacit knowledge.</td>
</tr>
<tr>
<td>Proposition 5</td>
<td>Knowledge transfer speed is affected by the choice of transmission channel which impacts on knowledge transfer effectiveness.</td>
</tr>
<tr>
<td>Proposition 6</td>
<td>Knowledge transfer control mechanisms increase individual motivation to share and the ability to absorb knowledge, thus giving rise to knowledge leveraging opportunities and knowledge innovation.</td>
</tr>
<tr>
<td>Proposition 7</td>
<td>Subsidiary autonomy and HQ–subsidiary network enhance knowledge absorption, standardisation, adaptation and implementation between global and local implementers and internal customers which impacts upon knowledge transfer effectiveness.</td>
</tr>
<tr>
<td>Proposition 8</td>
<td>A robust communication process flow enables better HQ-subsidiaries and inter-subsidiaries interactions, thus highly effective knowledge implementation.</td>
</tr>
</tbody>
</table>
Proposition 9

Organisational distance between subsidiaries and HQ affects knowledge transfer in international teams within MNCs.

Proposition 10

Cultural differences between individuals within an international team affect the way in which they interact with each other, and thus impact on knowledge transfer effectiveness.

7.2 Analysis of Findings

Figure 7.2 demonstrates the main sources for the data analysis. As presented in Chapter 6, section 6.4, the researcher used both interviews and documentation as the database. The goal was to employ the use of ‘multiple sources of data, or multiple methods to confirm the emerging findings’ (Merriam, 1998, p. 204). Both sources have generated categories of knowledge transfer model subject areas in Lean and Six Sigma teams.

Figure 7.2 Data collection sources (Arielle Dora Nganya. S)
7.2.1 Participant information

Ten participants were involved in the study. They were engaged in either Lean or Six Sigma deployment or both disciplines in the organisation and could be considered as knowledge workers. The spread of the sample by age, gender, position and geographic location is detailed in the Tables 7.1 to 7.5.

Table 7.1 Distribution of participants by age

<table>
<thead>
<tr>
<th>Age of participants</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>20–29</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>30–39</td>
<td>2</td>
<td>20%</td>
</tr>
<tr>
<td>40–49</td>
<td>4</td>
<td>40%</td>
</tr>
<tr>
<td>&gt; 50</td>
<td>4</td>
<td>40%</td>
</tr>
</tbody>
</table>

Table 7.2 Distribution of participants by gender

<table>
<thead>
<tr>
<th>Gender of Participants</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>3</td>
<td>30%</td>
</tr>
<tr>
<td>Male</td>
<td>7</td>
<td>70%</td>
</tr>
</tbody>
</table>
### Table 7.3 Distribution of participants by position

<table>
<thead>
<tr>
<th>Position of participant</th>
<th>Management</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Belt</td>
<td>Non-management</td>
<td>1</td>
</tr>
<tr>
<td>Black Belt</td>
<td>Non-management</td>
<td>1</td>
</tr>
<tr>
<td>Black Belt/Lean implementer</td>
<td>Middle management</td>
<td>1</td>
</tr>
<tr>
<td>Master Black Belt</td>
<td>Middle management</td>
<td>5</td>
</tr>
<tr>
<td>Lean implementer</td>
<td>Middle management</td>
<td>1</td>
</tr>
<tr>
<td>Champion (lean and SS)</td>
<td>Top management</td>
<td>1</td>
</tr>
</tbody>
</table>

### Table 7.4 Distribution of participants by geographic location

<table>
<thead>
<tr>
<th>Location of participants</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>1</td>
<td>10%</td>
</tr>
<tr>
<td>Brazil</td>
<td>1</td>
<td>10%</td>
</tr>
<tr>
<td>UK</td>
<td>1</td>
<td>10%</td>
</tr>
<tr>
<td>Germany</td>
<td>1</td>
<td>10%</td>
</tr>
<tr>
<td>France</td>
<td>2</td>
<td>20%</td>
</tr>
<tr>
<td>Malaysia</td>
<td>1</td>
<td>10%</td>
</tr>
<tr>
<td>USA (HQ)</td>
<td>3</td>
<td>30%</td>
</tr>
</tbody>
</table>
Table 7.5 Participants’ anonymous coding

<table>
<thead>
<tr>
<th>Role</th>
<th>Country</th>
<th>Participant’s coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lean implementer/ Six Sigma Black Belt (LBB)</td>
<td>Argentina (A)</td>
<td>LBBA01</td>
</tr>
<tr>
<td>Master Black Belt (MBB)</td>
<td>Brazil (B)</td>
<td>MBBB01</td>
</tr>
<tr>
<td>Lean implementer (L)</td>
<td>France (F)</td>
<td>LF01</td>
</tr>
<tr>
<td>Green Belt project leader (GB)</td>
<td>France (F)</td>
<td>GBF02</td>
</tr>
<tr>
<td>Master Black Belt (MBB)</td>
<td>Germany (G)</td>
<td>MBBG01</td>
</tr>
<tr>
<td>Master Black Belt (MBB)</td>
<td>Malaysia (M)</td>
<td>MBBM01</td>
</tr>
<tr>
<td>Black Belt (BB)</td>
<td>UK (UK)</td>
<td>BBUK01</td>
</tr>
<tr>
<td>Master Black Belt (MBB)</td>
<td>USA (US)</td>
<td>MBBUS02</td>
</tr>
<tr>
<td>Champion (C)</td>
<td>USA (US)</td>
<td>CUS01 (Bertrand Tchamwa)</td>
</tr>
<tr>
<td>Master Black Belt (MBB)</td>
<td>USA (US)</td>
<td>MBBUS01 (Marshall Parker)</td>
</tr>
</tbody>
</table>
7.3 Analysis of concepts and themes: measuring knowledge transfer effectiveness

Knowledge transfer was measured by four main independent variables – knowledge internalisation, knowledge implementation, knowledge leveraging, knowledge innovation – which spread into sub-categories during interviews coding and documentation analysis.

7.3.1 Composition of four levels of knowledge transfer processes with sub-categories

Table 7.6 Composition of the four levels of knowledge transfer processes in Lean and Six Sigma teams within MNCs

<table>
<thead>
<tr>
<th>Knowledge internalisation of Lean and Six Sigma know-how</th>
<th>Number of references</th>
<th>Knowledge implementation of Lean and Six Sigma know-how (socialisation)</th>
<th>Number of references</th>
<th>Knowledge leveraging</th>
<th>Number of references</th>
<th>Knowledge innovation</th>
<th>Number of references</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>10</td>
<td>Project selection and execution in subsidiaries</td>
<td>7</td>
<td>Knowledge storage</td>
<td>8</td>
<td>Learning capacity and personal competencies development</td>
<td>7</td>
</tr>
<tr>
<td>Mentoring and</td>
<td>10</td>
<td>Use of expatriates</td>
<td>5</td>
<td>Integrated and</td>
<td>10</td>
<td>Workshop</td>
<td>10</td>
</tr>
<tr>
<td><strong>coaching</strong></td>
<td><strong>Workshops (learning by doing)</strong></td>
<td>10</td>
<td><strong>Global and local implementers and experts</strong></td>
<td>10</td>
<td><strong>Formal/informal knowledge transfer</strong></td>
<td>10</td>
<td><strong>Informal knowledge transfer</strong></td>
</tr>
<tr>
<td>---------------</td>
<td>----------------------------------</td>
<td>----</td>
<td>---------------------------------------------</td>
<td>----</td>
<td>-------------------------------------</td>
<td>----</td>
<td>--------------------------------</td>
</tr>
<tr>
<td><strong>Learning capacity and personal competencies development</strong></td>
<td>7</td>
<td><strong>Mentoring and coaching</strong></td>
<td>10</td>
<td><strong>Mentoring and coaching</strong></td>
<td>10</td>
<td><strong>learning by doing</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Communication process flow</strong></td>
<td>10</td>
<td><strong>Application and usage of tools</strong></td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Local trainers</strong></td>
<td>3</td>
<td><strong>Change management strategies</strong></td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Networking HQ–subsidiaries</strong></td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Leadership and managerial skills</strong></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Relationship basis</strong></td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(trust, credibility, respect)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7.3.2 Knowledge internalisation

How do Lean and Six Sigma training enhance knowledge development within the organisation? (See Appendix 1)

7.3.2.1 Training and workshops to enhance knowledge internalisation

Training was identified as one of the first key elements for knowledge internalisation enhancement within the company and documentation supported this evidence. The company organises training sessions in each geographical region. During Lean or Six Sigma training, employees are taught about these methodologies and how to deploy them in projects. On top of this the organisation offers a set of additional online training sessions to help employees enhance their knowledge of Lean and Six Sigma such as: Training materials, Dow Intranet Six Sigma Website, I/S Training, Global Reporting Training. Additional training courses to address issues identified in an individual’s competency assessment are also available such as: Six Sigma Non-Core training, My Learning (computer-based training which is available at any time). It offers training courses and a linked test for skills evaluation and identification of the course needed: Global Standard Workstation Tool Training, Global Reporting, Human Resources Development Courses. Additional training are also provided for the following: Excel, PowerPoint, Word, NetMeeting and Live Meeting, and MS project (DowAgroSciences, 2009).

To evaluate a program, there are four ways as developed by Kirkpatrick (1998) : reaction, learning, behaviour and results. In this case, the researcher was not able to evaluate learning as no observations were made. However, during the interviews, she identified how individual behaviour and motivation could influence knowledge development within an organisation. Overall, participants agreed that training was done effectively and enabled not only knowledge development but also individual behaviour change, personal development and learning capacities when people perceived it as a ‘new improved way of thinking, finding solutions and solving problems’ (MBBUS02). On the other hand some participants pointed out a few aspects that could slow down the internalisation process. For example, MBBB01 affirms that in Brazil, individuals might perceive training as extra and complicated work before taking part in the training. Nevertheless, after buying into it, the training and the implementation was easier. CUS01 and BBUK01 insisted that although the company goal for Lean and Six Sigma
development was initially to get everybody within the organisation to understand the tools and the methodologies, they did not encourage ‘training for everyone’. Instead, they strongly believed that training must be given when there is a need to solve an issue and ‘has to be accompanied by coaching’ (MBBUS01 (Marshall)). Plus, the trainers must adapt to the audience, drawing examples from their area of expertise. This clearly links to Weick’s (1995, p. 40) comments about sensemaking. He urges that: ‘Sensemaking is surely never solitary because what a person does internally is contingent on others. Even monologues and one-way communications presume an audience. And the monologue changes as the audience changes.’

7.3.2.2 The biggest challenges during the internalisation process (see Appendix 2)

Although the process of internalisation within the company is quite well organised and coordinated, there are some challenges that trainers and project leaders face either locally or globally. Overall, all participants emphasised that common interest as a motivation vehicle and individual behaviour are the two main factors that affect the application of Lean and Six Sigma methodologies within the company. They insist that if people don’t buy into it and don’t see any interest in using these methodologies, knowledge internalisation is almost impossible. They must put strategic ways in place to enable mindset change. These two factors go along with one another. CUS01 (Bertrand) confirms that if individuals ‘don’t have the structural soft process in their mind, they will never execute, they will never follow it. So with Lean and Six Sigma, whatever you want to do, has to do with people’s behaviour. So before you actually try to implement Lean and Six Sigma, try to understand that behaviour and what their belief set is.’

The motivational factor ‘common interest’ and the ‘individual behaviour’ are general issues within the MNC as a whole. As mentioned previously, people have to be able to buy into it to allow knowledge development and thus internalisation within the company. Beside these factors, some participants pointed out some other key elements that could affect the speed of sharing knowledge within such big companies: the lack of local trainers, the team members’ selection, English language and the use of a common language.
Language was seen as an inhibiting factor since the formal language used within the firm with such cultural diversity was English (see Appendix 12). Although it did not have a major influence on knowledge internalisation 8 out of 10 participants considered it an inhibitor in terms of slowing down the transfer process. However, 8 participants constantly referred to language in terms of ‘jargon’ as a factor that could slow down knowledge transfer (see Appendix 2). BBs and MBBs, whose task is also to provide training, insisted that it was necessary to adapt to the audience during training sessions which mainly consisted of drawing on examples within their area of expertise (marketing, sales, customer service, manufacturing, etc.) and not using too much technical jargon to scare the audience off. MBBB01 claims: ‘When I say language, I mean how to translate all this stuff in the proper communication way, so not using too much of the Lean jargon so that the guys won’t be scared. I need to find a proper way to communicate to each group, a different way.’ Moreover, the Champions and the MBBs clearly see the importance of having local people to assist with training due partly to the language and cultural differences, and the geographical distance between the HQ and the foreign units. Therefore, they put in place the 3Ts (Train The Trainer) strategy. This consists of training local people to provide training to local employees within their context. However, LBBA01 believes that there is still a need to have more local people trained who will be able to deliver training locally in person. According to him, this can enhance knowledge transfer by speeding up the level of knowledge flow from the HQ to its subsidiaries. By implication, physical proximity therefore enhances knowledge transfer speed and is a necessary means for effective knowledge transfer.
Table 7.7 Summary of the challenging factors during knowledge internalisation

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Number of references</th>
<th>Degree of impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>English language</td>
<td>8</td>
<td>Low</td>
</tr>
<tr>
<td>Common language</td>
<td>8</td>
<td>Medium</td>
</tr>
<tr>
<td>Mindset change</td>
<td>10</td>
<td>High</td>
</tr>
<tr>
<td>Individual behaviour</td>
<td>7</td>
<td>High</td>
</tr>
<tr>
<td>Local trainers</td>
<td>2</td>
<td>Medium</td>
</tr>
<tr>
<td>Team member selection</td>
<td>2</td>
<td>Medium</td>
</tr>
</tbody>
</table>

7.3.3 Knowledge implementation within units

After training, the next level is the process of implementing the knowledge in a project. Figure 7.3 illustrates how Lean and Six Sigma objectives for deployment are cascaded down within DAS and Figure 7.4 demonstrates the Lean and Six Sigma deployment structure. These two figures are linked together.

Before any Lean and Six Sigma implementation takes place, gaps and needs must be identified in the balance sheet. The Corporate Director (CUS01 Bertrand) mentioned that Lean and Six Sigma is deployed to fix problems, hence if there are no gaps, there is no need to use continuous improvement methodologies in a process. Figure 7.3 shows that the role of the CMC is to identify those gaps to deliver the corporate strategy with less cost. The Corporate LSS team puts a strategy in place and determines the KPI (Key Performance Indicator). This KPI will be cascaded by region and project as shown in Figure 7.4. The corporate director is thus at the head with its functional leaders. The deployment structure in Figure 7.4 indicates that MBBs are experts in these functions of the organisation (R&D, M&E, M&S and supply chain). At the corporate team level, there are four MBBs (who may also be called Champions). Following division into regions, while the structure remains the same, the number of MBBs varies according to region and project execution. These MBBs have a basic general knowledge.
However, GBs or BBs may retain expertise in the subject matter. In fact, most of the BBs and GBs operate as part-time problem-solvers. According to CUS01 (Bertrand), having them performing their work while using and applying LSS know-how in their daily tasks enhances the deployment, because they have the expertise in their field and can better identify defects or eliminate waste (e.g. engineers in plants, marketing specialist, etc.).

With a functional scorecard (Appendix 4), the corporate director can compare regional performances. If a region performs less well than another and if this is due to lack of expertise, the company rotates expatriates between regions. It is thus a learning process and a way to acquire tacit knowledge as they believe that practical experience is valued over theoretical knowledge and thus people ‘must see the problem to know the problem’ (Dow, 2011).

---

**Figure 7.3 Lean and Six Sigma objectives deployment in DAS**

- **Players**
  - CMC (Corporate Management Committee)
  - Corporate Lean Six Sigma Team

- **Balance Sheet**
  - Identify gaps and needs to deliver corporate strategy with less cost
  - Put strategies in place
    - (1) Generate an integrated improvement plan
    - (2) Determine a KPI (Key Performance Indicator)
    - (3) Cascade KPI to functions and regions
    - (4) Policy Deployment (Hoshin Kanri)
      (KPI may be adapted to each region and local projects)
Figure 7.4 Lean and Six Sigma deployment structure in DAS
During the coding of interviews, a number of categories were generated. The main important ones were: Mentoring and coaching, Expertise identification, Brainstorming sessions, Application and usage of the tools and methodologies, Project selection, Subsidiary autonomy and HQ–subsidiary networking, Standardisation and adaptation (Input of global implementers, Use of local implementers), Change management and Knowledge leveraging. Although knowledge leveraging is integrated within knowledge implementation, since it is a big section on its own, it will be discussed in the next section. In this phase of implementation, both tacit and explicit knowledge transfers occur. Table 7.8 presents the statements from the participants and the categories that were generated.
### Table 7.8 Knowledge implementation participants’ statements and the generated themes

<table>
<thead>
<tr>
<th>Themes</th>
<th>Participants</th>
<th>Statements</th>
<th>Evaluation of statement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strong leadership and management</strong></td>
<td>CUS01</td>
<td>‘It is a prerequisite, if you don’t have management, mission and strong leadership, don’t even start otherwise you are loosing your time. The pattern has to do with leadership and the success comes from the bottom. The deployment order is a top-down. The top level has to agree and bet that we are going to be successful. The success is built bottom-up because you go down building on people, you make people buy into it. So you start from the top, you convince them with what we call “coaching tailoring”.’</td>
<td>Change management/ top management</td>
</tr>
<tr>
<td><strong>Application and usage of the tools and methodologies</strong></td>
<td>MBBM01</td>
<td>‘Firstly, because my geographical area is big, I will have three focal points in my areas. The design is that, they go back in the unit to run the project but we will stay in touch, if they need any help, I will come in. And the focal point will be a regular review and the review is to present to the process owner what the outcome of the project is. And from my side I will ensure that the tools and the methodologies are being utilised.’</td>
<td>Application of tools and methodologies/ mentoring and coaching</td>
</tr>
<tr>
<td><strong>Project selection and subsidiary autonomy level</strong></td>
<td>MBBG01</td>
<td>‘The decision about project execution, the project, is done locally. This is the discussion between MBBs and process owners who guide in what level the problem is identified, potentially BBs. This local activity is independent from the HQ. To capture local projects, to bring the best to...’</td>
<td>Project selection</td>
</tr>
</tbody>
</table>
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| Input of global implementers (Champion) | MBBUS02 | ‘We have a global leader who leads each of those groups, then I also have global business leaders. So we can be running global projects out of the HQ, we can also be running some for North America, Canada, and we also run a lot of cross functional projects. They could be from supply chain or any other functions. So if we have issues, we have people to get in and help to facilitate those projects.’ | Global project leaders/local implementers |
| Local implementers | MBBUS02 | ‘For Six Sigma, we try to have a local person, that’s why we have a BB in each area so that I am not from the US trying to tell somebody in Germany how to do things. We have somebody who works in the area of Europe. So we try to have somebody from that geography leading the information and so it is not just coming from the HQ out.’ | Subsidiary autonomy/HQ–subsidiaries networking |
| Expertise identification | MBBUS01 (Marshall) | ‘Experts are dispersed through the organisation and project leaders are encouraged to establish networks specific to the business need and project derivable. Understanding stakeholders at all levels and negotiating organisational structure is critical to learning to being a successful leader.’ | Expertise identification |
| Mentoring and coaching (socialisation) | BBUK01 | ‘What we also try to build is the mentoring and coaching skills set within the organisation. We have recognised that just telling people what to do or telling people to go to a website just doesn’t deliver improved performance. So we are now trying to get people linked up with mentors | Mentoring and coaching |
or coaches or self-managing teams to enable wider skills transfer observations. Basically getting people to be more open and promote what their failures are.’

<table>
<thead>
<tr>
<th>Informal norms of knowledge sharing encouragement</th>
<th>MBBUS01 (Marshall)</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="https://example.com">Informal norms of knowledge sharing encouragement</a></td>
<td>Brainstorming/knowledge sharing culture</td>
</tr>
<tr>
<td>‘If they understand the desire to learn from each other, if they are encouraged to use each other’s knowledge. If you have done this before and another person hasn’t; why don’t you go close to her and both can work on a brainstorming session? One of you can lead each other’s brainstorming sessions so that you can watch how the other person does it while still participating in your project.’</td>
<td></td>
</tr>
</tbody>
</table>

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A Critical Evaluation of Knowledge Transfer Management in Improving Organisational Effectiveness within MNCs
7.3.3.1 Balance of subsidiary autonomy level and HQ–subsidiaries networking enhances knowledge transfer effectiveness within the MNC

(See Appendix 5 for participants’ statements on subsidiary autonomy level and HQ–subsidiaries networking.)

It was important to identify subsidiaries’ autonomy level and the impact of their autonomy on the communication flow with the HQ. There was no great difference in the implementation of Lean and Six Sigma in the different subsidiaries. Overall, all six subsidiaries had the autonomy to select local projects and to determine when to implement Lean and Six Sigma. Since needs vary across geographies, it is necessary to adapt to the local market requirements. The project will then be identified within that area, although there are global projects. Even though subsidiaries have more freedom on project selection, the methodologies and the tools have to be applied according to HQ guidelines since HQ sets up objectives at the beginning of the year and may assist with guidance, advice and identification of expertise.

Overall, all ten participants recognised the need for subsidiaries’ autonomy to ‘capture local projects, to bring the best to local businesses’ (MBBG01) because ‘they know what the priorities in their regions are’ (MBBM01). However, they must maintain a link with the HQ since strategic decisions rely on the parent company and ‘that word “networking” is very important. It’s like if you are seeing people spinning plates, you have to keep adding energy to that relationship, by regular communication, good and bad’ (BBUK01). As shown in Figure 7.4, GBs and BBs will refer to their local MBBs for coaching, and advice. BBs can also seek advice from the HQ and each player in the network acquires specific knowledge from other players for decision support (Polanyi, 1958). So it is important to maintain HQ–subsidiary networking to enable coaching, advice and identification of experts.

Lean and Six Sigma team members are mostly international; they can be located in different geographical areas. However, in the company, there is a strong hierarchical structure in place to facilitate communication flow between HQ and subsidiaries within teams and communities of practice. MBBUS02 highlights that subsidiaries ‘would like to do their things on their own and sometimes they don’t like to be told how to do things. So like for Six Sigma we try to have a local person, that’s why we have a BB in each area, so that I am not from the US trying to tell
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somebody in Germany how to do things. We have somebody that works in the area for Europe. So we try to have a person from that geography leading the information and so that it is not just coming from the HQ out.’ Hence a balance between subsidiary autonomy and HQ–subsidiary networking enables both inflow and outflow communication between subsidiaries and the HQ.

In general the autonomy level of subsidiaries was found to have a positive impact on the communication flow between the HQ and the subsidiaries during Lean and Six Sigma deployments. Although, as identified in the internalisation process, the training materials were kept standard, training was done locally or within a region which facilitated easy access to training by local team members. In some cases there were some training sessions at HQ or expatriates attended the HQ for training in order to go back to their units to implement the acquired knowledge.

7.3.3.2 The use of local implementers and the input from global implementers to enhance knowledge transfer

The use of local implementers contributes to knowledge implementation as it breaks down cultural and language barriers. All MBB and Champion participants considered local implementers extremely important to enable successful Lean and Six Sigma deployment since they had to take into account geographical distances between the HQ and subsidiaries. The presence of local implementers in all subsidiaries facilitated both time and cost savings and knowledge sharing speed. As MBBUS02 from the HQ affirmed:

... In some cases it might be a little bit different, just because there is a distance between them [units]. It is easier for me here [HQ] when my team sits together, in Europe it is going to be a little bit more difficult because they are more spread out but the MBBs play a big role in those areas in making sure that there is consistency and that BBs and GBs have a place to go to for questions. In each region we also have experienced BBs that are coaching the GBs. We kind of have two layers of support and coaching to help them with their projects or any questions that they have.
So there is a strong layer of mentoring and coaching to help local implementers meet their objectives. On the other hand, global implementers are behind the scenes and will assist when there is a crucial need in the business. CUS01(Bertrand) states that as a Champion, he plays a big role in enabling and ensuring that local implementers get the support they need for better deployments. He is a kind of adviser and protector and also links the local implementers to other experts within the organisation. MBUS01 (Marshall) further explains that: ‘the real difficult situation is that there is a business need for significant changes and that there is not a local understanding. Then my job becomes coaching, leadership and getting the local teams to come to a central message based on data.’ Hence the input of both local implementers and global implementers enhances knowledge transfer effectiveness.

7.3.3.3 Mentoring and coaching, a contributory factor to tacit knowledge transfer

Mentoring and coaching findings summary: Over all how will you rate the effect of mentoring and coaching on reinforcing Lean and Six Sigma knowledge implementation? Positive, negative, no effect

(See Appendix 6 for Mentoring and coaching participants’ statements.)

Mentoring and coaching is a great way to exchange tacit knowledge and for DAS there is no doubt that ‘the coach is the advisor, the decision-maker and a resource provider’ (Dow, 2011). Swap et al. (2001, p. 95) affirm that, ‘Much knowledge, particularly knowledge with rich tacit dimensions, is transferred informally through processes of socialisation and internalisation.’ One of the MBB’s key responsibilities is to provide guidance and assistance to the rest of the members. The BB does play the role of coach for the GB. In the company, mentoring and coaching sessions should follow after training for a better absorption and implementation of Lean and Six Sigma know-how. Hence one cannot go without the other. This was confirmed by Weick and Roberts (1993, p. 362) who strongly advise that it is ‘... the outcome of training and experience that weave together thinking, feeling, and willing’. With mentoring and coaching people learn by doing and discover their learning capacity. This theme has been found in Weick’s articulation of the ‘recipe’ for sensemaking: ‘How can I know what I think until I see
what I say’ (cited by Gioia, 2006, p. 1713). It can be complex to transfer tacit knowledge as in most cases it cannot be written, instead it can be transferred through learning by doing. MBBUS01 (Marshall) indicated that:

A lot of time people who are really good at things don’t know why they are good at them. So how can they possibly write it down when it’s about personality and what you are thinking in your head to make it look clear when it doesn’t; how it looks like when you are listening when you are not. So there are all those soft side of people engagement project management and how do you write that down?

Thus sensemaking and heedful behaviour within teams may be preserved by storyline (Weick, 2006). During mentoring and coaching in the company, there are a lot of narratives which help to guide the project leader, helping him to make sense of the knowledge he is absorbing. The mentor at the same time also encourages the project leader to think of alternatives. For BBUK01, it is important that ‘as mentors we should be very clear of what we ask people before we start [...] so the people have thought through the alternatives. I think that people are able to share the alternatives and the logic of the alternatives.’ Hence in order to effectively transfer tacit knowledge, to get people involved and be more creative, the organisation encourages mentoring and coaching sessions.

Overall mentoring and coaching were seen as favourable factors in knowledge transfer within Lean and Six Sigma teams. All ten participants believed that it had positive effects on reinforcing Lean and Six Sigma training and implementation. MBBs were seen as the head of mentoring and coaching. Although Champions did not directly provide coaching to BBs and GBs, MBBs had the responsibility of providing support, assisting them with a network and providing them with advice and coaching. While the nature of Six Sigma was highly technical because it relied more on the use of statistical tools, Lean mentoring and coaching involved being at the plant site for practical and workshop sessions.

This finding is reinforced by the documentation where it was highlighted in several places that it was important to allow time for mentoring and coaching. CUS01 (Bertrand) and all MBB participants strongly supported mentoring and coaching and believed that when delivered face-to-face it would maximise the impact on the deployment. Physical proximity is then a
prerequisite in ensuring that knowledge – especially tacit knowledge – is being passed through and absorbed. BBs, MBBs and Lean implementers confirmed the response as a positive effect on knowledge transfer. However, BBUK01 mentioned that some people just don’t want to be coached because of various reasons or might manifest some resistance to change. While GBs do not directly interact with the Champions, BBs take the role of coach for them, and the latter can seek advice from MBBs and Champions. Mentoring and coaching is thus a facilitator for Lean and Six Sigma implementation. During the interview, GBF01 mentioned that she saw in MBBs and BBs a source of knowledge, advice and support. She stated: ‘the coach (MBB or BB) guides me through the implementation. That support, you can’t get it from any book or training materials,’

Documentation also emphasised that mentoring and coaching are extremely important for the conduct of projects. During training, individuals are informed that they can seek support from MBBs and Champions. There is also a need to set up regular meetings (formal and informal) with MBBs to enable knowledge absorption, interpretation and implementation. The causal relationship in these categories includes physical proximity and the relationship base (common interest, trust, credibility, respect and individual commitment). However, the biggest challenge that exists in such a big firm is the geographic distance between units which involves resource investment in travelling to maximise effective knowledge transfer through physical proximity. Besides the finding of ‘mentoring and coaching + physical proximity’ as being extremely important for tacit knowledge transfer, one of the MBBs mentioned that mentoring and coaching enabled the learning by doing, that bit that no book or course could teach you how to do (Nonaka and Takeuchi, 1995). Secondly the researcher identified that MBBs were sought for support and advice throughout the 12 months of project realisation and after. MBBs then are at the centre, providing the rest of the members with a strong network of people to contact for information and assisting with the application of methodologies and tools.

The quality of the mentoring and coaching was not specifically targeted during the conduct of interview. However, all BBs, MBBs and Lean implementers affirmed that they always gave support for project completion as it had a positive effect on Lean and Six Sigma deployment. For Lean and Six Sigma internalisation, for example, mentoring and apprenticeship is a good way of transferring knowledge, therefore it is the most appropriate way to transfer tacit knowledge since
it is ‘what we do not know that we know. It includes know-how, personal experience, insights, and intuition’ (Rumizen, 2002, p. 8). This was reported by Davenport and Prusak (1998) who believe that the better means of sharing tacit elements of knowledge is through personal contact.

It is then clear that within Lean and Six Sigma teams, mentoring and coaching greatly facilitate the transfer of tacit knowledge. MBUS01 (Marshall) affirms this:

That’s when the knowledge transfer a lot of time becomes complex. It is not the tools that’s hard, it is not the teaching in the class that’s hard, it is how you make it for a team of people who are all highly variable in their behaviour in their understanding. So the knowledge that is at risk when people move between jobs for instance is that knowledge on how to do it. This is not usually a classroom teaching. The ‘how to do it’ is probably something that you gain by experience. So that’s what is at risk.

7.3.3.4 Identification and usage of expertise within the HQ–subsidiary network as knowledge transfer facilitator

How are experts sought and identified? Are they always sought within the MNC?

Michailova and Minbaeva (2012, p. 59) note that ‘the MNC’s very existence is closely related to its ability to take advantage of differences in knowledge and expertise around the world in terms of exploiting existing repositories of knowledge and combining them to create new knowledge.’

Identification of expertise is another key element for Lean and Six Sigma deployment in MNCs and ‘organisations can improve performance quality not only by employing specific tools, but also by involving employees who hold tacit knowledge’ (Preuss, 2003, p. 593). Davenport and Prusak (1998) highlighted that one of the problems in big firms such as MNCs was the identification of experts (seen as great knowledge sources) in Lean and Six Sigma teams. The analysis revealed that the input of coaching and mentoring during Lean and Six Sigma implementation allowed a better identification of expertise since MBBs are expert resources in Six Sigma and Lean tools themselves (George, 2002, p. 104). MBBG01, for instance, mentioned that: ‘Not knowing something, people should quickly contact the coach and the coach can give
more guidance. Normally, the coach is then looking to create links to specific experts in business.’ Expertise can thus be sought not only within the Lean and Six Sigma network, but also in different departments.

Mentors then are there to facilitate that identification, but since they cannot have expertise in everything, project leaders have to be able to build their own network of experts. MBBUS01 (Marshall) pointed out that: ‘Experts are dispersed throughout the organisation and project leaders are encouraged to establish *networks* specific to the business need and project derivable.’ Project leaders are thus thought to look for alternatives, to identify experts at the beginning of the project execution with the help of a *portfolio of knowledge experts and project management* (see Figure 7.5). At the beginning of a project execution, the process or value stream mapping has to be drawn. This is essential to help identify the possible links and types of expertise related to the project. It helps in determining the project scope and all the knowledge sources, and helps project leaders to have a clear information flow. The champion CUS01 confirmed that ‘we have the infrastructure to do it; now people have to go and find it and do it. That’s where I am imposing on them to have a kind of bibliography before they start a project. You need to spend some time on the computer, do some research and give me a summary of whatever is looking like yours before you can actually start.’ MBBs might thus assist project leaders in building that network, in identifying the role of members and stakeholders and the sources of knowledge in the project, or even identifying experts. But it is up to the project leader to build the network and look for expertise when needed.

Overall the identification of experts and expertise had a positive impact on knowledge implementation. However, this could not be generalised as projects are different and expertise is sought accordingly. It was revealed that no external expertise to the MNC was sought to help during implementation. However, expertise external to the team or the department or the geography had been sought within the company. MBBG01 indicated that:

> People are told that if they have a problem in understanding something, they should ask experts. Of course not when working on sensitive tasks but when it is about information that are easily or publicly available in the business in specific countries in specific geographies, and there is no secret behind. For example having financial data, looking for
calculations and then having a problem of what are really the best calculations. Ask the people or go to the financial representative if he can check and give his point of view so that you are not running in the wrong direction.

Table 7.9 presents the number of references to each category and their importance during the implementation process.

**Table 7.9** Factors influencing knowledge implementation in Lean and Six Sigma teams

<table>
<thead>
<tr>
<th>Categories</th>
<th>Number of references</th>
<th>Degree of importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mentoring and coaching</td>
<td>10</td>
<td>High</td>
</tr>
<tr>
<td>Expertise identification</td>
<td>6</td>
<td>Medium</td>
</tr>
<tr>
<td>Brainstorming sessions</td>
<td>10</td>
<td>High</td>
</tr>
<tr>
<td>Application and usage of tools and methodologies</td>
<td>6</td>
<td>High</td>
</tr>
<tr>
<td>Input of global implementers and use of local implementers</td>
<td>10</td>
<td>High</td>
</tr>
<tr>
<td>Subsidiary autonomy and HQ–subsidiary networking/project selection</td>
<td>10</td>
<td>High</td>
</tr>
<tr>
<td>Change management</td>
<td>10</td>
<td>Medium</td>
</tr>
<tr>
<td>Knowledge leveraging</td>
<td>10</td>
<td>High</td>
</tr>
</tbody>
</table>

**7.3.3.5 Identification of expertise**

Generally, in the company, local teams may work together cross-functionally, and each member brings knowledge that the team needs. However, the company intranet offers a portfolio of knowledge experts and projects. The screenshot in Figure 7.5 illustrates this.
7.3.3.6 The biggest challenges faced during the implementation process

What are the challenges that you face during implementation in your unit or globally? (Appendix 7)

During the interviews, some participants talked about the challenges that they face during the implementation of Lean and Six Sigma either globally or locally (see Appendix 7 for more details and Table 7.10 for a summary). Hence the researcher has identified organisational distance, cultural awareness, resistance to change, trust and credibility, efficient application and use of methodologies and change management as the recurrent themes. Lean and Six Sigma training could sometimes be perceived as extra work and employees tended not to work in a standardised way in some regions. Participants constantly referred to cultural differences, motivation (common interest) and trust as factors that could affect people’s mindset and thus
resistance to change which would influence knowledge transfer effectiveness. The following section will highlight the communication process flow between two individuals within the company, since knowledge is the uniquely human capability of making meaning from information, ideally in relationship with other human beings (Miller, 2002) and between two ears, and only between two ears (Drucker, 1969).

Table 7.10 Summary of the challenging factors during knowledge implementation

<table>
<thead>
<tr>
<th>Categories</th>
<th>Number of references</th>
<th>Degree of impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisational distance</td>
<td>10</td>
<td>High</td>
</tr>
<tr>
<td>Extra work (demanding experience)</td>
<td>3</td>
<td>Low</td>
</tr>
<tr>
<td>Cultural awareness</td>
<td>10</td>
<td>High</td>
</tr>
<tr>
<td>Establishing trust and credibility to enable knowledge transfer</td>
<td>10</td>
<td>High</td>
</tr>
<tr>
<td>Employees working in a standardised way</td>
<td>1</td>
<td>Low</td>
</tr>
<tr>
<td>Efficient use of methodology to deliver answer/work overload</td>
<td>6</td>
<td>Medium</td>
</tr>
<tr>
<td>Motivation/common interest</td>
<td>10</td>
<td>High</td>
</tr>
<tr>
<td>Resistance to change</td>
<td>6</td>
<td>Medium</td>
</tr>
</tbody>
</table>

7.3.4 Communication process flow and HQ–subsidiary network management

Documentation supports the importance of having a communication process strategy in place. It is important for a project leader to ensure that he or she has a clear mapping of the stakeholders involved in the project. Hence, it is necessary for the project leader to develop a complete
communication strategy that includes the input of other team members and mentors and to constantly update both the stakeholders mapping and communication strategy at each project phase (DowAgroSciences, 2009). Thus eight out of ten declared knowing where to seek for expertise when needed. It has also been identified that MBBs play a big role in linking the BBs or GBs to the experts or in helping them to establish a good communication flow. MBBUS01 indicates that: ‘Our communication is set up pretty well. We have good people and so from that standpoint I think we are able to execute regardless of the location in a pretty good manner.’ And BBUK01 emphasises that ‘If you get all those three parts right: the direction that you want the project to go, the ability of the person to understand the alternatives and the impact of the alternatives, and the criteria of how the solution was made, then I will say that it is a great way of working.’ A communication process between two or more people can be more complex that we think. It can be a demanding process involving interdependent individuals and tools. Minbaeva (2007) analysed the joint effect of four determinants to understand the knowledge transfer process. In citing Szulanski (2000), she classified the determinants into four groups: (1) characteristics of knowledge; (2) characteristics of knowledge senders (disseminative capacity); (3) characteristics of knowledge receivers (absorptive capacity); and (4) characteristics of the relationship between senders and receivers. In a similar attempt to clarify the communication process flow within MNCs in Lean and Six Sigma teams, the researcher further analyses the effect of these factors in knowledge transfer effectiveness. One has to bear in mind that these team members can be dispersed geographically. The researcher came up with the framework in Figure 7.6 after completion of Chapter 3 of Part I.
During the coding of interview transcripts many categories emerged under the topic of communication process. However, the most important were selected according to the number of references, which showed that they had more importance for the participants. Each category generated sub-categories which revealed the causal relationship between each factor. Other factors called mediator variables that did not directly influence the communication process flow, but somehow played an important role in the processes were also identified and included in the Table 7.11.
Table 7.11 Factors influencing communication process flow

<table>
<thead>
<tr>
<th>Category</th>
<th>Sub-categories (no. of examples included)</th>
<th>Statements from participants’ stories and practices</th>
<th>Number of references</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge sender</td>
<td>Motivational disposition to share</td>
<td>‘When I see that the project they run creates value to the business.’ (MBBM01)</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Message definition and clarification</td>
<td>‘I think if what was asked was really clear and really defined and the person had delivered upon that, then there is no argument. I will say that we need to make sure and be very clear of what we ask people to do before we start.’ (BBUK01)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Tracking ability</td>
<td>‘We kind of have two layers of support to help them with their projects, with coaching or any questions that they have.’ (MBBUS02)</td>
<td>4</td>
</tr>
<tr>
<td>Knowledge receiver</td>
<td>Motivational disposition to receive</td>
<td>‘That’s the way they engage. Because the big advantage that Lean and Six Sigma have is to show that we can do the things easily. This advantage is the motivation to help people to buy in, to think about the best way to do the things they do, not to work hard only. And that’s how they start trusting, paying attention, understanding that they can do it easily and reducing the errors.’ (LBBA01)</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Absorptive capacity</td>
<td>‘So the first thing is the language and the ability to grasp</td>
<td>10</td>
</tr>
</tbody>
</table>
A Critical Evaluation of Knowledge Transfer Management in Improving Organisational Effectiveness within MNCs

<table>
<thead>
<tr>
<th>Relationship base</th>
<th>Common interest</th>
<th>‘People follow what we call interest and they will do stuff if they see an interest.’ (CUS01)</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common language</td>
<td>‘When I say adequate language, I mean how to translate all that stuff in the proper communication way, not using too much Lean jargon so that the guys won’t be scared. I need to find a proper way to communicate to each public, a different way.’ (MBBB01 (Marshall))</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Individual commitment</td>
<td>‘Once the people see that you are with them for two days, three days on the shop floor they can trust you and believe that you can help them.’ (LBB01)</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Trust, credibility and respect</td>
<td>‘What makes it better is the relationship, trust and flexibility in delivering the message. Your ability to change the message depending on its uptake. Things are getting in the way or everybody is too busy.’ (MBBUS01 (Marshall))</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Mediator factors</td>
<td>Leadership and managerial skills</td>
<td>‘Strong leadership and management is the key to knowledge transfer.’ (LF01)</td>
<td>4</td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>---</td>
</tr>
<tr>
<td>Language</td>
<td>‘The fact that we are all come from different countries and we don’t all have English as our first language can pose a problem sometimes, but not major.’ (GBF01)</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Cultural differences</td>
<td>‘When working in an MNC, people do not quickly accept when things are not aligned with their cultural style and mentality and those specific things have to be adapted, so it is good to have an adjustment done on the targeted audience. Especially when having specific mentalities and cultural differences. Because if we are not respecting a specific culture of a specific geography for example then the buy in might drop from one second to the next.’ (MBBG01)</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Transmission channels choice</td>
<td>‘The sender needs to be smart in understanding how he is going to send the message.’ (BBUK01)</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>
A variety of factors affected both the knowledge sender’s willingness to share and the knowledge receiver’s absorptive capacity. Most important is the relationship base that links both the knowledge sender and the knowledge receiver. Workers need to feel secure, they have to be able to trust each other and understand each other’s priorities and this can only happen with a relationship base.

7.3.4.1 Relationship base: common interest, trust, credibility and respect, common language, individual commitment, and leadership and managerial skills contributors to knowledge transfer effectiveness and change management

Do you trust the knowledge receiver in receiving, understanding, interpreting and applying the knowledge the way you intended him to? (Appendix 8, 9)

Although it was not intentionally looked at, common interest (Appendix 8) appeared as one of the main motivational factors in knowledge transfer within multinationals. Overall, participants acknowledged that when internal customers, or Lean and Six Sigma implementers, perceived a clear interest for them and for the business, they easily bought into it; they were given training and applied the knowledge to improve organisational performance. MBBB01 indicated that he has to convince people that ‘it will contribute to them, it will contribute to have a good project, and it will be useful to make things easier’. So people have to be able to trust and recognise that Lean and Six Sigma are beneficial for them. The interviews revealed that getting people to buy in is tricky, but once they have understood that the methodology will help them solve their problems, and bring them a new improved way of executing projects, once there is that trust, credibility and respect (Appendix 9) in place, they will adopt it, they will attend training, implement the piece of knowledge and keep in touch with mentors and coaches. BBUK01 points out that: ‘If you have that networking, you have a relationship and trust and the ability to have change management many times. The best example of how it works is where there is high trust and respect for the two parties. Where you do not have that it is very difficult particularly in the world of limited resources.’ One aspect came out when interviewing GBF01 who indicated that Six Sigma does not only help her achieve organisational objectives, but has helped her develop
her leadership skills and personal competencies. So it not only benefits the organisation but also the employees.

_The common interest, organisational benefit and individual benefit_ then are important aspects of knowledge sharing within MNCs. Employees felt more motivated to share when they perceived a clear benefit not only for themselves but for the organisation as a whole. Although for those already in Lean and Six Sigma teams it wasn’t a major issue as they all had common ground and objectives, the main difficulties relied on getting internal customers (employees from other departments facing problems) to use Lean or Six Sigma as a problem-solving methodology. CUS01 stated that ‘When I go there and I say: guys we need to use Lean and Six Sigma to fix this issue, they say let’s go and do it. And because they see results they encourage other people to do it. They do it because they know that if we lose business X in country Y, we will close Dow ‘Z’ business in country Y.’ Hence employees are committed and motivated to share and receive knowledge when there is common interest, trust, credibility and respect at the foundation.

All MBBs and BBs indicated that _mentoring and coaching_ increased the knowledge receiver’s absorptive capacity in understanding, interpreting and applying the knowledge in the way that the knowledge sender intended him to do. It was also noted that the lack of physical proximity could affect the relationship between the knowledge sender and the knowledge receiver and the absorptive capacity of the knowledge receiver. LBBA01, a Lean implementer, mentioned that: ‘I prefer face-to-face meeting in order to recognise that the work has been done.’ So eight out of ten participants affirmed that it was necessary to have met at least once with their team members to facilitate future interactions with them. LBBA01 indicated that it was easy to communicate when there had been an established relationship. He believes that: ‘“The difference is really huge. Once you know the person, you have met the person face-to-face, all the exchanges you have with that person are much easier than if you interacted only by phone or by email. So I think that it is a very important thing to do. For example, in the case of an international team to have a kick off meeting face to face in order to have everybody in the same boat at the beginning.”

On the other hard, lack of _common language_ could also hinder the communication process, especially between cross-functional teams. Lean and Six Sigma project leaders are often dealing
with other employees from different departments. This links back to Davenport and Prusak’s (1998, p. 98) affirmation: ‘People can’t share knowledge if they don’t share the common language.’ The Champion, all MBBs and BBs recognise that as a trainer and project leader, one has to try and adapt to the audience, use a language that people will clearly understand and try to keep the same level with other people of the network. This cannot be done if there are no **leadership and managerial skills**. These skills help the project leader to be open to change and to overcome resistance to change. As for MBBUS01 (Marshall):

> You can have all the book knowledge of the world about Lean and Six Sigma but if you can’t adapt to change or style, if you can’t adjust to the situation around you, if you are inflexible and don’t have good leadership skills to recognise what’s going on in the team that you are working with, and change your style, your vocabulary, your body language, the way you communicate, then it can’t work, because that’s what makes it successful, it is not the book knowledge.

On the other hand, it has been identified that beside trust, common interest and common language, it takes **individual commitment** to maximise effective communication flow, thus knowledge sharing. In fact, Nonaka and Takeuchi (1995) and Miller, (2002) strongly believe that knowledge is essentially related to human action, therefore knowledge creation takes place in a person’s mind through the flow of information that is anchored in the beliefs and commitment of its holder.

In general a good relationship base (common interest, trust, credibility and respect, individual commitment and common language) enhances the knowledge sender’s motivational disposition to share and the knowledge receiver’s absorptive capacity to receive, understand and interpret the piece of knowledge. Table 7.12 presents the different categories that emerged in the topic of relationship base and the degree of impact on the communication process.
Table 7.12 Relationship base as knowledge transfer facilitator

<table>
<thead>
<tr>
<th>Categories</th>
<th>Number of reference</th>
<th>Degree of impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common interest</td>
<td>10</td>
<td>High</td>
</tr>
<tr>
<td>Trust, respect and credibility</td>
<td>10</td>
<td>High</td>
</tr>
<tr>
<td>Individual commitment</td>
<td>7</td>
<td>Medium</td>
</tr>
<tr>
<td>Common language</td>
<td>8</td>
<td>High</td>
</tr>
</tbody>
</table>
Table 7.13 Common interest as a contributor factor

<table>
<thead>
<tr>
<th>Participants</th>
<th>Statements</th>
<th>Evaluation of statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUS01</td>
<td>‘Without interest there is no action. People will do stuff if they see an interest for them. It is easy to do Six Sigma and Lean. When dealing with a plant for example, if they see interest, they will deliver better results and that’s for sure. They will always start all deployment by “What are the expected results? What am I going to have? What is in it for us?”’</td>
<td>Common interest</td>
</tr>
<tr>
<td>GBF01</td>
<td>‘I always put in mind that most project executions are for business successes. I always give 100% of myself when I perceive a clear value for the company. I have come to understand that Six Sigma can help me find the solutions to most of the problems we face.’</td>
<td>Common interest</td>
</tr>
<tr>
<td>MBBG01</td>
<td>‘It is a situation of the trainer to identify quickly what is the best way to have the focus of the audience or having their interest in high level. You can loose the audience quickly, but when you have lost them then it is getting tricky to get them back.’</td>
<td>Common interest</td>
</tr>
<tr>
<td>MBBUS01(Marshall)</td>
<td>‘If you cannot paint a picture of why things are going to have to get better or change, your job on selling it’s probably not worth the investment. You can’t get there if you can’t get the group to see a picture of the change. So it is really hard to pick that common picture of why everybody has to contribute to a better future or a better solution. So that’s going be possible. That means they’</td>
<td>Common interest</td>
</tr>
</tbody>
</table>
have to invest a lot more time on gaining common knowledge, common understanding, trust and build teamwork.’

<p>| <strong>MBBM01</strong> | ‘When I give training they perceive a different way of addressing issues with Six Sigma, they kind of change their mindset and buy in the idea. Sometimes people have the impression that here is another project to do, another thing to learn, but the come to realise that it is something very critical, it is a tool, a methodology, to help you to derive a solution.’ |
| <strong>MBBUS02</strong> | ‘You can train every body in the company but it will not mean that you will have a good Six Sigma programme, because it is how you implement it and how you keep it sustainable and how you teach them to practice it in the role and then get the organisation to buy into it and sometimes you have to experience the success of it before you really buy into it. There are still a lot of places in the company where there are people who haven’t bought into it yet. Now they are becoming fewer and fewer all the time, but we’ve got to work very hard to get the receptivity and people actually coming to us for projects.’ |
| <strong>MBBB01</strong> | ‘And now the one thing that is motivating me is the objective of the point and I think that it is fundamental, because now when I have a project with a person, I think that now I can transmit this message, to say hey, you have this project here because it is relevant to the success of this business. We don’t have this project because you need a project to be there. No, you have this project because this project is relevant to the company packaging. It is very motivating for me.’ |</p>
<table>
<thead>
<tr>
<th>Reference</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>LBBA01</td>
<td>‘You know in a group there is generally one sphere who is engaged, one that is neutral and another one that disagrees. I try to put my focus on the people who are engaged. I usually try to do that. When the people see the opportunity there and once they understand that they have the tools to improve, they really start to engage. That’s the way that they engage. Because the most advantage that Lean and SS have in order to show that you can do the things easier, is a motivation to help people to buy in, to think about the best way to do the thing not to work hard only. And that’s the way that they are starting to pay attention, understanding that they can do it easier and reducing the errors.’</td>
</tr>
<tr>
<td>BBUK01</td>
<td>‘What is it for me? You have to understand that. What’s in it for them? You have got to try and understand what is the common ground we are trying to build the activity around.’</td>
</tr>
<tr>
<td>LF01</td>
<td>‘Choosing the right people for your team is also one of the key successes [...] And more important after the project, I will ask the stakeholder to go on the field and check, discuss with the guys and to show to the people that it is very important for them. If it is very important for the business leader, I as a worker I will think: OK if it is very important for them it should be important for me. If the stakeholder doesn’t come, doesn’t say anything, then as a worker I will think: OK why do I need to do it, nobody cares. So even when it is a simple thing, you have to show that it is important for the company.’</td>
</tr>
</tbody>
</table>
7.3.4.2 Leadership and managerial skills, organisational and individual benefits, mentoring and coaching as motivation driving forces

Although all four factors have been identified as a prerequisite to the relationship base between knowledge sender and knowledge receiver, all ten participants have referred to common interest, trust, credibility and respect as being most important to establish a common vision and thus a motivational aspect to share between members of the group. Leadership and managerial skills, organisational and individual benefits mentoring and coaching are also motivational driving forces. Table 7.14 and Figure 7.7 show evidence of the importance that those factors have for knowledge transfer. The team helps in enhancing knowledge transfer, while the sharing of implicit and explicit knowledge within the MNC by employees with the same skills, capabilities and interests forms the community of practice within either Lean or Six Sigma.
Table 7.1 Category of motivation factors in sharing and receiving knowledge

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Category of motivation to knowledge sharing and absorption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Majority</td>
<td>Group 1: Benefit to the employee</td>
</tr>
<tr>
<td></td>
<td>• 80% [Daily task] New improved way of thinking, finding solutions and solving problems, part of their work life.</td>
</tr>
<tr>
<td></td>
<td>• 50% [Reward and recognition] Open up the opportunity for sharing ideas and employees feel proud to contribute to the organisation’s improvements and success.</td>
</tr>
<tr>
<td></td>
<td>• 40% [Self-improvement] Learning opportunity to enhance individual’s knowledge, leadership and managerial skills and personal development competencies</td>
</tr>
<tr>
<td></td>
<td>• 30% [Network] create links with top management and experts</td>
</tr>
<tr>
<td>Minority</td>
<td>Group 2: Benefit to the organisation</td>
</tr>
<tr>
<td></td>
<td>• 80% [Performance] Enhance organisational performance</td>
</tr>
<tr>
<td></td>
<td>• 70% [Lean and Six Sigma successful deployment] Individuals perceive common interest, thus a benefit to business survival and sustainable growth.</td>
</tr>
<tr>
<td></td>
<td>Group 3: Characteristics of Lean and Six Sigma know-how</td>
</tr>
<tr>
<td></td>
<td>• 100% [Portfolio management] Integration of IT systems to enable knowledge leveraging</td>
</tr>
<tr>
<td></td>
<td>• 100% [Frequent mentoring and coaching] Frequent coaching during project execution</td>
</tr>
<tr>
<td></td>
<td>• 20% [Challenging] Applying the methodology and the tools to get results and having new techniques to try</td>
</tr>
<tr>
<td></td>
<td>Group 4: Supportive elements</td>
</tr>
<tr>
<td></td>
<td>• 70% [Top management support, Expertise input] Support, guidance and leadership from champion, MBB, BB and top management</td>
</tr>
<tr>
<td></td>
<td>• 40% [Budget] Budget to support physical proximity</td>
</tr>
</tbody>
</table>
KS knowledge sender/ KR knowledge receiver

Figure 7.7 Contributing factors affecting knowledge transfer effectiveness between members of the team (Arielle Dora Nganya. S)

7.3.5 Change management

How do you deal with resistance to change during the implementation of changes?

Lean and Six Sigma implementation takes place when there is a need for improvement which involves making some changes in order to optimise effectiveness. Employees must therefore be prepared to accept those changes. In fact, general or specific modifications might be done as a result of Lean and Six Sigma implementation and the top management should put strategies in place to overcome any resistance. During the implementation process, the project leader has to ensure that all the people necessary to effect change will be involved. So, stakeholders have to be part of the team as they have to be gradually informed of all changes at each stage. In this specific case, there are some factors that enabled good collaboration between Lean and Six Sigma implementers and internal customers. The notion of ‘shared mind’ is one factor. Since
people may disagree or agree with certain decisions that are made, all participants indicated that it is important that all members have a common picture. Within Lean and Six Sigma teams the notion of collective minds exists. However, as highlighted in Chapter 3, section 3.2.4.2, collective minds do not exclude the fact that people have individual backgrounds and behaviours and generate knowledge individually in their own minds and within their own contexts. All MBBs expressed the importance of continuously reinforcing a common picture with both internal customers and co-workers for successful deployment and change management.

Lean and Six Sigma implementers within the organisation may thus be located in different geographies and interact with employees from different departments. MBBUS01 (Marshall) insists that: ‘If you cannot paint a common picture of why things are going to have to get better or change, your job on selling is probably not worth the investment. You can’t get there if you can’t get the group to see a picture of the change.’ All ten participants then agreed that when people saw a clear interest, shared a common ground, things were much easier to implement (see Appendices 8 and 9 for statements summarising the importance of common interest, trust and security) in order to take decisions and implement changes. The Champion points out that ‘people will do stuff if they see an interest and if you don’t spend time convincing those guys that by doing what they have to do, by doing what you tell them to do, they will be more successful in their personal life, they will have a job security, they will be able to retire in peace. If you don’t convince them on that you are wasting your time.’ Figure 7.8 shows a house that summarises the building blocks and grounds for an effective change management.
Figure 7.8 Overcoming resistance to change within a team (Arielle Dora Nganya. S)

‘The instinctive resistance to change and the need for trust are at least as important.’ (Davenport and Prusak, 1998, p. 99)

7.3.6 Knowledge transfer control mechanism a contributor factor

Mudambi and Navarra, (2004) believe that any subsidiaries that have acquired considerable strategic independence in all aspects of their operations are therefore able to exercise considerable intra-firm bargaining power to influence the distribution of the firm’s resources. Consequently, sensitive management tools such as a formal control mechanism are required which will enable units to evaluate their contribution to the organisational effectiveness (Taggart and Hood, 1999).
Table 7.15 Lean and Six Sigma training – implementation in DAS and control mechanism

<table>
<thead>
<tr>
<th>Roles</th>
<th>Training duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>GB</td>
<td>3 days training + participation to a project</td>
</tr>
<tr>
<td>GBPL</td>
<td>2 weeks training + 1 project lead + Test</td>
</tr>
<tr>
<td>BB</td>
<td>2 weeks + 2 weeks training + 3 projects lead + Test</td>
</tr>
<tr>
<td>MBB</td>
<td>2 weeks training + 30 projects led</td>
</tr>
</tbody>
</table>

After training, the students are tested to ensure that knowledge has been absorbed. At the end of the test, they receive a certificate. Also, after project execution, certificates are delivered to help managers to constantly monitor the knowledge absorption process (Appendix 3). However, according to MBBB01, one should not only limit oneself to the certificate, but rather ensure that knowledge can be applied in projects effectively. Individuals are a major driver for improvements in organisations. It is therefore important to recognise their achievements in the programme through promotions, gifts and money, which will increase their motivation to improve their daily tasks. So after the deployment of Lean and Six Sigma into a project, certificates, reward and recognition, and promotion can be provided as a result of effective implementation of the knowledge. The overall population that have been exposed to Lean and Six Sigma know-how in the company is estimated at 85%. However, only 30% actively use and implement that expertise (CUS01).
7.3.7 Choice of knowledge transmission channels – training, mentoring and coaching

‘Companies must provide good mechanisms for efficiently disseminating knowledge. So we also need to consider more formal and intentional ways of sharing knowledge within organizations.’

(Davenport and Prusak, 1998, p. 95)

Lean and Six Sigma teams use various transmission channels. Table 7.16 lists some of the popular ones. While they employ IT tools for codified materials, statistical and non-statistical data and easy information, for more verbal sharing and tacit knowledge they prioritise physical proximity, expatriate rotation, workshops, walkabout management, mentoring and coaching and some IT tools.

Table 7.16 Knowledge transmission channels

<table>
<thead>
<tr>
<th>Codification</th>
<th>Personalisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training materials</td>
<td>Mentoring and coaching</td>
</tr>
<tr>
<td>Portfolio management</td>
<td>Brainstorming</td>
</tr>
<tr>
<td>IT tools (teleconferences,</td>
<td>Physical proximity</td>
</tr>
<tr>
<td>phone, email)</td>
<td></td>
</tr>
<tr>
<td>Intranet/Internet</td>
<td>Expatriates rotation</td>
</tr>
<tr>
<td>Storyboards</td>
<td>Walk about management</td>
</tr>
<tr>
<td></td>
<td>Workshops</td>
</tr>
</tbody>
</table>
These channels were identified as being the main medium for Lean and Six Sigma know-how transfer within the MNC. More interestingly, the researcher has identified that two main channels contributed to the transfer of two different types of knowledge. While the use of IT tools enhanced explicit knowledge storage and enabled team members to access the portfolio projects management which contained projects that could be leveraged into other projects in different locations, on the other hand mentoring and coaching was used as a mean to transfer tacit knowledge. It is necessary after training to ensure that knowledge has not only been transmitted but also has been absorbed and used by the receiver.
### Table 7.17 Physical proximity – training, mentoring and coaching (facilitator of the unspoken knowledge transfer)

<table>
<thead>
<tr>
<th>Participants</th>
<th>Preferred mode of transmission channel</th>
<th>Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUS01</td>
<td>Physical proximity, emails</td>
<td>‘I have to travel a lot. I have to go and understand the issues they are facing. It can be easy for me to sit in the HQ and send some emails and tell them what they have to do and how they are going to do it. No I have to travel, I have to go see it myself and provide them support.’</td>
</tr>
<tr>
<td>MBBM01</td>
<td>Phones conferences, physical proximity</td>
<td>‘For me it will be phone conferences, but there is still a face-to-face meeting of project leaders locally.’</td>
</tr>
<tr>
<td>LBBA01</td>
<td>Physical proximity</td>
<td>‘I prefer face-to-face meeting. Face-to-face recognition in order to recognise that the work has been done. The part where we have to ensure that they understand is to go directly to the practical activity in field after the training. I think that here in SA we prefer much more personal contact than something remote by email or by phone.’</td>
</tr>
<tr>
<td>MBBB01</td>
<td></td>
<td>‘…I support most face-to-face meetings.’</td>
</tr>
<tr>
<td>BBUK01</td>
<td>Physical proximity, phones, emails</td>
<td>‘I think the key point is what I call walkabout management. You got to be able to see, observe, monitor what the reaction is to whatever it is you are trying to do and that is easier when it is face to face, but you need to think about techniques of follow-up phone calls, follow-up emails, counselling all the...’</td>
</tr>
<tr>
<td>Interviewee</td>
<td>Physical Proximity</td>
<td>Comments</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------</td>
<td>----------</td>
</tr>
<tr>
<td>MBBG01</td>
<td>Physical proximity, some IT tools</td>
<td>‘In DAS we execute the training in person because there are so many practice activities which cannot be done online. On the other hand, the online training success is very different to the success of face-to-face training.’</td>
</tr>
<tr>
<td>LF01</td>
<td>Physical proximity</td>
<td>‘I support face-to-face meetings and 80% of our meetings and communication are face to face.’</td>
</tr>
<tr>
<td>GBF02</td>
<td>Physical proximity</td>
<td>‘I think physical proximity is the best way whenever possible. I believe it is the best way to communicate because everything goes in. Most of the time over the phone we lose patience because we can’t physically see the other person so we tend to rush things. Whereas if we are in the same room we tend to be more focused and attentive.’</td>
</tr>
<tr>
<td>MBBUS01</td>
<td>Physical proximity</td>
<td>‘…For me nothing beats the impact you can have on teams and progress than a few days of face-to-face time with teams, especially to kick them off. Then virtual management becomes much easier.’</td>
</tr>
<tr>
<td>MBBUS02</td>
<td>Physical proximity</td>
<td>‘Most of our training sessions are set up to be face-to-face for a week. We will not try to implement that week session over the phone.’</td>
</tr>
</tbody>
</table>
Table 7.18 Are your IT systems integrated and compatible effectively enables knowledge transfer?

<table>
<thead>
<tr>
<th>Participants</th>
<th>Location</th>
<th>Statements about knowledge storing</th>
<th>Effective or ineffective</th>
</tr>
</thead>
<tbody>
<tr>
<td>LBBA01</td>
<td>Argentina</td>
<td>‘Tools and technologies are available. There is always support to leverage projects.’</td>
<td>Effective</td>
</tr>
<tr>
<td>MBBB01</td>
<td>Brazil</td>
<td>‘The company has intranet tools for the portfolio tools. In that portfolio tool, all the MBB and project leaders are mainly responsible to open a project charter in the portfolio tool. With a search query. So anyone who is part of this internal SS community could search and find any project all over the world that could have any contribution to their work problem. And also, when a project leader puts a project in the system, all the MBB, receive a message saying “hey there is a new project opened, take a look, if it could contribute to your knowledge”.’</td>
<td>Effective</td>
</tr>
<tr>
<td>LF01</td>
<td>France</td>
<td>‘What is important is the solution for the people working in the area. For example I am a lean leader working in different areas and sometimes it happens to me that I do something somewhere that I have done before in another plant. Whatever happens, I will do my workshop as normal and push people to find the solution, even if I know the solution from the beginning, I will push people to find the solution because when it is a solution that you have found yourself, the rule that you have created yourself you will follow it. Yes, we have integrated IT systems are compatible to enable communication and sharing.’</td>
<td>Effective but have to be creative</td>
</tr>
<tr>
<td>GBF01</td>
<td>France</td>
<td>‘There is database called portfolio. As GPL I have the responsibility in the team to gather the right data in order to analyse them. After having received the project charter. The first thing on my checklist even before collecting data is to check if something similar has been conducted in some other part of the company to save time and avoid doing the same job twice. This can easily be done within the search query.’</td>
<td></td>
</tr>
<tr>
<td>MBBG01</td>
<td>Germany</td>
<td>‘We have full time BB meeting all together with the MBB to exchange information, to present something in some geography. It is mainly for the leverage reasons, to identify areas […] If I have a market share project in country A, market share in country B relatively similar conditions in the country, then very often we can leverage that knowledge from one country to the next. It saves time and effort.’</td>
<td></td>
</tr>
<tr>
<td>MBBM01</td>
<td>Malaysia</td>
<td>‘I encourage subsidiary autonomy, but I believe that in networking on HQ and other subsidiaries is also important, that’s where you leverage the best practices.’</td>
<td></td>
</tr>
<tr>
<td>CUS01</td>
<td>USA(HQ)</td>
<td>‘For learning we use the IT to share and learn. Everything could be available on the Internet. We have a shared system where anyone can what see everyone else has done. So we have got a portfolio management a good portfolio, where we can connect and find help and find similar projects done. So before you do anything, you have to go on the portfolio, you learn what was done and use it to leverage your work. So we have the infrastructure to do it.’</td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>Description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>USA (HQ)</td>
<td>MBBUS02: ‘So we have a database that’s searchable, we can go back and look for projects that we’ve already done and then try to leverage how they were done. It might not be the exact piece of information that is useful, but how they did the project is usable. So did they create a certain template, did they create certain tools, how did they go back doing the analysis? It’s a lot of those types of things, we go back to projects that we have already done and then we can reuse that learning.’</td>
<td></td>
<td></td>
</tr>
<tr>
<td>USA (HQ)</td>
<td>MBBUS01 (Marshall): ‘Every Thursday for an hour we do project reviews or continuous learning or something where we invest and we do that by sharing our projects or sharing different aspects of excelling to know all the different parts of the company where projects are going on and they get to see how other people solve problems and what you come to see to be quick on yours.’</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td>BBUK01: ‘We have a portfolio that’s manageable within the community of Six Sigma. It is easily accessible, Projects can be leveraged into others. It save time as there is no need to do the same work twice.’</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Effective</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
During interactions between the project leader, stakeholders and any other members of the team, MBBs or BBs provide mentoring and coaching to project leaders, assisting them during the implementation, making sure that all the methodologies and tools have been applied and used effectively. In total, eight out of ten participants indicated that this is where the real knowledge transfer happens. It is an effective mechanism to transfer strategic knowledge.

It is clear that it is important for firms to value both face-to-face and IT tools. Although the former is one of the best ways, it is necessary for individuals, especially those encouraged to work in virtual offices, to be able to make good use of electronic devices for effective knowledge transfer as a way to make up for the loss of interaction with colleagues.

7.3.7.1 Personalisation – physical proximity as a contributor to knowledge transfer (Annexe 10)

‘In some cases there’s no substitute for direct contact.’ (Davenport and Prusak, 1998)

While the subsidiaries did not differ considerably from each other in terms of levels of codification, they did so on personalisation. This is an important result, as codification relies more on IT systems and not personalisation. Although the use of IT brings many advantages for the internalisation and implementation of Lean and Six Sigma know-how, personalisation remains the best medium to transfer knowledge, especially knowledge that cannot be easily codified and which can be best exploited through the personal transfer mechanism (Lee and Wu, 2010), since we learn not only through mental but also by direct personal involvement (Yang, 2003). The study has also revealed that although personalisation may depend a little on IT tools such as teleconferences and phones, physical proximity is the best means of interaction between team members, though some practice differences can be observed across the MNC units.

It was noted that face-to-face was the predominant transmission channel for knowledge sharing within the unit along with emails and phone calls between different units. This channel works effectively. However, BBUK01 pointed out that it is not really productive, stating: ‘If I use emails and I send an email to you, I want the answer back in two days time and you don’t get it or you do get it and it is not the answer that I want. That’s a lot of how we can work these days
and I am not certain it is productive anymore.’ However, for better communication it is always good within a team to go for one communication medium to avoid leaving anybody in the group out. MBBUS01 (Marshall) explained that ‘if you have everybody calling from their office that means everybody is on the same boat and it encourages better behaviours, and that you don’t forget about the people on the line.’ While not especially targeted during the interview sessions, favourable comments were made about the efficacy of face-to-face meetings. All participants thus preferred face-to-face meetings or phone calls instead of emails (see Appendix 10). However, due to the geographical distance between units appropriate means of communication were used depending on the importance of the specific or general change that was going to take place.

7.3.7.2 Limits to physical proximity

As predicted in the literature review the choice of transmission channel was driven by the cost which affected the knowledge transfer speed. MBBUS01 (Marshall) explained that ‘Any time you can call it is OK, it is a good thing. Obviously we can’t afford to fly everybody everywhere all the time. But if we are going to do significant change that’s when we do make sure that we travel to the site, so that we are right there, we are 100% available to them. So that’s always better.’ For this reason, training is made available to enable employees to use alternatives to physical proximity such as NetMeeting and Live Meeting.

7.3.7.3 Some IT tools as substitutes to physical proximity

It is important for an organisation to have an IT network that enables them to easily communicate verbally. The DAS intranet offers an online chat option named ‘Office Communicator’ where the database shows a list of employees who are willing to chat and share information. On the other hand, subsidiary autonomy helped avoid issues in setting up meetings due to time differences because the speed in which knowledge is being sent throughout multinationals can impact on organisational performance.
Another way of sharing tacit knowledge is by means of the virtual teamwork video conferencing system. Davenport and Prusak (1998) highlighted that it ‘is essentially a tacit knowledge pipeline, a mechanism for linking people with the knowledge to people who need it.’ The company uses live meetings and video conferences (Webex) as a substitute for physical proximity. They bring the great advantage of helping both the sender and the receiver to use body language. As communication processes they can provide both verbal and unspoken messages. The sender can therefore easily make sense of both body language and verbal messages and perceive from the attitude of the receiver if the latter is willing to receive the message or not. In fact face-to-face or video meetings present the advantage that the messages can be understood and interpreted easily and quickly.

7.3.8 Knowledge leveraging: knowledge reuse

During documentation analysis, we identified two types of leveraging: leveraging-in and leveraging-out (DowAgroSciences, 2009). The leverage-in is about project charters. One of the documents for communication at the initiation and during the implementation of projects is the project charter. It is the main document explaining what the team does with the opportunity identified. The goal of this document is to present a list of specific and measurable objectives (in terms of savings in time, cost and effort) for the project which enables the team to reach consensus on what will be addressed during the course of the project (DowAgroSciences, 2009). (See Appendix 15 for project charter templates.) It also includes the source and analysis of any data that identified the opportunity to conduct the project. It is mentioned in the training materials that members of the team have to describe significant expectations and deliverables that the project team must produce. Deliverables can thus include project documentation and progress reports as well as project outputs.

Project charters, which are essential for any project execution, have to be updated frequently in the portfolio which can then be easily tracked by any other members within the Lean and Six Sigma community of practice in the company and enable leveraging-out. During project conduct, GBs and BBs or stakeholders or any other members have to identify projects with similar aspects that may be leveraged out within the business and function to other businesses and functions. It
is important for project leaders to identify the key stakeholders who will benefit most from their learning.

If there is a possibility of leveraging-in, this could be mentioned in the project charter as, for example: ‘Portfolio search to be done to identify potential leverage-in projects. The project has great leverage-out potential to other geographies within the region or country’ (DowAgroSciences, 2009). So individuals storing projects in the portfolio have to confirm whether the knowledge which was innovated and embedded in a particular location or context can add value to other units which can be distributed and leveraged into other projects. The portfolio is therefore a means of data storage that provides project leaders with data for businesses and functions to manage their portfolio of projects. It allows everyone to see the bottom-line results in their ‘project portfolio’. Overall, all ten participants agreed that it helps to keep track of costs and benefits and to manage critical resources. It facilitates project review, provides a historical record of what was improved and, more importantly, it enables the leveraging of charters, tools and deliverables for better use of resources. It is indeed an efficient locator for project leaders with similar projects (DowAgroSciences, 2009).

7.3.8.1 A3: a communication tool in Lean and Six Sigma teams within DAS

Beside mentoring and coaching, the company encourages Lean and Six Sigma teams members to use some standardised way of communication through a number of tools whose layout and format are compatible. One of the common tools used in teams is the ‘A3’ (see Figure 7.10). DAS defines the A3 as a standardised one-page report that includes all of the information the reader needs to become informed on: a stated problem, progress regarding the stated proposal and resulting actions. It enables any person involved in the project to understand the scope and status of a specific project. Simply put, it is a ‘storytelling’ report (Dow, 2011).

This document layout enables the author to be simple and concise when reporting in order to generate quick and precise communication. It is mainly used in the team during the identification of the root causes of a problem, to suggest a change or to report project progression. However, the fact that team members use the A3 format as a communication tool, does not in any way
imply that they should not have verbal communication. In fact, according to CUS01 (Bertrand), the team leader should allow enough discussion time for members to interact and generate ideas, mainly in the ‘Analyse phase’ during activities such as brainstorming or the application of tools such as the Fishbone diagram (cause/effect) and the 5 Why’s.

**Figure 7.10** A3: a communication tool in Lean and Six Sigma teams within DAS
7.3.8.2 IT system compatibility in MNCs: knowledge storage and knowledge leveraging (Annexe 11)

In general, all ten participants agreed that their IT systems were compatible and were necessary to support knowledge transfer and especially project leveraging. It has been noted that the participants always linked the use of IT for more explicit knowledge and documentation. IT tools enable knowledge reuse within the organisation. It had been identified that projects that had been executed in other locations could be easily applied elsewhere. Members could then look at the methodologies, the templates and the procedures that the project leader used to execute his project and leverage it into their own project. This ability to search the portfolio definitely saved a lot of time in transferring knowledge. MBBG01, for instance, states that: ‘If I have a market share project in country A and market share in country B with relatively similar conditions in the country, then very often we can leverage that knowledge from one country to the next. It saves time and effort.’ However, one important aspect was found when interviewing LF01. This Lean project leader encourages knowledge leveraging, but supports most of all individual effort. So the use of IT tools is necessary to enable knowledge (explicit) reuse.

7.3.8.3 Subsidiary infrastructure

In the company the infrastructure in all the subsidiaries is compatible so there is no problem in identifying a knowledge source. As stated by CUS01:

At Dow, we don’t have that issue, because our portfolio is well managed and in our portfolio, you have got what we call ‘subject matter experts (SMEs)’, so really if you need something somewhere, the name of SMEs, you have them. First of all you have got to contact the project leader. So your project is barely a new project in the company. Someone else has dealt with something like this in the past. So what you have to do, is to get in the portfolio, do some search, you will find similar projects somewhere. You can read the report on this project, you can contact the owner, if you cannot contact the owner, you can contact the SME and there is a list of people with whom you can quickly
get in touch with. Then if you cannot do that, your MBB should be able to enter in contact with them.

Therefore, in the company, they have a portfolio project management, that helps in the identification of experts. This is mainly supported by the integrated and compatible IT systems and intranet in the MNC (see Figure 7.5).

The researcher found that when the level of subsidiary autonomy and the use of personalisation and IT systems were combined, it contributed positively to the inflow and outflow of knowledge transfers between the HQ and its subsidiary units.

7.3.8.4 Integrated and compatible IT: a contributory factor to enable leveraging

The organisation has integrated and compatible IT systems to support knowledge transfer and especially the leveraging of projects across all units, even in developing countries. Moreover, the employees receive training in order to make good use of IT tools. All ten participants affirmed that the company IT systems were integrated and compatible to facilitate knowledge flow (see Appendix 11). It has been noted that standard and common IT database and software applications such as SAP, Portfolio Project Management, Business Object, Storyboard Basic, Dow Intranet Six Sigma Website, I/S Training, Global Reporting Training and Global Standard Workstation Tool Training were easily accessible by project leaders.

It is likely that this standardisation in IT systems has resulted in similarities in the way MNCs experience internal knowledge sharing between individuals, not only within a Lean and Six Sigma team but also within the organisation as a whole. In the Annual Chemical Conference (Dow Chemical, 2007), Dow stated that: ‘We will continue to grow in these emerging economies, not only in the obvious ways like building manufacturing plants, but also making full use of the brain power that exists in these countries, which is why you see us establishing IT and engineering and research centers in those countries.’ It is therefore important for an organisation to have a strong IT system that enables it to easily communicate verbally and supports knowledge leveraging. Figure 7.11 demonstrates the different factors that contribute to knowledge leveraging and the causal relationship with knowledge transfer effectiveness.
7.3.9 Mentoring and coaching, informal and formal knowledge transfer, contributors to knowledge innovation

The company has several ways of communicating informally. While it varies according to region, the goal is pretty much the same. Nevertheless, they do encourage informal knowledge sharing, as MBBUS02 stated: ‘As a team, we are helping each other every day because if we have some people who are more experienced and others who are new, we try to pass on that knowledge by sharing.’ Informal knowledge transfer enables the identification of experts and gives the advantage of benefiting from connecting with others who have done similar kinds of tasks.

Overall, all ten participants mentioned throughout the interviews the importance of informal knowledge sharing as an opportunity for exchange and thus serendipity. For example, all MBBs recognised that informal knowledge transfer such as discussions during breaks and interactions outside of the office enabled employees to feel more relaxed to share. On the other hand, they pointed out that formal knowledge sharing such as meetings, workshops and brainstorming sessions which are really important during the ‘Analyse’ phase of the methodology enhanced
knowledge transfer and thus knowledge creation, as each individual is able to make sense of the information in their mind and generate different or similar ideas which enable them to find solutions to their problems. However, participant BBUK01 pointed out that, although informal knowledge transfer may indeed be beneficial for the organisation, individuals must be aware of information overload which can lead to misunderstanding and misinterpretation. Consequently, MBBUS01 (Marshall) commented that ‘Fishing for data, projects and organisational know-how is not encouraged. Instead we strive to define objects of knowledge capture and learning and then target data and information collection to that goal.’ Hence MBBs provide support to project leaders to limit information overload. Thus it is also important to consider formal and intentional ways of transferring knowledge within the firm. The team also use formal ways to share projects that could be leveraged in other parts of the country. They have a project board where all BBs and MBBs store their projects. This board is easily accessible by all members of the team so that they are constantly able to discuss project progression.

Moreover, because of the tacit nature of knowledge that resides in people’s minds, knowledge creation may be influenced by individual behaviour. MBBUS01 (Marshall) mentioned that:

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It is not the tools that’s hard, it is not the teaching in the class that’s hard, it is how you make it for a team of people who are all highly variable in their behaviour in their understanding. So the knowledge that is at risk when people move between jobs for instance, is that knowledge on how to do it. Which is not usually a classroom teach. The how to do it is probably something that you gain by experience. So that’s what is at risk. The tools, the trainings are easy to transfer they are easy to show people. What they really mean and how you use them to change culture is a secret recipe.
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Figure 7.12 illustrates the different determinants that may enhance or obstruct knowledge innovation.
7.3.10 Knowledge sharing speed – time and resources investment

When the methodology of MAIC is applied in the Analyse phase, the team members must gather together and discuss the possible root causes and thus find potential solutions to eliminate the defect. Members in the group will share ideas and discuss each other’s suggestions and select the best of them during brainstorming sessions. This is the most delicate and complicated task, because it relies more on personal experience. It is then hard to convince others and to prove the credibility and accuracy of the knowledge one is trying to share, especially when there is no physical proximity. As Davenport and Prusak (1998) suggested, it can be difficult to make tacit knowledge explicit and transfer it quickly and easily. Because it is not easily codifiable it can take a long time to set down in documentation. That form of communication will simply not work for that type of sharing activity and can take a long time. However, participants recognised that although they have got integrated and up-to-date IT systems to enable better transfers, they do not rely solely on virtual meetings. Depending on the importance of the action or the project,
the company will invest in gathering the team physically together as it can thus guarantee good transmission and absorption of the knowledge, and speed up the transfer with effective results. MBBUS01 mentioned that when necessary you just have to get there and spend time with the group, working together and exchanging ideas. On the other hand, LBBA01 and MBBG01 emphasised that having more people able to deliver the training in person locally was also seen as a facilitator factor. Hence the company tries to have a network of trainers among the MNC in order to help the training, because face-to-face training is indeed more effective compared to online training. Figure 7.13 presents the inhibitor and facilitator factors that affect knowledge transfer speed in the teams within MNCs.
Figure 7.13 Knowledge transfer speed: inhibitor and contributor factors (Arielle Dora Nganya. S)
7.3.11 Psychic distance

7.3.11.1 Cross-cultural differences: an inhibitor factor

*Do you see cultural differences as a major obstacle in knowledge transfer? How do you strike a balance between the company culture and the local culture?*

Culture was one recurrent theme during the interviews. It was found that local culture, individual behaviour and individual background (education level, age, gender, religion, language) were cited as barriers to knowledge sharing by each of the participants to a certain extent. The participants uniformly asserted that these factors needed to be considered in the cultural mix if knowledge sharing was to be effective in their organisations.

7.3.11.2 Building from individual behaviour and mindset change to enhance knowledge internalisation and thus knowledge transfer effectiveness

The research found that *individual behaviour* and *individual background* were two factors that may inhibit knowledge sharing. She previously discussed, in *Chapter 3, section 3.2.4.1*, that knowledge is conceived in a person’s mind who then makes sense of the flow of information. The individual’s background may influence the way he interacts with co-workers and takes decisions, and his ability to absorb and understand the communicated message. Participant MBBG01 highlighted that: ‘Because sometimes we have people from different regions included, it is quite interesting to see the staff mentality. One of the problems is the mentality and then having a cross-functional team around the table is sometimes very powerful but very complex.’ People are therefore not easy to manage due to their individual behaviour and culture, and managers should take this into account. CUS01 (Bertrand) added: ‘The most important role of a business Champion, is to understand how people’s minds work. You need to understand the behaviour, the set of beliefs of people – that’s culture – so that you can know how to manage the change […] Lean and Six Sigma whatever you want to do, have to do with people’s behaviour. So before you actually try to implement Lean and Six Sigma, try to understand how that behaviour and what their set of beliefs is.’ Moreover, MBBM01 pointed out that: ‘when you challenge people on how they make decisions they can get defensive.’ Overall, participants at the
top and middle management level emphasised that individual behaviour and background are factors that could impede effective knowledge transfer if there were individual behaviour clashes. They highlight that a good manager or executive should first of all try to understand their employees’ set of beliefs and work from there. This links back to Trompenaars and Hampden-Turner (1997) who suggest that organisations should not ignore their employees’ routine ways of seeing, but rather should try to understand their individual behaviour and build from ‘the way they think’.

7.3.11.3 Cross-cultural differences seen as an opportunity for learning

Although the majority of participants saw cross-cultural differences as a challenge in the knowledge transfer process within their company, some participants such as MBBM01 and MBBUS02 believed that having a cross-cultural team may also offer an opportunity to learn many other ways of doing things. The latter claimed that: ‘It adds a lot of value by having different cultures within a group and it is a learning experience for them.’ In fact members from a cross-cultural team will be exposed to some issues as well as opportunities. Yet, they will be able to come out with better solutions regarding how to handle these issues as they will be constantly learning from each other and understanding the differences that stand between them. Such teams are more likely to be innovative, more culturally sensitive and deal promptly with issues in a smarter way. This reinforces Holden’s (2002, p. 15) argument, which suggests: ‘Once we begin to see culture and knowledge about culture as an organisational ressource, then cross-cultural management focuses less on the management of cultural differences and more on the application of this resource, which is then a form of organisational knowledge, to resolve international management problems.’

7.3.11.4 Culture and transmission channels

In some cultures, people are more relaxed and even prefer to meet after work to discuss current projects with colleagues. These conversations indeed will still add value to the firm. Interestingly it has been discovered that European and US participants mainly communicated via phone and
emails, and face-to-face only when necessary. On the other hand, in Latin America (Argentina and Brazil) participants strongly preferred face-to-face communication and liked interaction outside work. When interviewing participants from Latin America, both LBBA01 and MBBB01 mentioned the fact that the Latin American culture was more relaxed in the work environment, and they expressed the importance for Brazilian and Argentineans to meet face-to-face to discuss issues. LBBA01, for example, stated: ‘We encourage open exchange between members and it is one of the advantages of Latin American people in order to have friendly activities. Therefore in this part of the world we are quite open. We entertain, having a barbecue, playing together, so there is a good exchange of information between us because it is something that is very common in our region.’ It is thus critical for colleagues in that region to build up relationships, and therefore trust, which facilitate effective interactions.

7.3.11.4 Individual background (education level, gender, age, religion (appendix 13))

Do you see education level, gender, age and religious differences as obstacles to knowledge transfer?

Overall, nine out of ten participants agreed that these elements could have a slight impact upon communication between individuals. Participants MBBUS01 (Marshall) and MBBUS02 brought up an interesting issue concerning the fact that younger people may be more technologically adept. For example, during training sessions and workshops the participants observed that younger people may be more likely to use electronic devices while older participants preferred face-to-face and email communication. Therefore hard copies of manuals were made available during training sessions and workshops. On the other hand, according to BBUK01, while older generations looked towards authority for direction, younger generations were more information aware and seemed to be ‘so wrapped up in social stereotypes that they find it hard to operate in networks and teams. And if you take the two together, they are confused with each other’s attitudes.’ However, the company provides assistance with IT tools training so that the lack of technological skills should not keep individuals out of the loop.
While in some regions such as Brazil, the level of education may be considered a barrier, its impact on communication is low and can be overcome because people communicate easily within that environment. Nevertheless, language may hinder the process (Appendix 12). It has also been identified that religion has to be taken into consideration. The company has several units dispersed around the globe and is therefore exposed to different cultures. Participant MBBG01 noted, for example, that: ‘If I have training taking place in a specific country in North Africa, before fixing the training dates, I have to look in the Ramadan calendar to ensure that it is not in conflict with their beliefs. So that’s showing respect to them and not bringing them into conflict with their own religion.’ In general, these factors do not have a major influence on knowledge sharing as the company encourages a good level of politeness and respect.

**Table 7.19** Summary of cultural factors that could impact on knowledge transfer within Lean or Six Sigma teams and their evaluation

<table>
<thead>
<tr>
<th>Cultural factors</th>
<th>Number of references</th>
<th>Degree of impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual background</td>
<td>10</td>
<td>Medium</td>
</tr>
<tr>
<td>Individual behaviour</td>
<td>10</td>
<td>High</td>
</tr>
<tr>
<td>Language barriers</td>
<td>10</td>
<td>Low</td>
</tr>
<tr>
<td>Cross-cultural differences</td>
<td>10</td>
<td>High</td>
</tr>
</tbody>
</table>

7.3.11.5 *Striking the balance between corporate culture and foreign units cultures/knowledge implementation: standardisation and adaptation (see Table 20, 21 and 22)*

In general all participants agreed that culture may hinder communication and thus knowledge transfer effectiveness. MBBG01 stressed the fact that: ‘When working in an MNC, people do not quickly accept when things are not aligned with their cultural style and mentality and those
specific things have to be adapted [...] Especially when having specific mentalities and cultural differences. Because if we are not respecting a specific culture of a specific geography for example then the buy in might drop from one second to the next.’ So cultural diversity was found to be partly behind people’s interactional conflicts. However, all participants highlighted that the organisation has put norms in place to help people to be aware of those differences. As explained in Section 7.3.2, during training sessions, for example, the HQ encourages the use of local people to train or translate. For instance, MBBUS02 highlighted that working in an environment where they are constantly involved with individuals from other backgrounds is an opportunity to learn about other cultures, to be more sensitive and to be open to finding a solution if any cross-cultural issues arise. All MBBs recognise that although Lean and Six Sigma teams are mainly composed of individuals from different geographic areas, they encourage respect, politeness and trust between members. Another good way to prevent cross-cultural issues arising and actually getting people to learn about other cultures in the company is to rotate expatriates around the globe. That way they are exposed to other ways of doing things and beliefs which can foster tolerance.
Table 7.20 Lean and Six Sigma implementation and internalisation similarities and dissimilarities within the MNC

<table>
<thead>
<tr>
<th>Categories</th>
<th>Standardisation</th>
<th>Adaptation</th>
<th>Statements from the HQ and some local MBBs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>Training materials (in English)</td>
<td>Training can be provided in the local language or common language of the area of expertise</td>
<td>‘The training has to be adapted to the audience. I have a standardised set of training modules. Of course when taking examples, if I have only sales people, I will try to find of course the sales-related examples. It will be the same with the marketing specialist or customer service, but the training materials, which can be apply in all businesses and thus no change of training materials for a specific audience.’ (MBBG01)</td>
</tr>
<tr>
<td>Tools</td>
<td></td>
<td></td>
<td>‘When we are introducing these new tools and techniques, we would like that to be as standardised as possible.’ (MBBUS02)</td>
</tr>
<tr>
<td>Project selection</td>
<td>Project charter, global projects</td>
<td>Subsidiary autonomy for project identification and selection Project selected according to local needs</td>
<td>‘To capture local projects, to bring the best to local business, it has to be done autonomously because each country has different business conditions, business environment, so it has to be taken into consideration and can only be handled locally. It is good to have a freedom to identify projects and to assign them to specific people, build the team and execute.’ (MBBG01)</td>
</tr>
<tr>
<td>Team member ‘roles’</td>
<td>MBB, BB, GB have different responsibilities</td>
<td>In some regions, they may have part-time project</td>
<td>‘In the US we have full-time BBs. We have made some modifications. Outside of the US, my colleagues in Europe, Africa, Middle East [...] In those geographies we have a higher number of part-time project leaders.’</td>
</tr>
</tbody>
</table>


## A Critical Evaluation of Knowledge Transfer Management in Improving Organisational Effectiveness within MNCs

<table>
<thead>
<tr>
<th>Phase</th>
<th>Role/Position</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project execution</strong></td>
<td>leaders</td>
<td>So they will have a full-time job and they will be running projects kind of in the area that they work.’ (MBBUS02)</td>
</tr>
<tr>
<td></td>
<td>Local implementers</td>
<td>‘When we are trying Lean and Six Sigma deployment, we try our best to use local people to do the local job because if you take the cultural part, Lean and Six Sigma have many other steps in the process and they are linked to people’s behaviour.’ (CUS01(Bertrand))</td>
</tr>
<tr>
<td><strong>Mentoring and coaching</strong></td>
<td>MBBs are mentors and to some extend BB for GB</td>
<td>‘MBB’s goal is to ensure the training and development of the future leader delivers for the business unit with team and personal excellence, therefore ensuring their success and in the course of that action, developed people leaders and not just project managers.’ (MBBUS01 (Marshall))</td>
</tr>
<tr>
<td><strong>Local trainers</strong></td>
<td>Local people used for training</td>
<td>‘Try to have more people trained in order to deliver the training in person, try to have a network of trainers along the company in order to ease training, because as a matter of fact the face-to-face training is very good compared to the online training.’ (LBBA01)</td>
</tr>
<tr>
<td><strong>IT system</strong></td>
<td>Integrated and compatible</td>
<td>‘IT systems are integrated and compatible, but in some countries for security reasons, they may not have access to certain type of tools or IT systems. However, this is just in case of extreme precautions, e.g. Country X.’ (BBUK01)</td>
</tr>
</tbody>
</table>
Table 7.21 How do you strike the balance between corporate culture and foreign units cultures? Are cross-cultural issues challenging?

<table>
<thead>
<tr>
<th>Participants</th>
<th>Statements/storytelling</th>
<th>Solutions</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUS01</td>
<td>‘This is what we call national management. It is the skill that people use and that they personally discover by doing it. If you go to Japan now and you have to deal with the Japanese, there is a particular way to deal with the Japanese. If you look at Asia, there is a different way to deal with the Asian guys. They have something that they call “loosing face”, they don’t want to lose face. If they think that they are going to lose face with you, it will never work with you, it will never work for you. And if you go back to the western countries, that doesn’t mean anything. No one worries about loosing face. That’s not a big issue. So as a global executive you need to know that every time you step in a new culture, you need to be aware of the local culture.’</td>
<td>Using local implementers  ‘That’s why when we are trying Lean and Six Sigma deployment, for example. We try the best to use local people to do the local job, because if you take the cultural part, L and SS have many other steps in the process and they are linked to people behaviours.’</td>
<td>Be aware of local culture</td>
</tr>
<tr>
<td>MBBG01</td>
<td>‘Basically when we have cross-functional projects it starts to get very complex, because sometimes we have people from different regions included and then it is quite interesting to see the staff mentality. One of the problems is the mentality and then having a cross-functional team around the table is sometimes very powerful but very complex.’</td>
<td>Adapting to the local context and using local people to handle communication  ‘If you want to get something done in one of the countries in Asia, then it is sometimes good</td>
<td>Individual behaviour is a challenge</td>
</tr>
</tbody>
</table>
‘When working in an MNC, people do not quickly accept when things are not aligned with their cultural style and mentality and those specific things have to be adapted, so it is good to have an adjustment done on the targeted audience. Especially when having specific mentalities and cultural differences. Because if we do not respect a specific culture of a specific geography for example, then the buy in might drop from one second to the next.’

‘So adjustment of communication to target audience is sometimes the key. Which is then the execution of the methodology has to be the same everywhere. If there are other businesses related it has to be taken into consideration. For example, what is the best composition? In different countries it is differently handled with the different seniorities of team members. If you go to the US, they are very relaxed. When you go to Asia you have to respect the fact that the seniors have to be treated as seniors and when taking this into consideration the acceptance of the communicated message is quite better than no consideration at all.’

<table>
<thead>
<tr>
<th>MBBUS02</th>
<th>‘Yes I will say it is easier to work with a subsidiary whose culture is similar to our HQ national culture. But the more</th>
<th>Using expatriates: rotating employees across borders to</th>
<th>Cross-cultural differences open</th>
</tr>
</thead>
</table>
opportunities you can get to learn cross-cultural, then the good learning opportunities on both ways to better understand the differences in cultures and to find common ways to work together.’

‘I think there are a lot of opportunities to learn. Within my groups here, in the past we have tried to rotate in people, and bring people over for a year to become a black belt and do projects. So we brought them from India, the UK, and we also sent some from here [HQ] to Germany or to North America. So we try to do that. It adds a lot of value by having different cultures within a group and it is a learning experience for them. Because how we work here in the HQ, and just how even decisions are made, how meetings are conducted. All of those things are very different in different parts of the world. So this can be a really big challenge.’

| MBBUS01 (Marshall) | ‘In general corporations tend to value time and tend to make everybody so busy that we don’t slow down in order to understand culture, develop trust, and understand time. For me personally, when I talk to my audience, I always try to talk in a common language. In DAS we do classroom training, we do training where we go in some places and deliver to the | facilitate cultural awareness and learning | doors to other ways of doing |
| | Adapting to each audience and site and find ways to allow more time to develop trust and understand culture | | Not enough time to develop trust and understand culture but learning opportunities from |
team and they can do the work on the site like an event. We always do our best to go to the field and this is where the excellence comes in. We always adapt what we say to the audience. We might have the exact ten slides every time, but I believe in that number of slides there is a lot of conversation. And the conversation is about the way they are doing the things that are relevant to them. You have to speak in their language, you can’t use a lot of Lean jargon or Six Sigma jargon. You can’t use a manufacturing example when you are talking to office people. You can use a manufacturing example when you are talking to your field group. And that’s where the benefit of doing lots of different events around the globe with lot of different groups bring. You have a lot to draw from. You can find a new way. If you are talking to them about something and you are told it is not working, you can change.’

| MBBM01 | ‘I think a common thing I will say is that the Six Sigma culture is incorporated in the organisation, so this has actually taken over the rest of the culture.’

I do not see that as a challenge. One good thing about DAS is |

| cross-cultural and functional teams | Common language: standardised terminologies in all units and the HQ | Not a challenge |
that although we have a lot of abbreviation, but we all use the same terminologies. We use a common language I will say. It is a global initiative. I don’t experience any hinders coming to economic, cultural standpoint.’

**LBBA01**

‘In the case of Latin America, the behaviour is generally quite similar, because, we have the same problem and the same characteristics, in some cases there are some differences, but in general Latin Americans have the same profile. I mean, sometimes people are really friendly, but sometimes they have difficulties to standardise their work. The challenge is to show them that working in a standardised way is an advantage not a disadvantage. That is the main challenge. You know with some kind of informalities and immoralities, if you compare with the chairman way of working, the American way of working, it is quite different. So that is the main challenge, it is to show them that you can work in a standardised way easier than you can work in a non-standardised way.’

**Encouraging people to work in a standardised way to facilitate uniformity in task execution**

It is challenging for Latin Americans to work in a standardised way

**BBUK01**

‘From a corporate perspective the assumption is, the culture is the same. I think what is more important is individual culture. If I work with somebody from Romania, their background of freedom to make discussion, freedom to discuss things is less

The corporate culture will be the same in all units

Cultural differences make interaction with colleagues
than perhaps it will be for the UK. If you talk to an Egyptian
guy, he will tell you exactly what he thinks and won’t care if
he upsets you whereas the British culture is that you don’t
upset anybody. So there is culture by country, education and
age, overlaid by the communication style of the social makeup
of a person. And that’s what makes it complex.”

| LF01 | ‘I remember that during a trip to the Indian plant, I was faced
with a cultural issue. The goal of my trip was to initiate a
project, and we had fixed the day and time in advance. The
meeting was supposed to be at 8 a.m. and when I arrived in
the plant there was nobody. So I was surprised and I waited
until 10 a.m. and I saw people arriving with a monk. They
explained that in that region they saw incarnation of gods in
every thing or machine. Because we were supposed to initiate
the production with that new machine, they went to the temple
to pray to the gods first. It was so obvious to them that they
did not take the initiative to remind me. So I had learned a
lesson then. Which is: to try to understand the local culture
before interacting with the local people. That’s what the
company encourages us to do.’ |
| Organisation encourages cultural awareness | Cross-cultural differences may be challenging |
| MBBB01 | ‘Once I was in England for a workshop. A colleague of mine was delivering part of the training, he was talking about MAIC methodology, I still remember at a certain moment during his presentation I raised my hand, and I said: “Hey if you want to share an example of that picture, I have it in my machine.” I did it very spontaneously. So after the presentation I received a feedback from him saying that I interrupted his training and I brought information that he did not expect. And I got another feedback, from a senior who explained to me that: “You need to understand that, that person is a very American guy. He was there to deliver training, he was prepared to do so, had several slides to follow, and he did not invite you to talk. However, you just raised your hand and started talking, you did not ask the permission to do so. So in his mind, you actually jumped into his presentation.” But as a Brazilian, for me, it was normal. So I apologised and understood that in his mind it was completely unexpected. | Top management assistance to employees in handling cross-cultural issues | Individual behaviour and background may cause misinterpretation during interactions |
| GBF01 | ‘I think culture might represent a barrier when working with people from different backgrounds. Although we can have issues sometimes, in the company we have an organisational | Organisation puts norms in place to encourage cultural awareness | Culture may represent a barrier to |
A Critical Evaluation of Knowledge Transfer Management in Improving Organisational Effectiveness within MNCs

culture which encourages employees to be sensitive to those kind of aspects.’

| culture which encourages employees to be sensitive to those kind of aspects. | communication |
### Table 7.22 Summary of the strategies used to balance adaptation and standardisation in order to facilitate collaboration in a culturally diverse MNC

<table>
<thead>
<tr>
<th>Strategies</th>
<th>Number of references</th>
<th>Degree of impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using local implementers</td>
<td>10</td>
<td>High</td>
</tr>
<tr>
<td>Adapting to the local context and using local people to handle communication</td>
<td>10</td>
<td>High</td>
</tr>
<tr>
<td>Expatriates: employees rotate across borders to facilitate cultural awareness and learning</td>
<td>5</td>
<td>Medium</td>
</tr>
<tr>
<td>Adapting to each audience and site and finding ways to allow more time to develop trust and understand culture</td>
<td>10</td>
<td>High</td>
</tr>
<tr>
<td>Common language: standardised terminologies in all units and the HQ</td>
<td>9</td>
<td>High</td>
</tr>
<tr>
<td>Encouraging people to work in a standardised way to facilitate uniformity in tasks execution</td>
<td>1</td>
<td>Medium</td>
</tr>
<tr>
<td>Similar corporate culture in all units</td>
<td>7</td>
<td>High</td>
</tr>
<tr>
<td>Top management assistance to employees in handling cross-cultural issues</td>
<td>10</td>
<td>High</td>
</tr>
<tr>
<td>Norms put in place by the organisation to encourage cultural awareness</td>
<td>10</td>
<td>High</td>
</tr>
</tbody>
</table>

#### 7.3.11.6 Organisational distance an inhibitory factor to knowledge transfer effectiveness

Although the company’s organisational structure is fairly similar in all units and has been defined at a global level to provide a better integration of decision-making and communication
processes, all ten participants recognised that differences in unit infrastructure, policies, IT compatibility and hierarchical structures may hinder the process of knowledge transfer if they were high. The formal language used in the company is ‘English’. Although it may not be all employees’ first language and can represent an obstacle for some individuals, it does not have a major impact on knowledge transfer because MBBs and BBs in each location operate at a strategic position in the hierarchy and therefore have a good level of English. These local MBBs and BBs may deliver training in both the native language and English and serve as mediators between expatriates’ expertise or global implementers and the local workers.

Furthermore, confidentiality did not seem to be a major issue once internal customers recognised the need to adopt Lean and Six Sigma know-how and bought into it. Hence collaboration was easier which eliminated any obstruction due to confidentiality. On the other hand the geographical distance was found to have an influence on knowledge transfer effectiveness. Participant MBBUS02, for instance, believes that investing time to actually convert tacit knowledge is important. She pointed out that, because of the geographical distance between units, the company must spend time in order to have critical processes in place. She mentioned that: ‘If those processes can be well documented, so that the next person coming in has a written process in place, we can do a better job by documenting those processes. And for things that can’t be documented there will need to be that allowed time for transfer. Sometimes we do a good job in that, sometimes we don’t.’ Figure 7.10 is an example of communication tool, while Appendix 16 is an illustration of the codification of tacit knowledge to a certain extent. It explains the procedure for data collection and analysis for a project. (For confidentiality reasons, only the first page of the document will be provided.) On the other hand, MBBG01 emphasised that documented and shared projects enable leveraging which saves time and effort, so people can actually concentrate on building other capacities.
Table 7.23 What are the organisational factors that could positively or negatively impact upon knowledge transfer within Lean or Six Sigma teams? Do you see any obstacle in dealing with units or the HQ if they are geographically distant?

<table>
<thead>
<tr>
<th>Organisational factors</th>
<th>Participants</th>
<th>Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisational culture</td>
<td>MBBM01</td>
<td>‘I think a common thing I will say is that the Six Sigma culture is incorporated in the organisation, so that has actually taken over the rest of the culture.’</td>
</tr>
<tr>
<td>Confidentiality</td>
<td>MBBG01</td>
<td>‘Normally in the situation of the project leader when they have assignments, they have full permission for the data needed for the project. So the data can then be generated from the system by experts who are able to run the report.’</td>
</tr>
<tr>
<td>Lean and Six Sigma teams’ hierarchical structure</td>
<td>GBF01</td>
<td>‘Having a kind of hierarchy I will say helps us to maintain a structured information flow. I mean, each member has a role and brings in his contribution. So it is easy to know where to go, when seeking for assistance for example.’</td>
</tr>
<tr>
<td>Time and resources investment</td>
<td>MBBUS02</td>
<td>‘I think the biggest cost is probably the lost opportunity of not sharing enough. So where the cost can hurt you, is that you duplicated work because you did not share enough.’</td>
</tr>
<tr>
<td>Leadership and management commitment</td>
<td>LF01</td>
<td>‘Strong leadership and management is the key to knowledge transfer.’</td>
</tr>
</tbody>
</table>
| IT systems and                                | CUS01        | ‘For learning, we use IT. We have a shared system where anyone can'
| Organisational infrastructure compatibility in all units | see what everyone else has done. So we can connect and find help and similar projects done. So we have the infrastructure to do it.‘ |
| Geographical distance | MBBUS02 | ‘In some cases it might to be a little bit different, just because there is distance between units. It is easier for me here when my team sits together, in Europe it is going to be a little bit more difficult because they are more spread out but the MBBs play a big role in those area in making sure that there is consistency and they have a place to go to for questions and in those places we also have experienced BBs that are coaching the GBPL. We kind of have two layers of support to help them with their projects with coaching or any questions that they have.’ |
| Formal language (English) | MBBB01 | ‘Yes language is also a problem linked to the education in our unit.’ |
### Table 7.24 Summary of the impact of organisational factors upon knowledge transfer in Lean and Six Sigma teams within MNCs

<table>
<thead>
<tr>
<th>Organisational factors</th>
<th>Number of references</th>
<th>Degree of impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisational culture</td>
<td>7</td>
<td>Medium</td>
</tr>
<tr>
<td>Confidentiality</td>
<td>6</td>
<td>Low</td>
</tr>
<tr>
<td>Lean and Six Sigma teams’ hierarchical structure</td>
<td>10</td>
<td>High</td>
</tr>
<tr>
<td>Time and resources investment</td>
<td>10</td>
<td>High</td>
</tr>
<tr>
<td>Leadership and management commitment</td>
<td>10</td>
<td>High</td>
</tr>
<tr>
<td>IT systems and organisational infrastructure compatibility in all units</td>
<td>10</td>
<td>High</td>
</tr>
<tr>
<td>Geographical distance</td>
<td>5</td>
<td>Medium</td>
</tr>
<tr>
<td>Formal language (English)</td>
<td>10</td>
<td>Low</td>
</tr>
</tbody>
</table>

### 7.4 Summary

In this chapter, the researcher has analysed and discussed the findings based on interviews and documentary data. She emphasised knowledge internalisation, knowledge implementation, knowledge leveraging and knowledge innovation as four important levels in the transfer process. These variables served as measures for knowledge transfer effectiveness. In addition, various other factors were found to have a direct or indirect effect on the effectiveness of knowledge transfer in MNCs. The next chapter provides a résumé of the discussions and findings of this chapter.
CHAPTER 8 CONCLUSION, LIMITATIONS AND MANAGERIAL IMPLICATIONS

8.1 Conclusion

Many researchers came up with the conclusion that effective knowledge transfer will impact on organisational performance (Davenport and Prusak, 1998; Pedersen et al., 2003; Szulanski, 1996). The aim of this study was to develop a model that highlights the inhibiting and facilitating factors of knowledge transfer in Lean and Six Sigma teams within multinationals. To achieve that, an examination of Lean and Six Sigma know-how transfer and the knowledge transfer process in the respective teams within MNCs was conducted. It focused on Lean and Six Sigma project leaders. A qualitative approach was used in this case and interviews and documentation provided a source of data to investigate the propositions of this research.

As discussed in the literature review, the management of knowledge from numerous distant sources is a delicate task for international organisations which may affect their effectiveness. Although various authors have investigated the notion of knowledge management, little work has been done regarding Lean and Six Sigma know-how internalisation within MNCs and the intra knowledge transfer processes within such international teams. It was demonstrated in Part I that the transfer of Lean and Six Sigma know-how within an MNC presents two perspectives: firstly, the knowledge development process within the firm; and secondly the knowledge transfer processes between international members of the team, internal customers and top management. There were different views about knowledge management. While some authors argued that it is a complex task to transfer knowledge – mainly tacit knowledge because it is context-specific and owned by individuals (Davenport and Prusak, 1998; Haghirian, 2011; Pedersen et al., 2003) – others believed that although tacit and explicit knowledge are two types of knowledge (Cook and Brown, 1999), the first can be better exploited through personal contact (Lee and Wu, 2010) with a strong communication process in place. In an attempt to make sense of all these different approaches, two main frameworks were developed. The first was generated in Chapter 3 and consisted of the presentation of a communication process flow management between the
knowledge source and the knowledge recipient. The second model, which was considered the conceptual framework of knowledge transfer in Lean and Six Sigma teams within MNCs, was presented in Chapter 5. Both models served as bases to generate propositions.

The study focused mainly on six dyads between the HQ and its subsidiaries even though there was also an investigation into inter-subsidiary communications. These subsidiaries were located in four regions: Asia (Malaysia), Europe (France, Germany, the UK), Latin America (Argentina, Brazil) and the USA. It was argued that knowledge transfer effectiveness within MNCs is dependent on knowledge internalisation, knowledge implementation, knowledge leveraging and thus knowledge innovation. Moreover, there are other contingent factors such as the communication process flow (knowledge characteristics, knowledge transmission channels, knowledge sender characteristics, knowledge receiver characteristics and relationship base), inter-unit relationships and psychic distance (organisational distance and cultural differences) that were seen as independent variables to knowledge transfer effectiveness. Moving on to the analysis, those independent variables which were partly drawn from earlier research served as measures to determine knowledge transfer effectiveness. Although all these elements were found appropriate to be fitted in the final model, more evidence came out during data analysis. These results make a contribution not only to the field of knowledge management, but also to international business, management practices, operations management and Lean and Six Sigma methodologies.

The researcher identified 13 main findings:

- **Lean and Six Sigma knowledge development** within MNCs was found to be successful only when gaps were identified. Therefore individuals tended to have a *shared mind* and a *common interest* to fix the problem. So *training and workshops* were appropriate media to transfer the know-how. It is learning by doing.

- The majority of the selected subsidiaries were fairly autonomous in selecting their projects and using their own operations management tools, although the HQ fixed the objectives. They interacted in inflow and outflow exchanges with the HQ. The balance between *subsidiary autonomy* and *HQ–subsidiary networking* had a positive impact on
knowledge transfer success, which gave more freedom to the units to train, select and execute projects with the input of local and global implementers and expertise.

- **Using local trainers and global expertise** contributed to the balance between adaptation and standardisation within a context which enhanced knowledge absorption. Adapting information and knowledge to the local context during training and project execution was one of the key successes.

- **Expertise** brought value to project execution in the teams. Experts were sought within the firm and their identification was not difficult because the MBBs and Champions assisted project leaders in doing so. Moreover, the company offers portfolio project and expertise management and project leaders are taught how to look for expertise (see Figure 7.5).

- **Knowledge leveraging** was one of the main findings. It had a positive impact on time saving and knowledge innovation. While personalisation – mentoring and coaching and expatriates were found to be contributors to effective knowledge transfer (with more tacit variation) which enhanced the absorptive capacity of the knowledge receiver, *portfolio project management* had a positive impact on project leveraging (explicit knowledge) during the implementation process. However personalisation presented the only disadvantage in that it is more costly than codification. So substitutes to physical proximity were used when there was no major change to make.

- **Integrated IT systems compatibility and organisational infrastructure** added a positive impact on knowledge storage and thus leveraging. Projects applied in location A could be used as models in location B which implied time and cost savings. Although there was strong evidence that knowledge storage supported knowledge implementation, there was no verification that higher knowledge storage could enhance knowledge innovation.

- Knowledge transfer control mechanisms surely increased individual ability and motivation to share knowledge. However, common interest, the relationship base (common interest, common language, individual commitment, and credibility of trust and respect), individual benefits and organisational benefits were some motivational factors which helped managers to change people’s mindset and get them to buy in and thus overcome any resistance to change. On the other hand, leadership and managerial skills were perceived as contingents that could increase individual commitment and facilitate teamwork.
• **Face-to-face meetings** and the use of substitutes such as video conferencing and teleconferencing were the dominant and preferred knowledge transmission channels, mainly during Lean implementation as it facilitated tacit knowledge transmission. However, *emails* were often used to communicate basic information and more explicit knowledge.

• Although the impact of a formal language such as ‘English’ on the communication process was not major, *common language* (jargon and vocabulary used in the area of practice) was found to be important during the communication process. It helped managers to get internal customers to buy in and have a common vision in fixing a problem.

• *Mentoring and coaching, learning capacities and competencies development, informal knowledge transfer, and formal knowledge transfer* all showed a positive impact on knowledge innovation. However, individual behaviour was perceived as an element that could hinder knowledge creation in the team since knowledge resides in people’s minds. *Confidentiality* did not appear to affect the interaction between members of international teams once they had a common interest in solving the matter.

• The impact of *cross-cultural differences within* a team and mainly *individual behaviour* and *backgrounds* appeared to affect knowledge transfer effectiveness because of the lack of time to develop trust and understand culture. People were more likely to develop resistance to change when things did not match with their mentality or perception which affected change implementation; however, it partly showed a positive impact on learning experiences and more opportunities to develop bright ideas and solutions in cross-cultural groups. In addition, the company uses norms to maintain a good balance between the corporate culture, the cultures of the foreign units and the national culture by encouraging employees to be culturally sensitive and assisting them to deal with issues.

• *The hierarchical structure* of Lean and Six Sigma teams used within the MNC add an important benefit to knowledge transfer. On the other hand, *geographical distance* did not have a major influence on the knowledge transfer process because the company maintains organisational similarities such as IT systems and organisational structures in all units which enhance communications.
Knowledge transfer speed in international Lean and Six Sigma teams was found to be dependent on: the choice of knowledge transmission channel which is affected by knowledge variation and which impacts upon the cost; personalisation, which in particular was seen as a medium that facilitates speed in sharing knowledge; a strong communication process and common interest; the use of local trainers and local implementers; knowledge leveraging; and the geographic distance between units.
**Tale 8.1** A résumé of the propositions and the direct findings on knowledge transfer effectiveness

<table>
<thead>
<tr>
<th>General propositions</th>
<th>Main findings and implications</th>
<th>Proposition accepted</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Proposition 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Lean and Six Sigma knowledge development and coordination depend on appropriate training, mentoring and coaching.</em></td>
<td>Training, mentoring, and coaching indeed facilitate knowledge internalisation. Time and cost investment must also be considered. However, no Lean and Six Sigma know-how development can be successful if there is no issue to solve and if people don’t have a common interest in solving the matter. Therefore gaps must be identified prior to Lean and Six Sigma internalisation.</td>
<td>Yes - problem identification prior to know-how development</td>
</tr>
<tr>
<td><strong>Proposition 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Trust, common interest and 'shared mind' facilitate the motivational disposition and willingness to share of the knowledge sender and the absorptive capacity and motivational disposition to receive of the knowledge receiver</em></td>
<td>It is important for the top management to ensure that all members have a common picture, a common interest and trust each other while working towards achieving common objectives. There is a need to have a robust relationship base in place to enable good collaboration and interaction. Only then can the communication process be effective and information flow easily.</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Proposition 3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Integrated and compatible IT systems enable highly effective</em></td>
<td>Integrated and compatible IT systems showed a positive impact on knowledge storage and knowledge leveraging.</td>
<td>Yes</td>
</tr>
<tr>
<td>Proposition 4</td>
<td>Mentoring and coaching via personalisation between units enables a better transfer of tacit knowledge.</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Mentoring and coaching via personalisation between units enables a better transfer of tacit knowledge.</strong></td>
<td>Mentoring and coaching facilitated the knowledge receiver’s absorptive capacity. It showed positive impact upon tacit knowledge transfer. Its effect was maximised when it was delivered through personalisation means such as face to face.</td>
<td></td>
</tr>
<tr>
<td><strong>Proposition 5</strong></td>
<td>Knowledge transfer speed is affected by the choice of transmission channel which impacts on knowledge transfer effectiveness.</td>
<td></td>
</tr>
<tr>
<td><strong>Knowledge transfer speed is affected by the choice of transmission channel which impacts on knowledge transfer effectiveness.</strong></td>
<td>Beside the choice of transfer mechanism, knowledge transfer speed may also be affected by several other factors. The transmission channel must be selected depending on the knowledge variation. Other factors such as a strong communication process and relationship base (common interest, individual commitment, trust, respect, credibility), the use of local trainers and local implementers, physical proximity and knowledge leveraging were seen as contributors. However, organisational dissimilarities showed a negative influence on the speed.</td>
<td></td>
</tr>
<tr>
<td><strong>Proposition 6</strong></td>
<td>Knowledge transfer control mechanisms increase individual motivation to share and the ability to absorb knowledge, thus giving</td>
<td>Knowledge transfer control mechanisms such as rewards and recognition systems, certificates after training and project execution and performance evaluation systems definitely assisted managers to ensure that knowledge had been transmitted and absorbed and to motivate individuals. Moreover, formal regular meetings helped managers to keep track of the work’s</td>
</tr>
<tr>
<td><strong>Knowledge transfer control mechanisms increase individual motivation to share and the ability to absorb knowledge, thus giving</strong></td>
<td>Partially accepted</td>
<td></td>
</tr>
<tr>
<td>Proposition 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subsidiary autonomy and HQ–subsidiary networking enhance knowledge absorption, standardisation, adaptation and implementation between global and local implementers and internal customers which impacts upon knowledge transfer effectiveness.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>While subsidiary autonomy enables units to have more freedom with local project selection and the collaboration of local implementers and expertise, networking with the HQ and the homogeneity of the hierarchical structure of Lean and Six Sigma teams in the MNC facilitate the input of global implementers and expertise into the organisation as a whole.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Proposition 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>A robust communication process flow enables better HQ–subsidiaries and inter-subsidiaries interactions, thus highly effective knowledge implementation.</td>
</tr>
<tr>
<td>The relationship base (common interest, individual commitment, trust, respect and credibility) was found to rest on motivational factors that encouraged people to interact within the team and in the network. In addition, individual and organisational benefits were also perceived as motivational driving forces. Expatriate rotation in the network was found to be another effective means that contributed to knowledge transfer effectiveness. HQ–subsidiary networking enabled inflow and outflow</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Proposition 9</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Proposition 10</td>
</tr>
</tbody>
</table>
### Table 8.2 Summary of contributory and inhibitory factors of knowledge transfer in Lean and Six Sigma teams within MNCs

<table>
<thead>
<tr>
<th>Themes</th>
<th>Categories: inhibitory and contributory factors</th>
<th>Effect (+/-/minor)</th>
<th>References (interviews)</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1 Internalisation: knowledge development</td>
<td>Training</td>
<td>+</td>
<td>LRH A01 MBB B01 LF01 GBF G01 MBB B01 MBB M01 BBUS01 BBUS02 (Marshall)</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Workshops</td>
<td>+</td>
<td>LRH A01 MBB B01 LF01 GBF G01 MBB B01 MBB M01 BBUS01 BBUS02 (Marshall)</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Mentoring/coaching</td>
<td>+</td>
<td>LRH A01 MBB B01 LF01 GBF G01 MBB B01 MBB M01 BBUS01 BBUS02 (Marshall)</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Local trainers</td>
<td>+</td>
<td>LRH A01 MBB B01 LF01 GBF G01 MBB B01 MBB M01 BBUS01 BBUS02 (Marshall)</td>
<td>3</td>
</tr>
<tr>
<td>Level 2 Implementation: knowledge adaptation and standardisation</td>
<td>Mentoring/coaching</td>
<td>+</td>
<td>LRH A01 MBB B01 LF01 GBF G01 MBB B01 MBB M01 BBUS01 BBUS02 (Marshall)</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Brainstorming sessions/follow-up sessions/workshops</td>
<td>+</td>
<td>LRH A01 MBB B01 LF01 GBF G01 MBB B01 MBB M01 BBUS01 BBUS02 (Marshall)</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Expertise identification</td>
<td>+</td>
<td>LRH A01 MBB B01 LF01 GBF G01 MBB B01 MBB M01 BBUS01 BBUS02 (Marshall)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Inappropriate application and usage of tools and methodology</td>
<td>-</td>
<td>LRH A01 MBB B01 LF01 GBF G01 MBB B01 MBB M01 BBUS01 BBUS02 (Marshall)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Input of global implementers</td>
<td>+</td>
<td>LRH A01 MBB B01 LF01 GBF G01 MBB B01 MBB M01 BBUS01 BBUS02 (Marshall)</td>
<td>10</td>
</tr>
<tr>
<td>Knowledge leveraging</td>
<td>Use of local implementers</td>
<td>+</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>Employee rotation across borders (expatriates)</td>
<td>+</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Resistance to change</td>
<td>–</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Portfolio management</td>
<td>+</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Expertise input</td>
<td>+</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>IT system compatibility</td>
<td>+</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Mentoring/coaching</td>
<td>+</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Level 4 Innovation: Knowledge optimisation</td>
<td>Mentoring/coaching</td>
<td>+</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Formal and informal knowledge transfer</td>
<td>+</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Learning capacity and competencies</td>
<td>+</td>
<td>1</td>
<td>1</td>
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</table>
## A Critical Evaluation of Knowledge Transfer Management in Improving Organisational Effectiveness within MNCs

<table>
<thead>
<tr>
<th>Communication process flow</th>
<th>development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge sender</td>
<td>+ 1 1 1 1 1 1 1 1 1 1 10</td>
</tr>
<tr>
<td>motivational disposition to share</td>
<td>+ 1 1 1 1 1 1 1 1 1 1 10</td>
</tr>
<tr>
<td>Knowledge receiver</td>
<td>- 1 1 1 1 1 1 1 1 1 1 9</td>
</tr>
<tr>
<td>absorptive capacity</td>
<td>+ 1 1 1 1 1 1 1 1 1 1 10</td>
</tr>
<tr>
<td>Inappropriate choice of knowledge transfer mechanism</td>
<td>+ 1 1 1 1 1 1 1 1 1 1 10</td>
</tr>
<tr>
<td>Physical proximity</td>
<td>+ 1 1 1 1 1 1 1 1 1 1 10</td>
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</table>

<table>
<thead>
<tr>
<th>Relationship basis</th>
<th>development</th>
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<tbody>
<tr>
<td>Common interest</td>
<td>+ 1 1 1 1 1 1 1 1 1 1 10</td>
</tr>
<tr>
<td>Common language</td>
<td>+ 1 1 1 1 1 1 1 1 1 1 8</td>
</tr>
<tr>
<td>Trust, credibility, respect</td>
<td>+ 1 1 1 1 1 1 1 1 1 1 10</td>
</tr>
<tr>
<td>Individual commitment</td>
<td>+ 1 1 1 1 1 1 1 1 1 1 7</td>
</tr>
<tr>
<td>Relationship HQ–subsidiaries</td>
<td>Leadership and managerial skills</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>Subsidiary autonomy level and HQ–subsidiary networking balancing</td>
<td>+</td>
</tr>
<tr>
<td>Knowledge control mechanism</td>
<td>Certificates after training</td>
</tr>
<tr>
<td></td>
<td>Certificates after deployment</td>
</tr>
<tr>
<td></td>
<td>Performance evaluation system</td>
</tr>
<tr>
<td></td>
<td>Rewards and recognition</td>
</tr>
<tr>
<td></td>
<td>Formal meetings</td>
</tr>
<tr>
<td>Cultural awareness</td>
<td>Cross-cultural differences</td>
</tr>
<tr>
<td></td>
<td>Individual behaviour</td>
</tr>
<tr>
<td></td>
<td>Individual background</td>
</tr>
<tr>
<td>Organisational distance</td>
<td>English language</td>
</tr>
<tr>
<td>-------------------------</td>
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</tr>
<tr>
<td></td>
<td>Minor influence</td>
</tr>
<tr>
<td>Confidentiality</td>
<td>Minor influence</td>
</tr>
<tr>
<td>-----------------</td>
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</table>

A Critical Evaluation of Knowledge Transfer Management in Improving Organisational Effectiveness within MNCs
Figure 8.1 Final model of a successful knowledge transfer in Lean and Six Sigma teams within MNCs (Arielle Dora Nganya. S. 2014)
The factors identified in the initial conceptual framework were verified and refined following data analysis. Figure 8.1 represents the final model of a successful knowledge transfer in Lean and Six Sigma teams within MNCs. Although all the factors mentioned in the Table 8.2 were not incorporated in the model, the themes are revealed. Therefore, this study suggests that Table 8.2 may be used along with this model for further clarifications.

The model presents four different main levels in the knowledge transfer process. It suggests that a need or a gap must be identified prior to Level 1: ‘Knowledge internalisation’. The reason is, people can only adopt Lean and Six Sigma as a problem-solving methodology if they believe it can fix an issue. Hence, it will be important for the top management to think of ways to enable a change of mindset and get people to have a common interest and look towards the same direction. Only then can the internalisation process begin, when project leaders and internal customers have a common interest and are satisfied with the methodology. During the training and workshops, to maximise a better absorption of the knowledge, global implementers should get local trainers to assist them as they have a better understanding of the culture (language, behaviour, etc.).

Moving to Level 2, ‘Knowledge leveraging’, before starting the execution of the project, the team should ensure that some research has been done in order to identify possible leveraging-in projects. This can only be possible if there is a good IT compatibility and portfolio project management where all Lean and Six Sigma projects and templates are stored. This organisation data storage enables project leaders to search for and identify any potential projects related to theirs, and then contact the owners to clarify the methodology. Project leaders may also identify any possible expertise within the MNC that could assist them. Creating these links can also be done with the support of the Champions and the MBBs. It is also important to have a clear information flow map that presents the location of knowledge sources and expertise. With good information flow mapping, managers can ensure that people get the *right information, from the right source at the right time*.

In Level 3, ‘Knowledge implementation’, it is important to maintain a good HQ–subsidiary network to enable good communication flow. It is recommended that subsidiaries have the autonomy to select their projects as they have a better knowledge of the local context. For the
execution of the projects, MBBs must make sure that BBs and GBs are using the appropriate tools and methodologies. It is therefore crucial to have regular follow-up meetings and mentoring and coaching. This enables all implementers to maintain a good information flow and identify difficulties when using the different tools. In some cases, it can be a good idea to rotate employees, getting them involved in different workshops globally. This helps them to see other ways of doing things they can leverage and combine with their own way of doing things which gives room for knowledge innovation (Level 4). As Champions and MBBs mentioned, after completion of the project it is necessary to identify potential leveraging-out which will be useful for future projects.

Knowledge transfer can only be effective if these levels are applied with strong commitment. One way of making sure that the knowledge is being transmitted, understood, absorbed, used and applied in the right way is by putting knowledge transfer control mechanism at each level. Only then can managers have a clear picture of the progression of the project. Finally if the project has been successfully conducted, then there is no doubt that knowledge has been well internalised, leveraged and implemented. Otherwise it is advised to revisit the project.

8.2 Limitations

It was important for the researcher to recognise and acknowledge the limits of this research to have a better understanding of the successions of events throughout its completion. This study presented the advantage of focusing on a single case study to depict the complex causal relationships that reside in knowledge transfer in Lean and Six Sigma teams within MNCs. According to Dyer and Nobeoka (2000) such investigations are difficult to capture with a bigger sample but are better analysed in one organisation. Although the key distinction between quantitative and qualitative methodologies relies on the large representative sample which may more often lead to an attempt to construct generalisation, Hyde (2000) argues that an inductive or qualitative research is a building process that starts with observations of specific instances, which also seeks to establish analytical generalisations about the problem being investigated. Understanding an inductive research therefore focuses on a detailed knowledge of the particular, and its nuances in each concept (stake, 1994) which may provide a theoretical meaning of a
general problem. The findings of this research can surely be generalised. However, it does not guarantee the basic of generalisation in quantitative approach which is the statistical generalisation of the results. More often, results of a qualitative research may remain untested, but this research opens the door to the introduction of further formal deductive research. Therefore aspects of the thirteen findings previously listed may be investigated quantitatively. For instance in this specific company, it was observed that knowledge transfer control mechanisms increase individual motivation to share and the ability to absorb knowledge depending on the type of knowledge transfer control mechanisms in place. Such mechanisms may vary in different MNCs and may/or not contribute to the motivation of individuals.

Another issue is that the findings are mainly based on subjective perspectives as they involved the understanding, opinions and experiences of the participants. However, one can argue that in this specific case and under these circumstances, an objective judgement would have been impossible to obtain (Suwignjo et al., 2000). On the other hand there may be an issue of respondent bias since findings are based on the analysis and data reported by the researcher. Nevertheless, using both methods of data collection maximised the reliability and validity of the data collected. Moreover, to guarantee the validity of the participants’s responses, the researcher asked similar questions in different ways and at different stages during the interview. Finally it was quite critical to limit the measures applied to knowledge transfer effectiveness because it would have involved the researcher going beyond the scope of this study.

Although there were a few limitations, this research contributes to international business, management practices and knowledge management and can serve as a basis for further research in those fields. Table 8.3 illustrates the contribution to these three fields.
**Table 8.3 Contribution to international business, management practice and knowledge management**

<table>
<thead>
<tr>
<th>Contribution to areas of practices</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>International Business</strong></td>
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<td></td>
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<td></td>
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<tr>
<td><strong>Management Practices</strong></td>
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<td></td>
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<tr>
<td><strong>Knowledge Management</strong></td>
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</tbody>
</table>
8.3 Managerial implications

Many factors have contributed to the way in which MNCs manage knowledge effectively nowadays, but perhaps the development and implementation of knowledge still presents some obstacles that leaders and managers cannot totally control. Despite the fact that the findings of this research may not address all their uncertainties, it provides them with some relevant knowledge that could help them to devise strategies to enhance the communication process flow in such international firms.

Interestingly, the results emphasise that people are highly variable in their behaviour and managers should continuously reinforce a common vision to achieve knowledge transfer effectiveness. A knowledge transfer process cannot be effective if there is no strong management in place. Previously in the analysis the researcher identified and analysed some factors that could influence the process, thus it is important to present the managerial implications of these findings.

First of all, the HQ–subsidiaries networking is a crucial element, even though units may be autonomous to a certain extent. It facilitates knowledge inflows and outflows and enables HQ to remain informed about the potential competencies developed at each unit level. Furthermore, it suggests that Lean and Six Sigma deployment and knowledge transfer effectiveness are influenced by a number of factors such as common interest, individual benefits and organisational benefits. Where there is no shared mind and common interest, people will not see the need to deploy Lean and Six Sigma for the benefit for organisational effectiveness. Another important aspect is awareness of the psychic distance within such a large organisation. If managers do not create time for their subordinates to learn about the different cultures, the interaction between members of the team may be complex. Therefore understanding individual behaviour and cultural differences are the main keys to communication and the implementation of change. Moreover, when there are fewer differences between units’organisational culture, structure and policies it limits the risk of knowledge management failure. A Lean and Six Sigma hierarchical structure homogeneity definitely contributes to a better information flow.

Despite the fact that expenses may force managers to use more affordable means to transfer knowledge, sometimes it is necessary to have physical proximity, with all the individuals coming
together in order to maximise the outcome. Knowledge transfer mechanisms without doubt may benefit the transmission. However, the choice of the medium must fit the type of knowledge and must be developed. For instance, in Lean and Six Sigma teams, while mentoring and coaching are good ways to facilitate knowledge absorption because they involve the learning by doing, IT systems may contribute to the transfer of more explicit knowledge such as methodologies and project leveraging.

Knowledge transmission channels must be constantly developed to enable knowledge sharing and absorption, but how much of the ‘what we know’ can we share? Unfortunately one of the biggest problems that organisations are facing today is the storage of the knowledge (experience) held by the older generation of employees and its transfer to the younger generation. When an employee leaves a company, he takes away with him part of the organisation’s patrimony. Certainly this is a theme worth investigating in the future.
References


A Critical Evaluation of Knowledge Transfer Management in Improving Organisational Effectiveness within MNCs


Huang, Jun; Ling, Juan; Zhao, Quanwu. 2010 Key success factors in knowledge transfer during M&A in traditional industries: an empirical study. The Free Library (October, 1), Available online at: http://www.thefreelibrary.com/Key success factors in knowledge transfer during M&A in traditional...-a0289621100 (Accessed April 24 2011)


Miller, F. J. (2002) ‘I = 0 (Information Has No Intrinsic Meaning)’, Information Research, 8(1).


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pp. 1–33.


Sage.


**Interview’s questions**

**Introduction**

The literature review highlights that knowledge transfer process within MNCs can be influenced by different variables; I have identified the sender (source), the receiver, the relationship between the sender and the receiver and knowledge (Lean and Six Sigma) as the principal variables of this research. For independent variables I limited the research to: psychic distance, language skills, information technology and transmission channels, time and cost investment on knowledge sharing, knowledge transfer performance evaluation system and other variables that will be identified during the interview.

**Lean Six Sigma: L/SS**

**Headquarters: HQ**

**Theme 1: Lean and Six Sigma know-how characteristics**

**Internalisation**

1. How do Lean and Six Sigma training enhance knowledge development within the organisation?
2. Does it involve adaptation in some parts of the organisation?
3. Clarify the extend to which Lean and Six Sigma know-how could be characterised as:
   a. Complex: knowledge is about highly interdependent routines, individuals, and technologies
b. Specific: Knowledge in its context is about specific functional expertise

c. Available: always available for and easy accessible by new personnel

4. What are the challenges that you encounter during Lean and Six Sigma internalisation? Or some common challenges that you and your colleague may face globally?

**Implementation**

**Mentoring and coaching**

Overall, how would you rate the mentoring and coaching in reinforcing the Lean or Six Sigma deployment in your subsidiary? Does it have a positive effect, negative effect, or no effect?

- [ ] Positive effect  
- [ ] No effect  
- [ ] Negative effect

1. Describe how the mentoring and coaching were demonstrated during project executions.

2. How do you interact with all the members of the team? How is the interaction between you (MBB or BB) and the BB and GB during the project work?

3. Do you support face-to-face meetings before establishing new project teams?

4. How did your MBB and champion provide guidance to you during the conduct of the project? (Addressed to MBB/BB/GB)

5. What frequency is the frequency of the interaction between the BB and the MBB? Does it provide support for the project or provide personal help to you?

**Experts**

Overall, how would you rate the use and availability of experts and expertise in reinforcing the Lean or Six Sigma deployment?

- [ ] Positive effect  
- [ ] No effect  
- [ ] Negative effect

1. Where are experts found within the organisation to support the project? Are they always found within the MNC?
2. Were there any areas where expertises were sought and none were available?

3. Does the organisation encourage you (the unit or the team) to develop your own competencies that could be reuse in some other locations? How do you facilitate knowledge reuse in your team?

**Theme 2: Communication process flow within MNCs**

*Characteristics of knowledge sender’s “Motivational disposition and willingness to share”*

Did you receive training on knowledge transfer process procedures?

1. How willing are you to share your knowledge? Do you have the obligation to do so in your team?

2. Do you worry about how the knowledge receiver will perceive and interpret your knowledge? Can it have an effect on you revealing the relevant knowledge?

3. Do you trust people in their accuracy and credibility in analysing and understanding your knowledge? Do you feel more motivated to share with someone or an audience that is eager to learn?

4. Do you feel more encouraged to share the knowledge when you perceive a clear benefit for you (reward) and/or for the organisation (increase in gross margin)?

5. Do you think it isn’t worth spending the time and resources on knowledge sharing that could have been invested in activities that are more productive for the individual?

6. Are you reluctant on sharing crucial knowledge for fear of losing a position of privilege and superiority (confidentiality, hierarchy and formal power)

7. Do you have any norms in your unit or in the organisation that encourage open exchanges of knowledge among organisational members?

   a. If yes, what are they? And do you think it will lead to a greater degree of knowledge sharing?

*Characteristics of knowledge receiver “Absorptive capacity”*

Absorptive capacity of receiver unit will be the degree of absorptive capacity of local nationals and expatriates within the subsidiary top management team.
A Critical Evaluation of Knowledge Transfer Management in Improving Organisational Effectiveness within MNCs

1. Do you sometime see knowledge sharing as intrusive and extra work?

2. Do you trust in the accuracy and credibility of the sender and his transferred knowledge?
   At which level?
   □ Very low □ Low □ Medium □ High □ Very High

3. How do you motivate yourself/ how does your superior motivate you in increasing your ability to absorb knowledge?

4. Are you able to receive, interpret and understand knowledge? If not what do you do?

5. Do you think you can contribute to organisational performance with your ability to interpret understand and using Lean and Six Sigma know-how?

Relationship and communication flow HQ-Subsidiaries

Headquarters-subsidaries communication (e.g. communication between national sub senior manager and his counterpart in the headquarters)

1. What is the frequency of your (subsidiary) communication with HQ?
   □ Very low □ Low □ Medium □ High □ Very High

1. What is the autonomy level of the subsidiary?
   □ A no voice subsidiary
   □ Autonomous in deciding about their operations and management system □ In the centre of competencies (lead subsidiary)?

2. How is the effect of your unit autonomy level on the communication flow?
   □ Positive □ No impact □ Negative

3. Do you think it can have a positive effect on the communication flow?

4. What do you encourage the most and why?
   a. The most subsidiary autonomy
   b. Networking on Headquarters-subsidiary
5. How is the hierarchical structure of your team? Do you think it may inhibit knowledge flows?

6. Do leadership and managerial direction clearly communicate the benefits and values of knowledge sharing practices that are required?

7. During a HQ-Subsidiary knowledge transfer processes, are you (subsidiary/ or the internal customers) satisfied with the changes in both the quantity and usefulness of relevant knowledge.

**Relationship and communication flow Inter-subsidiaries**

*Inter-subsidiary communication (national subsidiary manager with the other national subsidiary manager)*

1. What is the frequency of your (subsidiary) communication with other subsidiaries?

   □ Very low    □ Low    □ Medium    □ High    □ Very High

   a. How is the effect of autonomy level of the subsidiary on the inter-subsidiary communication?

2. Please indicate your subsidiary degree of involvement in MNCs network using Likert-type scale of 1 (very low) to 5 (very strong)

   □ Very low    □ Low    □ Medium    □ Strong    □ Very Strong

3. Do you experience a high level of external and internal competitiveness within and across business units? How does it influence knowledge sharing transfer?

**Theme 3 Psychic Distance**

**Culture**

*Cross-cultural differences*

1. Do the national culture of other units and the HQ greatly differ from yours?

2. Do you think that having more cultural similarities with another subsidiary or the HQ makes things easier during knowledge transfer process?
3. Tell me about the cultural obstacles that you have encountered? How do you breakdown cultural misunderstanding? Where you given guidance on how to deal with them?

**Individual background**

4. Do you think the difference in level of education, age, language and religion or can interfere on knowledge transfer process?

**Language skills**

1. Which language do you use within your unit? Does it differ from the formal corporate language?

2. Is there any unit that do not perceive “English as a common corporate language? In that case what do you do?

3. Do you see language difference as major obstacle in communicating with and understanding your partner

**Organisational factors**

**Knowledge transfer mechanisms**

1. Is the organisational structure redefined at the global level to provide a better integration of decision- making and communication processes?

2. Do the integrated IT systems and tools support people’s work processes and actual communications flows? Making knowledge easily accessible by everyone?

3. Are your IT systems and tools compatible?(i.e.: new technology into current soft and hardware, updates...).Does it differ from one unit to another?

4. What are you preferred way of communication?
   a. face to face,
   b. Phone,
   c. Emails
   d. Others….

**Time and cost investment on knowledge transfer**

1. Would you associate the cost of sharing knowledge to :
   a. Knowledge sharing behaviour of individuals?
b. Specialised equipments and facilities?

c. Skilled human resources (training)

i. Have the unit committees got a lot of physical, financial, organisational and logistical resources to support the seeking diffusion and sharing of information originating from this alliance.

2. Where do the cost involved are derived from?

a. The effort to gather the group together (face to face)

b. Lean and Six Sigma trainings

3. Do you have enough time to establish contacts and foster relationships with internal and external knowledge sources?

Knowledge transfer control mechanism

1. Do you have any formal control mechanism such as:

a. Formal demand to transfer knowledge from HQ

b. Performance evaluation system related to knowledge transfer

c. Reward and recognition scheme

d. Certifications

2. Is your managerial control systems uniformly structured in such a way that it provides standardised procedures and comparative analysis of performances?

Economical differences

1. What are the organisational factors that could hinder the communication process flow within your team?

2. Does your country’s degree of industrial development is similar to the HQ or other subsidiaries with whom you share? Does it facilitate the transfer in any way?

Some other questions that emerged:

_Do you encourage informal knowledge transfer? If yes, how do you manage the risk of information overload?_

_DAS encourages virtual offices, which effect do you think it has on knowledge sharing: positive, negative or none? Explain why._
## Appendices

Appendix 1. How do Lean and Six Sigma training enhance knowledge development within the organisation?

<table>
<thead>
<tr>
<th>Participants</th>
<th>Statements</th>
<th>Evaluation of statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBBB01</td>
<td>‘The company has a very robust SS methodology, they have a package and it is a credit (...) People says that this training is tough, there will be a lot of statistics. Everyone think that it is something complicated; I remember when I was in the college. Here in Brazil, we had a specific challenge. I had to recover all the Six Sigma culture, GB training and encourage people to use the methodology and show them that it will contribute to their projects, it will make things easier.’</td>
<td>Positive but Can be perceived as extra work or complex knowledge but</td>
</tr>
<tr>
<td>CUS01</td>
<td>‘I am completely against the way to think that ‘we need everyone to bit Six Sigma training’. We need people who are in trouble to provide them training so that they can fix that issue. You don’t train anyone in the company to become Six Sigma experts it is a stupid plan. I am 100% against training for everyone. I am 200% for training with the goal to fix an issue. So when you are going in the units, the first question is generally: what are the issue? If you tell me: ‘I am in trouble’, I will help you, I will take your project and apply the methodology to help you solve that issue. Hence you will focus because you see the positive results. It is ‘interest, objective and deployment leader’. You don’t say ‘yes lets deploy Six Sigma just because it is good to deploy Six Sigma.’</td>
<td>Positive but Training has to be done when there is a need</td>
</tr>
<tr>
<td>GBF01</td>
<td>‘Training is a good way of introducing Six Sigma to individuals who see in the</td>
<td>Positive</td>
</tr>
</tbody>
</table>
methodology a solution to their problems. I think once the interest is there, people will follow. No matter how demanding the understanding of the tools and methodologies are. I mean for me for example, something has changed in my behaviour as a result of getting the training. I learned how to think systematically and to continuously looking for alternatives not only in my daily work but also in my personal life. I think it is not only a great way to spread the knowledge of Six Sigma, but also to enable personal development and leadership.'

**MBBG01**

‘As a really completely data and fixed driven process methodology. We have been using specific sites of tools techniques, standardised tools and techniques to execute the projects. But it is to the trainer to quickly identify what is the best way to have the focus of the audience or having their interest in high level. You can loose the audience quickly, when you have lost them then it gets tricky to have their attention back.’

**MBBUS02**

‘Yes, we have all the materials that are on a site, so they can go in our intranet site and get all the materials that they want. So the materials are always available, but then we also run 2 pieces: One of ‘win’ and one of ‘house quality’ that we put them through. We would like as many people in the company to have done this training, because it’s a new improved way of thinking if they just get there on their own. So it’s been a proven way to find solutions and solving problems, a much more productive way.’

**MBBUS01 (Marshall)**

‘The tools, the trainings are easy to transfer they are easy to show people. None of that is really truly confidential. What they really mean and how you use them to change culture is a secret sauce. When you talk about investing in individuals and knowledge

<table>
<thead>
<tr>
<th>MBBG01</th>
<th>Training enables learning capacity and behavioural change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive but Have to find a way to win the audience focus</td>
<td></td>
</tr>
<tr>
<td>MBBUS02</td>
<td>Positive New improved way of thinking, find solutions and solving problems</td>
</tr>
<tr>
<td>MBBUS01 (Marshall)</td>
<td>Positive but Effective training has to be accompanied with coaching to create</td>
</tr>
<tr>
<td>Interviewee</td>
<td>Quote</td>
</tr>
<tr>
<td>------------</td>
<td>-------</td>
</tr>
<tr>
<td>MBBM01</td>
<td>‘Training is a formal session for them to learn about the process and the methodology. The training materials will be standardised based on our global standard training materials. The presentation will vary by country in a sense that core example will related to the topic I am teaching them. So I will quote local examples.’</td>
</tr>
<tr>
<td>LF01</td>
<td>‘It is easily transferable, however according to the audience that we have in front it should always be adapted. Then you need to be able to capture the attention of the audience, they have to be able to see an interest for them. If they don’t care, then there is no good communication.’</td>
</tr>
<tr>
<td>LBBA01</td>
<td>‘Lean is quite easy to transfer, if you can explain the basics, people understand clearly the concept. There is no complex point for Lean. It is on Six Sigma depending on the problem, the audience, the way that you can implement. But for example for the operator’s level, the lean tools and the lean implementation are really easy to understand. From my experience in America the people quickly engage.’</td>
</tr>
<tr>
<td>BBUK01</td>
<td>‘We started with the idea that everybody should have to understand every tool and every methodology and that failed it was just too complex for people with very busy jobs to be able to first of all understand the tools but more importantly which tools they</td>
</tr>
</tbody>
</table>
should use where.
How that works is that the focus managers identify potential Green belt project leaders
they will have the requirement to run a project and then we will run a number of
courses per year. Currently we are doing about 2 a year with 18 people per course. So I
will say we have a population within Dow where by at least 50% of people above a
certain job grade have been exposed to run a Six Sigma training and run a project been
a Green Belt running project.'
Appendix 2. What are the challenges that you encounter during Lean and Six Sigma internalisation?

<table>
<thead>
<tr>
<th>Participants</th>
<th>Statements</th>
<th>Evaluation of statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBBG01</td>
<td>‘The big challenge is of course is that training materials are developed in English. The situation is that especially in countries where the local MBBS colleagues are executing trainings, they have to translate slide by slide very often. So especially when you look at colleagues such as Chinese or Japanese or for example in Latina America because where the local language is Spanish and very often the people have a really low level of English and so the MBB have to translate everything in Spanish.’</td>
<td>English language</td>
</tr>
<tr>
<td>BBUK01</td>
<td>‘The challenges I have encountered are:</td>
<td>English language</td>
</tr>
<tr>
<td></td>
<td>The first thing is language. If we start thinking about bringing people in from Egypt, Morocco, not so much SA but African countries, Romania. We do have a goal that everybody above a certain job level must have English as a second language but that is not always easy and particularly when you have a very complex training.’</td>
<td></td>
</tr>
<tr>
<td>LBBA01</td>
<td>‘Try to have more people trained in order to deliver the training in person, try to have a network of trainers along the company in order to ease training, because as a matter of fact the face to face training is very good compared to the online training.’</td>
<td>More local trainers needed/physical proximity</td>
</tr>
<tr>
<td>MBBUS02</td>
<td>‘Six Sigma can be complex until you become experienced and know the learning curves. What we’ve noticed is that you have new people coming in and they are on the learning curve for about 18 months. But the first 6 months is a really deep learning process. So it is not something that you can walk into and then after a month you are really good at it. Well I</td>
<td>Common interest</td>
</tr>
</tbody>
</table>
think, there are definitely issues that people haven’t had priority experiencing with Six Sigma. So those people will become more sceptical. They really have to pull off and it’s a journey and even using Six Sigma and Lean and in to any culture, it doesn’t happen overnight so even if you come in and you do all the training and you train everybody, you are not going to have a good Lean or Six Sigma program. You can train everybody in the company but it will not mean that you will have a good Six Sigma program, because it is how you implement it and how you keep it sustainable and how you teach them to practice it in the role and then get the organisation to buy into it and sometimes you have to experience the success of it before you really buy into.’

<table>
<thead>
<tr>
<th>MBBUS01 (Marshall)</th>
<th>‘You have to speak in their language, you can’t use a lot of Lean jargon or Six Sigma jargon. You can’t use manufacturing examples when you are talking to office people. You can use manufacturing examples when you are talking to your field in a group. And that’s where the benefit of doing lots of different events around the globe with lot of different groups is that you have a lot to draw from. It is challenging at times but that’s the fun part of it.’</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUS01</td>
<td>‘We cannot do training without having the local people in there, because sometimes we have the language barrier, we cannot just do it. But if we have got a new topic coming in, that I want to launch, we will bring some local guys, train them so that they could train their own people. Again it is the same step, what is true for you might not be easily transmitted to people. So we need to have the local guys there to add that kind of flavour.’</td>
</tr>
<tr>
<td>LF01</td>
<td>‘The thing is when you go for workshop in a specific area in a plant. You will built a team to make a workshop for 3, 4, 5 days. The plant works on 24hrs basis. You will have guys working in the day shift but not in the night shift. So that will be also a key of the results: the operators you take into your workshop. Because they will be the guys who after the workshop will go in the field to convince the other operators who were not in the workshop to implement the new things or to follow the new procedure or the new way of doing. Choosing the right people of your team is also one of the key successes.’</td>
</tr>
</tbody>
</table>
Appendix 3. An example of a knowledge control mechanism of a selected function in DAS

### 2013 Lean Mastery Milestone Targets

<table>
<thead>
<tr>
<th>Intent</th>
<th>Tactic</th>
<th>Vision</th>
<th>2013 Status</th>
<th>2013 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC Employees Conversant and Practiced in Lean</td>
<td>Introduction to Lean training</td>
<td>100% of FS/FL and Tech/Tech</td>
<td>52%</td>
<td>90%</td>
</tr>
<tr>
<td></td>
<td>Lean Practitioner Certified</td>
<td>75% of FS/FL</td>
<td>5%</td>
<td>25%</td>
</tr>
<tr>
<td>SC Employees have Project Leadership Skills</td>
<td>GBPL trained</td>
<td>100% of FS/FL</td>
<td>56%</td>
<td>65%</td>
</tr>
<tr>
<td></td>
<td>Lean trained</td>
<td>75% of FS/FL</td>
<td>43%</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>BB trained</td>
<td>30% of FS/FL</td>
<td>11%</td>
<td>20%</td>
</tr>
<tr>
<td>SC Employees Actively Involved in/with Lean Projects</td>
<td>Participate on Lean events</td>
<td>100% of FS/FL and Tech/Tech</td>
<td>40%</td>
<td>85%</td>
</tr>
<tr>
<td></td>
<td>Lead Lean events (VSM, Kaizen)</td>
<td>75% of FS/FL and Tech/Tech</td>
<td>11%</td>
<td>65%</td>
</tr>
<tr>
<td>Increased Visibility of Improvement Efforts Intra- and Inter-Regionally</td>
<td>Highlight improvement activities during regional update meetings</td>
<td>100% of RCUs</td>
<td>56%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Improvement updates by one region at each SCLT meeting</td>
<td>100% of meetings</td>
<td>44%</td>
<td>100%</td>
</tr>
</tbody>
</table>
Appendix 4. A functional scored card for a division of Dow

**Improvement Savings***

<table>
<thead>
<tr>
<th>Values</th>
<th>ANZ</th>
<th>ASEAN</th>
<th>Brazil</th>
<th>China</th>
<th>EU</th>
<th>India</th>
<th>Japan/Korea</th>
<th>MesoAndean</th>
<th>NA</th>
<th>S Cone</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013 Goal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$750</td>
</tr>
<tr>
<td>2013 Actual</td>
<td>$15</td>
<td>$0</td>
<td>$202</td>
<td>$0</td>
<td>$3,776</td>
<td>$27</td>
<td>$9</td>
<td>$889</td>
<td></td>
<td></td>
<td>$839</td>
</tr>
</tbody>
</table>
Appendix 5. How is the effect of autonomy level of the subsidiary on the communication flow?

<table>
<thead>
<tr>
<th>Country/ participants</th>
<th>Is your subsidiary autonomous?</th>
<th>Effect of autonomy level of the subsidiary on the communication flow?</th>
<th>Statements from participants</th>
<th>HQ-subsidiaries Networking or Subsidiary autonomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina (LBBA01)</td>
<td>Yes ‘For improvement, autonomy in order to decide where to start because at the end we have goals of saving etc. We can coordinate autonomously the way to reach that goal.’</td>
<td>positive</td>
<td>‘It is quite strong, because you can prioritise the activities of plants or business and as I said before depending on the feedback you get from a plant leader for example you can prioritise another plant and invest your time in that plant.’</td>
<td>I will encourage both. We have several networking with the HQ in order to keep all the people updated about the activities that we are doing. For example we have networking for supply chain and networking for operations. That kind of different approaches</td>
</tr>
<tr>
<td>Brazil (MBBB01)</td>
<td>Yes/ No \‘I have local autonomy; I have the autonomy to run a training, to select a project, to apply Lean. In terms of operations our</td>
<td>No negative impact</td>
<td>‘No I don’t think that our autonomy level impact negatively on the communication flow negatively between us and the HQ.’</td>
<td>Both</td>
</tr>
</tbody>
</table>
autonomy level is high. However I need to follow the company guideline on training and project executions.’

<table>
<thead>
<tr>
<th>Country</th>
<th>Response</th>
<th>Evaluation</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>France (LF01)</td>
<td>Yes. ‘At the beginning of the year we receive a guideline on the target and objectives. We are quite autonomous in deciding about our operations and management system.’</td>
<td>positive</td>
<td>‘We don’t communicate that often with the HQ. The impact of autonomy level of our unit on the communication flow and the network is strong and I thing it is a good factor to facilitate knowledge transfer. I encourage the most subsidiary autonomy. The autonomy has a greater influence on the communication.’</td>
</tr>
<tr>
<td>France (GBF02)</td>
<td>Yes. ‘Here in our units we are quite autonomous. We will receive objectives from HQ, but how we get there is up to us.’</td>
<td>positive</td>
<td>‘Although we are autonomous, networking with the HQ enables better implementation as it a source for advices and support.’</td>
</tr>
<tr>
<td>Germany (MBBG01)</td>
<td>Yes</td>
<td>positive</td>
<td>‘To capture local projects, to bring the best to local business, it has to be</td>
</tr>
</tbody>
</table>

Both
<table>
<thead>
<tr>
<th>Country</th>
<th>Response</th>
<th>Statement</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaysia</td>
<td>Yes</td>
<td>‘We will decide what to do, so we are quite autonomous.’</td>
<td>Both</td>
</tr>
<tr>
<td>UK</td>
<td>Yes</td>
<td>‘I think we are pretty autonomous. So what we do, we are autonomous. We have a reporting system. So if you take people management, health and safety, sales and margin reporting. I think we are positive (has to go along with trust)’</td>
<td>Both. That word networking is very important. Is like if you are seeing people spinning plates, you have to keep adding energy to that relationship, by regular communication, good and bad.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘I will say that it is good to be autonomous in the sense that we know what the priorities in this region and having said that it doesn’t mean that there is no link with the HQ. We do maintain within the MBB a network where we share things we do in each region.’</td>
<td>Both</td>
</tr>
<tr>
<td>USA (CUS01)</td>
<td>Not applicable</td>
<td>positive</td>
<td>‘It is very hard to communicate everything to all divisions and ask them to act only the same way. They cannot because they are different in a certain way. So what we do is that we give a set of advices, guideline and direction and let them deal with it.’</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>USA (MBBUS02)</td>
<td>Not applicable</td>
<td>positive</td>
<td>‘I think in some cases subsidiary autonomy level can impact on the communication flow with us. Because of the logo areas. They would like to do their things their</td>
</tr>
</tbody>
</table>
own and sometimes they don’t like to be told how to do things. So like for Six Sigma we try to have a local person, that’s why we have a BB in each area, so that I am not from the US trying to tell somebody in Germany on how to do things. We have somebody that works in the area for Europe. So we try to have somebody from that geography leading the information and so that it is not just coming from the HQ out. The only point where that does impact is for Lean implementation. Where we are early in our journey on Lean and when you have upper management body on Lean, and they communicate out about the importance of it and then we support this and we going to make initiative and you will try and meet their expectations and then that makes it
<table>
<thead>
<tr>
<th>USA (MBBUS01/ Marshall)</th>
<th>Not applicable</th>
<th>Positive</th>
<th>Both</th>
</tr>
</thead>
</table>

much easier to implement it at a global level.’

‘I think we are sensitive to it and I know we are not cheating, we talk to our project leaders and we teach them to be very sensitive to those kinds of things (time difference between geographical distant units). So even that’s a form of communication that sends a message that causes a lot sites to become more autonomous, they are responsible for themselves they have enough governess but at the same time we try really hard to keep them in our strategy pictures. So that when they are making independent decisions they are aligned with the organisation strategy. I think in DAS, has 2 things will be considered, one is the concept of the remote distance and therefore independence, the
other one come from acquisition and mergers, so now you have a site that has a completely different culture and background and they grow alone."
Appendix 6. Mentoring and coaching findings summary: Over all how will you rate the effect of mentoring and coaching on reinforcing Lean and Six sigma knowledge implementation? Positive, negative, no effect.

<table>
<thead>
<tr>
<th>Participants</th>
<th>Statements from participants</th>
<th>Effect (positive negative, no effect)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUS01</td>
<td>‘As a Champion, I have to understand what are the issues that they are facing, if they have some technical, management, behavioural issues I will help them, I will remove some barriers, I will open some doors and put some changes. I give them protection, advice, technical coaching and leadership skills.’</td>
<td>Positive effect (but has to be driven by common interest)</td>
</tr>
<tr>
<td>MBBUS01(Marshall)</td>
<td>‘That’s when the real and powerful knowledge transfer happens. When they come in with their problem and they want to ask your advice. That’s how we get the work done successfully. For new project leaders in particular frequent follow up soon after the training is critical to leader development and project performance, 2 week intervals work best for most 3-6 month scoped projects.’</td>
<td>Positive effect</td>
</tr>
<tr>
<td>MBBUS02</td>
<td>‘So that’s our jobs as MBB, so we have them come and whether they are BB or GBPL we are in constant contact, having them share on how they are doing their projects and then we are here for questions at all time. Then we have a lot of them coached by other when they run project as they lead them so that they can see how it is done.’</td>
<td>Positive effect</td>
</tr>
<tr>
<td>LBBA01</td>
<td>‘After the training we have workshop and coaching to implement the methodology, to deliver work on their opportunities. When the people see the opportunity and once they understand that they have the tools to improve, they really start to engage.’</td>
<td>Positive effect</td>
</tr>
<tr>
<td>MBBB01</td>
<td>‘I work in operations projects, I am a kind of team members and I act as a coach making sure that the adequate methodology of lean or Six Sigma are common sense and are being used in an</td>
<td>Positive effect</td>
</tr>
<tr>
<td>ID</td>
<td>Quote</td>
<td>Effect</td>
</tr>
<tr>
<td>------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>GBF01</td>
<td>‘During project executions, project always involve statistical tools and the input from the coach (BB) guide me through the implementation. That support you can’t get it from any book or training material.’</td>
<td>Positive effect</td>
</tr>
<tr>
<td>LF01</td>
<td>‘When you implement something new and you take the people in the room for 2 days, making the workshop or whatever. During the workshop there will be 100% focus on what they are doing, then after that when you come back in the normal life, if there is no body to push them to do something, they will go back to what they usually do and so on and they will forget everything about the workshop itself. Coaching, pushing the guys to make it happen, is about 80% of the results. If you don’t do it you are sure that nothing will happen or very little.’</td>
<td>Positive effect</td>
</tr>
<tr>
<td>MBBG01</td>
<td>‘The coaching is mostly to check the correct application of the technique also to guide the project leader through the jungle of available tools, techniques and templates and the execution of projects and also learning out of other projects. The coach is then looking to create links to specific experts in business.’</td>
<td>Positive effect</td>
</tr>
<tr>
<td>MBBM01</td>
<td>‘After the training, i usually have a follow up session with them to know how they are progressing and how they have arrived to the solution. This session we can probably call it as a session of knowledge transfer. If they have difficulties like analysing the data. I will guide the employees To me the key thing that i need to ensure is that knowledge is passed through and that the methodology is used to help them to deliver answers.’</td>
<td>Positive effect</td>
</tr>
<tr>
<td>BBUK01</td>
<td>‘That’s where we have the mentoring part, the coaching part, to help them run the projects. Each project leader is given a coach which I think is important. It is important to reinforce the learning and as we build how to choose the different tools and techniques and when to use them (but have to be conscious of psychological ego of project)’</td>
<td>Positive effect</td>
</tr>
</tbody>
</table>
and not when to use them. We have recognised that just telling people what to do or telling people to go to a website just doesn’t deliver improved performance. So we are now trying to get people build up with mentors or coaches or self-managing teams to enable wider skills transfer observations.’
Appendix 7. What are the challenges that you face during implementation in your unit or globally?

<table>
<thead>
<tr>
<th>Participants</th>
<th>Challenges</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBBB01</td>
<td>‘Sometimes and I think in most cases here in Brazil, it is such a demanding experience that there is a possibility that when a person eventually get the certification, the person doesn’t want to work with the methodology anymore’</td>
<td>Demanding experience (extra work)</td>
</tr>
<tr>
<td>MBBM01</td>
<td>‘To me the key thing that I need to ensure is that the methodology is used to help them deliver answers. If they just show me the answer to the business issue, I will not be satisfied; I will ask them how they arrived in to that. I am very though on that. I can understand that sometime they have a lot of things to do, they do it in a hurry, they rush it up, they use the faster way.’</td>
<td>Efficient use of methodology to deliver answer/work overload(discuss issue of having part time BB (GB))</td>
</tr>
<tr>
<td>LF01</td>
<td>‘When you implement something new and you take the people in the room for 2 days, making the workshop or whatever. During the workshop there will be 100% focus on what they are doing, then after that when you come back in the normal life, if there is no body to push them to do something, they will go back to what they usually do and so on and they will forget everything about the workshop itself. Coaching, pushing the guys to make it happen is about 80% of the results. If you don’t do it you are sure that nothing will happen or very little.’</td>
<td>Motivation/common interest</td>
</tr>
<tr>
<td>BBUK01</td>
<td>‘Implementing change it’s more difficult than for what I will call a new growth area. So if you take our EUFRASIA business it’s been much easier for people to adopt the methodology and have successful projects than it perhaps had been in Northern Europe which has been static for a number of year (...) We have some people who just don’t want to be coached. So you get somebody who will take the training and then refuse to do coaching.’</td>
<td>Resistance to change</td>
</tr>
<tr>
<td>MBBUS01 (Marshall)</td>
<td>‘Usually the biggest challenges are: You need to make sure that everybody where you go</td>
<td>Establishing trust and credibility to</td>
</tr>
</tbody>
</table>
(Mexico, Canada, England) You really have to ensure that there is a level of trust and understanding that you are there to make their lives better and help them discover what good looks there for them and that you are not seen as somebody from the HQ coming to do something to them. So a lot of time your first goal is about establishing that trust and credibility.’

**MBBUS02**

‘In some cases the implementation process might be a little bit different in the different units just because there is a distance between them. It is easier for me here when my team sits together. But in Europe it is going to be little bit more difficult because they are more spread out but the MBB plays a big role in those area in making sure that there is consistency and they have a place to go to for questions. In those places we also have BBs, experienced BBs who are coaching the GBPL. We kind of have 2 layers of support to help them with their projects.’

**CUS01**

‘Another factor is, you have got to be smart, and you have got to understand the local culture. That’s why it is easier to use a local lean leader, because he knows how to deal with that culture. You need to find within that local culture a ‘trade agent’ that means someone who is straight forward, who needs to learn new steps and deploy some changes, but who also understand the local culture and you go through that person. If you go as a foreigner, you may be successful, but you will take a long time.’

**LBBA01**

‘You know in the case of Latin America, the behaviour is generally quite similar, because, we have the same problem and the same characteristics, in some cases there are some differences, but in general the Latin American people is the same profile, I mean some times the people are really friendly, but sometimes they have difficulties to standardised their work. The challenge
is to show them that work in a standard way is an advantage not a disadvantage. That is the main challenge. You know with some kind with informalities and immoralities, if you compare with the chairman way of work, the American way of work, it is quite different. So that is the main challenge is to show them that you can work in a standard way easier than you can work in an non-standard way.’

### Appendix 8. Common interest as a contributor factor

<table>
<thead>
<tr>
<th>Participants</th>
<th>Statements</th>
<th>Evaluation of statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUS01</td>
<td>‘Without interest there is no action. People will do stuff if they see an interest for them. It is easy to do Six Sigma and Lean. When dealing with a plant for example, if they see interest, they will deliver better results and that’s for sure. They will always start all deployment by “What are the expected results? What am I going to have? What is in it for us?”</td>
<td>Common interest</td>
</tr>
<tr>
<td>GBF01</td>
<td>‘I always put in mind that most project executions are for business successes. I always give 100% of myself when I perceive a clear value for the company. I have come to understand that Six Sigma can help me find the solutions to most of the problems we face.’</td>
<td>Common interest</td>
</tr>
<tr>
<td>MBBG01</td>
<td>‘It is a situation of the trainer to identify quickly what is the best way to have the</td>
<td>Common interest</td>
</tr>
<tr>
<td>Source</td>
<td>Quote</td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>-------</td>
<td></td>
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<tr>
<td>MBBUS01 (Marshall)</td>
<td>‘If you cannot paint a picture of why things are going to have to get better or change, your job on selling it’s probably not worth the investment. You can’t get there if you can’t get the group to see a picture of the change. So it is really hard to pick that common picture of why everybody has to contribute to a better future or a better solution. So that’s going be possible. That means they have to invest a lot more time on gaining common knowledge, common understanding, trust and build teamwork.’</td>
<td></td>
</tr>
<tr>
<td>MBBM01</td>
<td>‘When I give training they perceive a different way of addressing issues with Six Sigma, they kind of change their mindset and buy in the idea. Sometimes people have the impression that here is another project to do, another thing to learn, but the come to realise that it is something very critical, it is a tool, a methodology, to help you to derive a solution.’</td>
<td></td>
</tr>
<tr>
<td>MBBUS02</td>
<td>‘You can train every body in the company but it will not mean that you will have a good Six Sigma programme, because it is how you implement it and how you keep it sustainable and how you teach them to practice it in the role and then get the organisation to buy into it and sometimes you have to experience the success of it before you really buy into it. There are still a lot of places in the company where there are people who haven’t bought into it yet. Now they are becoming fewer and fewer.’</td>
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</table>
fewer all the time, but we’ve got to work very hard to get the receptivity and people actually coming to us for projects.’

MBBB01

‘And now the one thing that is motivating me is the objective of the point and I think that it is fundamental, because now when I have a project with a person, I think that now I can transmit this message, to say hey, you have this project here because it is relevant to the success of this business. We don’t have this project because you need a project to be there. No, you have this project because this project is relevant to the company packaging. It is very motivating for me.’

LBBA01

‘You know in a group there is generally one sphere who is engaged, one that is neutral and another one that disagrees. I try to put my focus on the people who are engaged. I usually try to do that. When the people see the opportunity there and once they understand that they have the tools to improve, they really start to engage. That’s the way that they engage. Because the most advantage that Lean and SS have in order to show that you can do the things easier, is a motivation to help people to buy in, to think about the best way to do the thing not to work hard only. And that’s the way that they are starting to pay attention, understanding that they can do it easier and reducing the errors.’

BBUK01

‘What is it for me? You have to understand that. What’s in it for them? You have got to try and understand what is the common ground we are trying to build the activity around.’

LF01

‘Choosing the right people for your team is also one of the key successes [...] And
more important after the project, I will ask the stakeholder to go on the field and check, discuss with the guys and to show to the people that it is very important for them. If it is very important for the business leader, I as a worker I will think: OK if it is very important for them it should be important for me. If the stakeholder doesn’t come, doesn’t say anything, then as a worker I will think: OK why do I need to do it, nobody cares. So even when it is a simple thing, you have to show that it is important for the company.’

Appendix 9. Do you trust the knowledge receiver in receiving, understanding, interpreting and applying the knowledge the way you intended him to?

<table>
<thead>
<tr>
<th>Participants</th>
<th>Statements</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBBUS01(Marshall)</td>
<td>‘You really have to ensure that there is a level of trust and understanding that you are there to make their lives better and help them discover what good looks there for them and that you are not seen as somebody from corporate coming to do something to them. What make it better is relationship, trust collocation and flexibility in delivering the message. Your ability should change the message depending on its uptake. Things are getting on the way or everybody is too busy.’</td>
<td>Yes</td>
</tr>
<tr>
<td>GBF02</td>
<td>‘Yes, sometimes I worry that the receiver will not interpret my information they way I intended him to. But it is also up to me to be clear and precise and to keep track of it and make sure that he got the right message at the right time. In most of the cases working in a team, i have learned to know my team members and</td>
<td>Yes</td>
</tr>
</tbody>
</table>
trust them. If I have any doubt about anything I will bring up the issue with the concerned.’

<p>| MBBG01  | ‘There is trust built. No I never had a reason to doubt about the capacity of the receiver on understanding the knowledge. If I will have the impression that the receiver is not correctly handling the knowledge, then I will have of course a discussion with his supervisor, but I never had it yet.’ | Yes |
| MBBUS02 | ‘Well I think, there are definitely issues that people haven’t had priority experiencing with Six Sigma. So those people will become more sceptical, they will be less likely to become an As for help and as any new organisation starts up, they really have to pull off and it’s a journey. No I have not really been in that position because most of what I am sharing is. I am going to do the best job I can even if I think that that person is going to leave in two months.’ | Yes |
| MBBM01  | ‘I will say that happens sometimes, in the sense that probably a person is new. Sometimes people may take the wrong data set to make a decision. If I don’t trust you as a new person, I will ask you how you got the data. If I have a doubt I will check how you got the data and who else is involved and your process owner’s response to your data, because they should know more than me.’ | Yes |
| LF01    | ‘In a team, if I know my colleague and I know what he is capable of. Yes I will trust him on interpreting the knowledge in a good way. However if I have in front of me someone that I know little or I don’t trust, it will be difficult to trust in him, but as I said it is a communication, I do my job.’ | Yes |</p>
<table>
<thead>
<tr>
<th>Yes I can be reluctant until I get to know them. But once I know what they are capable of I am comfortable and able to receive and trust the accuracy of their knowledge.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LBBA01</td>
</tr>
<tr>
<td>BBUK01</td>
</tr>
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<td>----------------</td>
</tr>
<tr>
<td><strong>CUS01</strong></td>
</tr>
<tr>
<td><strong>MBBB01</strong></td>
</tr>
</tbody>
</table>
Appendix 10. Physical proximity - Training, Mentoring and coaching (facilitator of the unspoken knowledge transfer)

<table>
<thead>
<tr>
<th>Participants</th>
<th>Preferred mode of transmission channel</th>
<th>Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUS01</td>
<td>Physical proximity, emails</td>
<td>‘I have to travel a lot. I have to go and understand the issues they are facing. It can be easy for me to sit in the HQ and send some emails and tell them what they have to do and how they are going to do it. No I have to travel, I have to go see it myself and provide them support.’</td>
</tr>
<tr>
<td>MBBM01</td>
<td>Phones conferences, physical proximity</td>
<td>‘For me it will be phone conferences, but there is still a face-to-face meeting of project leaders locally.’</td>
</tr>
<tr>
<td>LBBA01</td>
<td>Physical proximity</td>
<td>‘I prefer face-to-face meeting. Face-to-face recognition in order to recognise that the work has been done. The part where we have to ensure that they understand is to go directly to the practical activity in field after the training. I think that here in SA we prefer much more personal contact than something remote by email or by phone.’</td>
</tr>
<tr>
<td>MBBB01</td>
<td></td>
<td>‘…I support most face-to-face meetings.’</td>
</tr>
<tr>
<td>BBUK01</td>
<td>Physical proximity, phones, emails</td>
<td>‘I think the key point is what I call walkabout management. You got to be able to see, observe, monitor what the reaction is to whatever it is you are trying to do and that is easier when it is face to face, but you need to think about techniques of follow-up phone calls, follow-up emails, counselling all the</td>
</tr>
<tr>
<td>Interviewee</td>
<td>Method</td>
<td>Quote</td>
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</tr>
<tr>
<td>MBBG01</td>
<td>Physical proximity, some IT tools</td>
<td>‘In DAS we execute the training in person because there are so many practice activities which cannot be done online. On the other hand, the online training success is very different to the success of face-to-face training.’</td>
</tr>
<tr>
<td>LF01</td>
<td>Physical proximity</td>
<td>‘I support face-to-face meetings and 80% of our meetings and communication are face to face.’</td>
</tr>
<tr>
<td>GBF02</td>
<td>Physical proximity</td>
<td>‘I think physical proximity is the best way whenever possible. I believe it is the best way to communicate because everything goes in. Most of the time over the phone we loose patience because we can’t physically see the other person so we tend to rush things. Whereas if we are in the same room we tend to be more focused and attentive.’</td>
</tr>
<tr>
<td>MBBUS01</td>
<td>Physical proximity</td>
<td>‘…For me nothing beats the impact you can have on teams and progress than a few days of face-to-face time with teams, especially to kick them off. Then virtual management becomes much easier.’</td>
</tr>
<tr>
<td>MBBUS02</td>
<td>Physical proximity</td>
<td>‘Most of our training sessions are set up to be face-to-face for a week. We will not try to implement that week session over the phone.’</td>
</tr>
</tbody>
</table>
Appendix 11. Are your IT systems integrated and compatible effectively enables knowledge transfer?

<table>
<thead>
<tr>
<th>Participants</th>
<th>Location</th>
<th>Statements about knowledge storing</th>
<th>Effective or ineffective</th>
</tr>
</thead>
<tbody>
<tr>
<td>LBBA01</td>
<td>Argentina</td>
<td>‘Tools and technologies are available. There is always support to leverage projects.’</td>
<td>Effective</td>
</tr>
<tr>
<td>MBBB01</td>
<td>Brazil</td>
<td>‘The company has intranet tools for the portfolio tools. In that portfolio tool, all the MBB and project leaders are mainly responsible to open a project charter in the portfolio tool. With a search query. So anyone who is part of this internal SS community could search and find any project all over the world that could have any contribution to their work problem. And also, when a project leader puts a project in the system, all the MBB, receive a message saying “hey there is a new project opened, take a look, if it could contribute to your knowledge”.’</td>
<td>Effective</td>
</tr>
<tr>
<td>LF01</td>
<td>France</td>
<td>‘What is important is the solution for the people working in the area. For example I am a lean leader working in different areas and sometimes it happens to me that I do something somewhere that I have done before in another plant. Whatever happens, I will do my workshop as normal and push people to find the solution, even if I know the solution from the beginning, I will push people to find the solution because when it is a solution that you have found yourself, the rule that you have created yourself you will follow it. Yes, we have integrated IT systems are compatible to enable communication and sharing.’</td>
<td>Effective but have to be creative</td>
</tr>
<tr>
<td>GBF01</td>
<td>France</td>
<td>‘There is a database called portfolio. As GPL I have the responsibility in the team to gather the right data in order to analyse them. After having received the project charter, the first thing on my checklist even before collecting data is to check if something similar has been conducted in some other part of the company to save time and avoid doing the same job twice. This can easily be done within the search query.’</td>
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<tr>
<td>MBBG01</td>
<td>Germany</td>
<td>‘We have full time BB meeting all together with the MBB to exchange information, to present something in some geography. It is mainly for the leverage reasons, to identify areas […] If I have a market share project in country A, market share in country B relatively similar conditions in the country, then very often we can leverage that knowledge from one country to the next. It saves time and effort.’</td>
<td></td>
</tr>
<tr>
<td>MBBM01</td>
<td>Malaysia</td>
<td>‘I encourage subsidiary autonomy, but I believe that in networking on HQ and other subsidiaries is also important, that’s where you leverage the best practices.’</td>
<td></td>
</tr>
<tr>
<td>CUS01</td>
<td>USA (HQ)</td>
<td>‘For learning we use the IT to share and learn. Everything could be available on the Internet. We have a shared system where anyone can see what everyone else has done. So we have got a portfolio management a good portfolio, where we can connect and find help and find similar projects done. So before you do anything, you have to go on the portfolio, you learn what was done and use it to leverage your work. So we have the infrastructure to do it.’</td>
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Effective
<table>
<thead>
<tr>
<th>MBBUS02</th>
<th>USA (HQ)</th>
<th>‘So we have a database that’s searchable, we can go back and look for projects that we’ve already done and then try to leverage how they were done. It might not be the exact piece of information that is useful, but how they did the project is usable. So did they create a certain template, did they create certain tools, how did they go back doing the analysis? It’s a lot of those types of things, we go back to projects that we have already done and then we can reuse that learning.’</th>
<th>Effective</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBBUS01 (Marshall)</td>
<td>USA (HQ)</td>
<td>‘Every Thursday for an hour we do project reviews or continuous learning or something where we invest and we do that by sharing our projects or sharing different aspects of excelling to know all the different parts of the company where projects are going on and they get to see how other people solve problems and what you come to see to be quick on yours.’</td>
<td>Effective</td>
</tr>
<tr>
<td>BBUK01</td>
<td>UK</td>
<td>‘We have a portfolio that’s manageable within the community of Six Sigma. It is easily accessible; Projects can be leveraged into others. It save time as there is no need to do the same work twice.’</td>
<td>Effective</td>
</tr>
</tbody>
</table>
Appendix 12. Do you see language difference as major obstacle in communicating with and understanding your partner?

<table>
<thead>
<tr>
<th>Participants</th>
<th>Statements</th>
<th>Evaluation of statements</th>
</tr>
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<tbody>
<tr>
<td>MBBM01</td>
<td>‘I don’t think that language is the barrier on delivering the training. I have to recognise in some countries they are very much native focus, but generally those people that we send in training normally should be able to speak and understand English.’</td>
<td>No</td>
</tr>
<tr>
<td>BBUK01</td>
<td>‘Sometimes, yes I see it as an obstacle, but not major. The first thing is language. If you start thinking where bring people in from Egypt, Morocco, not so much SA but African countries, Romania. So first of all we have to… we do have a goal that everybody above a certain job level must have English as a second language but that is not always easy and particularly when you have a very complex training if you like Six Sigma. We try to do that with a week followed by coaching. So the first thing is the language and the ability to grasp information.’</td>
<td>Yes/not major</td>
</tr>
<tr>
<td>MBBB01</td>
<td>‘Yes Language is also a problem linked to the education. I have a chance to deliver Six Sigma training in Portuguese; I also have a chance to deliver lean in English. But it is better for me to communicate in Portuguese. I am not shy to say I don’t understand. Even with my superiors when working in a specific marketing project for pastures in Brazil. I do my best to understand, but sometimes they are talking in a very technical level that I cannot follow.’</td>
<td>yes</td>
</tr>
<tr>
<td>GBF01</td>
<td>‘Yes it is an obstacle but not major. The fact that we are all com from different countries and we don’t all have English as our fist language can pose a problem'</td>
<td>Yes/not major</td>
</tr>
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</table>
sometimes, but not major. There are surely some misunderstandings during the communication process, but nothing major that I couldn't deal with. Although English is not my first language I have a good level, if it happens that I did not understand something, I am not ashamed to ask for clarifications.’

**CUS01**

‘We cannot do the training without having the local people in there, because sometimes we have the language barrier, we cannot just do it. But if we have got a new topic coming in and that I want to lunch, we will bring some local guys, train them so that they could train their own people. Again it is the same step what is true for you might not be easily transmitted to people. So we need to have the local guys there to add that kind of flavour.’

**MBBG01**

‘The big challenge is of course that training materials is developed English. The situation is that especially in countries where the local MBB colleagues when they are executing trainings that they have very often to translate slide by slide. So especially when you look to countries such as Chinese or Japanese colleagues where they have to translate, also Latina America because the local language is Spanish, so the people very often have a really low level of English and so the MBB have to translate everything in Spanish.’

**MBBUS02**

‘Yes! And I hear about this from my colleagues too because they have most of their geographies they will have more than one language. Here in the US mostly everything is English. We have participant coming from other geographies. It is probably easier here because we don’t have an accent trying to deliver the English; it is easier for them to understand. But when there is another accent involved
trying to speak English or trying to deliver training in English. So a German accent trying to speak English to deliver training for example in China or some place like that, it makes it even more difficult for them to understand. And so the rate of learning is much flat and the questions, they don’t understand the materials well because of all the interpretation. They put in so much brain power trying to make all the translation and the interpretation then it is hard for them to learn.’

<table>
<thead>
<tr>
<th>MBBUS01 (Marshall)</th>
<th>‘A lot of places we go, all our sites leader speak English, they know or they think they don’t even know but you can tell they know exactly what you are saying, but they are not comfortable with their ability to speak. So it is kind of a mix. It will be perfect if everybody was multilingual. A lot of Americans aren’t. In my specific case, if i was put in a situation and there isn’t somebody local that also knows the Six Sigma word concepts in their languages. I kind of make fun of it. I will use the 10 words I know in their language. But yes it is hard. If we are doing true training we usually try to have a local person deliver the training and then if somebody has a question about a slide they will ask me in English and they will listen to the response and we will translate it back for the class. So you are only there to act as an expert and the person delivery it does the talking in the language of the country.’</th>
</tr>
</thead>
<tbody>
<tr>
<td>LF01</td>
<td>‘In my opinion people will always use it as an excuse, because I don’t think that it is a factor that can slow down the communication process. It is not a major obstacle.’</td>
</tr>
<tr>
<td>LBBA01</td>
<td>‘Usually the training material is in English but I provide the training in Spanish</td>
</tr>
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</table>

Yes/not major
We use a lot Spanish here, but English is a mandatory requirement for some leadership activities or supervisor activities. Usually we have the training material in English but we try to train in Spanish but we don’t have the resources embedded to translate so we try to keep the material as they are and we try to explain.'
Appendix 13. Do you see education level, gender, age and religion differences as obstacles to knowledge transfer?

<table>
<thead>
<tr>
<th>Participants</th>
<th>Statements</th>
<th>Evaluation of statements</th>
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<tbody>
<tr>
<td>LBBA01</td>
<td>‘Usually the younger people are more engaged to understand the new world concept. Beside that I don’t think that other factors have a great impact on knowledge sharing.’</td>
<td>Yes, age</td>
</tr>
<tr>
<td>MBBB01</td>
<td>‘I think that especially in Brazil, I will say that sometimes we have education barriers. We have people with different education levels. But on the other hand, it is very easy to communicate in Brazil, so you can overcome these kind of things because you can talk with no problem. No problem related to gender and age, it is not the case. Language is also a problem yes linked to the education.’</td>
<td>Yes sometimes education level or language</td>
</tr>
<tr>
<td>LF01</td>
<td>‘I remember that during a trip to the India plant, I was faced with a cultural issue. The goal of my trip was to initiate a project, and we had fixed the day and time in advance. The meeting was supposed to be at 8 am and when I arrived in the plant there was nobody. So I was surprised and I waited until 10 am and I saw people arriving with a monk. They explained that in that region they saw incarnation of gods in every think or machine. Because we were supposed to initiate the production with that new machine, they went to the temple to pray the gods first. It was so obvious to them that they did not take the initiative to remind him. So I had learned a lesson then. Which is: to try to understand the local culture before interacting with the local people. That’s what the company encourages us to do.’</td>
<td>Yes, religion</td>
</tr>
<tr>
<td>GBF02</td>
<td>‘Yes it can be threat for communication. But again I think we have got to be</td>
<td>Yes</td>
</tr>
<tr>
<td>Interviewee</td>
<td>Quote</td>
<td>Comments</td>
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</tr>
<tr>
<td>MBBG01</td>
<td>‘Normally absolutely no problem with religion, gender, age etc... Nothing has to be the reason that something is running differently. I as sender of the message have to be careful. I have to always act with respect to other people. Also where we work in the business we have to have good level of politeness. I will say be respectful and be polite of course but then specific communication is differently done for different cultures for different religions. For example if I have training taking place in a specific country in east Africa. Before fixing the training dates, I have looked in the Ramadan calendar to ensure that it is not in conflict with their beliefs. So that’s showing respect to them and not bringing them in conflict with their own religion’</td>
<td>No major impact because we have good level of politeness</td>
</tr>
<tr>
<td>MBBM01</td>
<td>‘Not really’</td>
<td>No</td>
</tr>
<tr>
<td>BBUK01</td>
<td>‘Yes, If you take my generation, we had the baby boomers and we grew up with the freedom to do our own things if you like, but also look towards authority for directions and look to teachers to teach us. In the current time they are information aware, but so wrapped up into social stereotype that they find it hard to operate in networks and teams. And if you take the two together, they are confused with each other attitudes. And then you’ve got people in between. It is difficult if you take a company like Das where 40% of the workers are 7 years away from the retirement which means we’ve got to bring in 30% of new people. How do you manage that?’</td>
<td>Yes, Age</td>
</tr>
</tbody>
</table>
A Critical Evaluation of Knowledge Transfer Management in Improving Organisational Effectiveness within MNCs

<table>
<thead>
<tr>
<th>CUS01</th>
<th>‘Yes it could be, we have faced some situations with slight issues concerning that, but not a major issue’</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBBUS02</td>
<td>‘I think it can. I think you have to try and be prepared on some of the things that you can accommodate for those differences. For example, just age wise. The newer generation learns in a very different way than the older generation do. So when you are doing training the older generation wants the manual copies, the materials. The newer generation is quite happy with having everything electronic. If you try to force the older generation to do everything electronic they probably won’t learn at all. It is that there are some of those key differences and that you understand those and you can make those adaptations and offer them both ways. I mean maybe it can be more cost effective to keep everything electronic, but you have to have the ability to have those materials available if somebody needs them or if there are learning facilities. You really need to adapt to the different learning facilities, and understand those then be able to kind of accommodate those with your training.’</td>
</tr>
<tr>
<td>MBBUS01(Marshall)</td>
<td>‘In general, what we teach is all about leadership and personal development, improving and making themselves better. We don’t run into those barriers where not very often we don’t respect what the young people are bringing to the table at the training(...) I think it facilitates the leader to engage everybody and to mix up that diversity whether it is age, race, country or education. It is to give everybody a chance to speak, to share throughout the training.’</td>
</tr>
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</table>

Yes, but the organisation encourages respect and all employees interaction
Appendix 14. How do you strike the balance between corporate culture and foreign units cultures? Is cross-cultural issues challenging?

<table>
<thead>
<tr>
<th>Participants</th>
<th>Statements/storytelling</th>
<th>Solutions</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUS01</td>
<td>‘This is what we call national management. It is the skill that people use and that they personally discover by doing it. If you go to Japan now and you have to deal with the Japanese, there is a particular way to deal with the Japanese. If you look at Asia, there is a different way to deal with the Asian guys. They have something that they call “loosing face”, they don’t want to lose face. If they think that they are going to lose face with you, it will never work with you, it will never work for you. And if you go back to the western countries, that doesn’t mean anything. No one worries about loosing face. That’s not a big issue. So as a global executive you need to know that every time you step in a new culture, you need to be aware of the local culture.’</td>
<td>Using local implementers ‘That’s why when we are trying Lean and Six Sigma deployment, for example. We try the best to use local people to do the local job, because if you take the cultural part, L and SS have many other steps in the process and they are linked to people behaviours.’</td>
<td>Be aware of local culture</td>
</tr>
<tr>
<td>MBBG01</td>
<td>‘Basically when we have cross-functional projects it starts to get very complex, because sometimes we have people from different regions included and then it is quite interesting to see the staff mentality. One of the problems is the mentality and then having a cross-functional team around the table is</td>
<td>Adapting to the local context and using local people to handle communication ‘If you want to get something done in one of the countries in</td>
<td>Individual behaviour is a challenge</td>
</tr>
</tbody>
</table>


sometimes very powerful but very complex.’

‘When working in an MNC, people do not quickly accept when things are not aligned with their cultural style and mentality and those specific things have to be adapted, so it is good to have an adjustment done on the targeted audience. Especially when having specific mentalities and cultural differences. Because if we do not respect a specific culture of a specific geography for example, then the buy in might drop from one second to the next.’

‘So adjustment of communication to target audience is sometimes the key. Which is then the execution of the methodology has to be the same everywhere. If there are other businesses related it has to be taken into consideration. For example, what is the best composition? In different countries it is differently handled with the different seniorities of team members. If you go to the US, they are very relaxed. When you go to Asia you have to respect the fact that the seniors have to be treated as seniors and when taking this into consideration the acceptance of the communicated message is quite better than no consideration at all.’

<table>
<thead>
<tr>
<th>MBBUS02</th>
<th>‘Yes I will say it is easier to work with a subsidiary whose</th>
<th>Using expatriates: rotating</th>
<th>Cross-cultural</th>
</tr>
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</table>

Asia, then it is sometimes good to handle or to bring over the communication to colleagues in China, Japan. Differently doing this to colleagues in France, Italy or UK.’
culture is similar to our HQ national culture. But the more
opportunities you can get to learn cross-cultural, then the good
learning opportunities on both ways to better understand the
differences in cultures and to find common ways to work
together.’

‘I think there are a lot of opportunities to learn. Within my
groups here, in the past we have tried to rotate in people, and
bring people over for a year to become a black belt and do
projects. So we brought them from India, the UK, and we also
sent some from here [HQ] to Germany or to North America.
So we try to do that. It adds a lot of value by having different
cultures within a group and it is a learning experience for
them. Because how we work here in the HQ, and just how
even decisions are made, how meetings are conducted. All of
those things are very different in different parts of the world.
So this can be a really big challenge.’

<table>
<thead>
<tr>
<th>MBBUS01 (Marshall)</th>
<th>employees across borders to facilitate cultural awareness and learning</th>
<th>differences open doors to other ways of doing</th>
</tr>
</thead>
</table>
| ‘In general corporations tend to value time and tend to make
everybody so busy that we don’t slow down in order to
understand culture, develop trust, and understand time.
For me personally, when I talk to my audience, I always try to
talk in a common language. In DAS we do classroom training. |
| Adapting to each audience and site and find ways to allow more time to develop trust and understand culture |
| Not enough time to develop trust and understand culture but learning |
we do training where we go in some places and deliver to the team and they can do the work on the site like an event. We always do our best to go to the field and this is where the excellence comes in. We always adapt what we say to the audience. We might have the exact ten slides every time, but I believe in that number of slides there is a lot of conversation. And the conversation is about the way they are doing the things that are relevant to them. You have to speak in their language, you can’t use a lot of Lean jargon or Six Sigma jargon. You can’t use a manufacturing example when you are talking to office people. You can use a manufacturing example when you are talking to your field group. And that’s where the benefit of doing lots of different events around the globe with lot of different groups bring. You have a lot to draw from. You can find a new way. If you are talking to them about something and you are told it is not working, you can change.’

| MBBM01 | ‘I think a common thing I will say is that the Six Sigma culture is incorporated in the organisation, so this has actually taken over the rest of the culture.’ | Common language: standardised terminologies in all units and the HQ | opportunities from cross-cultural and functional teams | Not a challenge |
‘I do not see that as a challenge. One good thing about DAS is that although we have a lot of abbreviation, but we all use the same terminologies. We use a common language I will say. It is a global initiative. I don’t experience any hinders coming to economic, cultural standpoint.’

**LBBA01**

‘In the case of Latin America, the behaviour is generally quite similar, because, we have the same problem and the same characteristics, in some cases there are some differences, but in general Latin Americans have the same profile. I mean, sometimes people are really friendly, but sometimes they have difficulties to standardise their work. The challenge is to show them that working in a standardised way is an advantage not a disadvantage. That is the main challenge. You know with some kind of informalities and immoralities, if you compare with the chairman way of working, the American way of working, it is quite different. So that is the main challenge, it is to show them that you can work in a standardised way easier than you can work in a non-standardised way.’

**Encouraging people to work in a standardised way to facilitate uniformity in task execution**

**It is challenging for Latin Americans to work in a standardised way**

**BBUK01**

‘From a corporate perspective the assumption is, the culture is the same. I think what is more important is individual culture. If I work with somebody from Romania, their background of

**The corporate culture will be the same in all units**

**Cultural differences make interaction with**
freedom to make discussion, freedom to discuss things is less than perhaps it will be for the UK. If you talk to an Egyptian guy, he will tell you exactly what he thinks and won’t care if he upsets you whereas the British culture is that you don’t upset anybody. So there is culture by country, education and age, overlaid by the communication style of the social makeup of a person. And that’s what makes it complex.”

| LF01 | ‘I remember that during a trip to the Indian plant, I was faced with a cultural issue. The goal of my trip was to initiate a project, and we had fixed the day and time in advance. The meeting was supposed to be at 8 a.m. and when I arrived in the plant there was nobody. So I was surprised and I waited until 10 a.m. and I saw people arriving with a monk. They explained that in that region they saw incarnation of gods in every thing or machine. Because we were supposed to initiate the production with that new machine, they went to the temple to pray to the gods first. It was so obvious to them that they did not take the initiative to remind me. So I had learned a lesson then. Which is: to try to understand the local culture before interacting with the local people. That’s what the company encourages us to do.’ | Organisation encourages cultural awareness | Cross-cultural differences may be challenging |
**MBBB01**  “Once I was in England for a workshop. A colleague of mine was delivering part of the training, he was talking about MAIC methodology, I still remember at a certain moment during his presentation I raised my hand, and I said: “Hey if you want to share an example of that picture, I have it in my machine.” I did it very spontaneously. So after the presentation I received a feedback from him saying that I interrupted his training and I brought information that he did not expect. And I got another feedback, from a senior who explained to me that: “You need to understand that, that person is a very American guy. He was there to deliver training, he was prepared to do so, had several slides to follow, and he did not invite you to talk. However, you just raised your hand and started talking, you did not ask the permission to do so. So in his mind, you actually jumped into his presentation.” But as a Brazilian, for me, it was normal. So I apologised and understood that in his mind it was completely unexpected.

**Top management assistance to employees in handling cross-cultural issues**

Individual behaviour and background may cause misinterpretation during interactions

**GBF01**  “I think culture might represent a barrier when working with people from different backgrounds. Although we can have issues sometimes, in the company we have an organisational

**Organisation puts norms in place to encourage cultural awareness**

Culture may represent a barrier to
| culture which encourages employees to be sensitive to those kind of aspects. | communication |
Appendix 15. Project chart

<table>
<thead>
<tr>
<th>SIX SIGMA PROJECT CHARTER TEMPLATE</th>
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<tbody>
<tr>
<td><strong>Business:</strong></td>
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<tr>
<td></td>
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</tbody>
</table>

**Project Title:**

**Project Impact/Strategic Alignment:**
Indicate how the project aligns with the business strategies of the business units and external customers impacted by or receiving benefit from the project.

**Customer Loyalty Driver:**
Identify the confirmed customer loyalty driver(s) that this project improves (e.g., product quality/integrity, ease of doing business, stable prices, business relationship, etc.).

**Opportunity Statement:**
State why this effort was initiated and what will be affected by the outcome. Orient the team and others to the true need for the project. Include the source and analysis of any baseline data that identified the opportunity.

**Data Sources:**
Explain the data sources most likely to be used by the project and include the system, server, folders and files. State who is the data owner and if access is agreed and what procedure to be followed to access it.

**Describe the Defect, CTX’s:**
Write a specific defect statement that describes the defect in terms that are measurable. Include what (current and desired state), when, where, why (cause), and how to measure improvement (CTX’s refers to defects that are critical to any variable (x), e.g. quality, cost, customer satisfaction).

**Project Scope & Boundaries:**
Specify the scope of the project. Identify the Division, Business Unit, Function, Site, Process and/or Product encompassed by the project. State any project constants or limitations.

**Project Goal/Objectives:**
List of specific and measurable objectives for the project. This enables the team to reach consensus on what will be addressed during the course of the project. These objectives should be quantified in terms of cost, savings, time, and/or effort.

**Timeline:**
Identify the key milestones for completion of the project. Forecast the Start and Completion dates for each M-A-I-C phase of the project and the realization of the project goals.

**Deliverables:** [$ Impact Actual Operating Margin/yr and Economic Profit/yr Gain]
Describe significant expectations and/or deliverables that the project team must produce. This helps hold the team accountable and map team progress. Deliverables can include project documentation and progress/status reports as well as project outputs. Specific deliverables may be required for each phase of M-A-I-C. Deliverables can also include the Leveraging of documentation and Learning’s to others.

**Leverage in (Portfolio project no. and brief description):**
Identify projects with similar aspects that may be leveraged in. Include Portfolio project # and a brief description. Besides Portfolio, make sure you are looking at other sources of opportunities including, for example, Tech Centers, libraries, etc.

**Leverage out (Actions taken during or after project completion):**
Identify whether this project could be leveraged out within the business/function or to other businesses/functions. Identify the key stakeholders who will benefit most from your Learning’s. Include actions taken before and after project completion to support leveraging.

**Team Characteristics/Composition:**
Ensures that all the people necessary to effect change will be involved; defines who will be on the team and why. The team may include key stakeholders to ensure they are aware of all changes and to provide input and guidance as needed.

Marketing / Sales / Customer Service / Regulatory: no Green Belts = permanent team members – only to work with SMEs =

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A Critical Evaluation of Knowledge Transfer Management in Improving Organisational Effectiveness within MNCs
Appendix 16. Process documented (tacit knowledge codified)

<table>
<thead>
<tr>
<th>Product: All molecules</th>
<th>Owner:</th>
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<tr>
<td>Last Review: 19/11/2010</td>
<td>Page 1 of 11</td>
</tr>
</tbody>
</table>

Supply Chain Value Stream Map Approach: Data collection procedure

VSM Methodology Approach

Data Process

A set of quantitative data should be collected (sales and inventories). This will help describing and specifying the size and placement of stocked products for a better elaboration of the VSM.

Data collection

It is important to collect reliable data for the completion of this project. The main sources of data are:

- Business object (Sales summary)
- DAS MRP II Processes (Inventory Management system)
A Critical Evaluation of Knowledge Transfer Management in Improving Organisational Effectiveness within MNCs